INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

Chevron Horizontal Directional Drill 3 (HDD3) Pipeline Replacement Project

January 2019

CEQA Lead Agency:

California State Lands Commission
100 Howe Avenue, Suite 100 South
Sacramento, CA 95825

Applicant:

Chevron Pipe Line Company
1400 Smith Street
Houston, TX 77002

MISSION STATEMENT

The California State Lands Commission provides the people of California with effective stewardship of the lands, waterways, and resources entrusted to its care through preservation, restoration, enhancement, responsible economic development, and the promotion of public access.

CEQA DOCUMENT WEBSITE
www.slc.ca.gov/Info/CEQA.html

Geographic Location (Lease PRC 3277):

Grizzly Island Work Site	Birds Landing Work Site
Latitude: N121.917826	Latitude: N121.897836
Longitude: 38.097002	Longitude: 38.1348354

NAD83 Datum

Cover photo: Birds Landing Area
(Photo courtesy of AECOM)

TABLE OF CONTENTS

EXECUTIVE SUMMARY 1

1.0 PROJECT AND AGENCY INFORMATION 1-1
1.1 PROJECT TITLE 1-1
1.2 LEAD AGENCY AND PROJECT SPONSOR 1-1
1.3 PROJECT LOCATION 1-1
1.4 ORGANIZATION OF MITIGATED NEGATIVE DECLARATION 1-4
1.5 PROJECT BACKGROUND, OBJECTIVES, AND SCOPE 1-5
1.6 PUBLIC REVIEW AND COMMENT 1-6
1.7 APPROVALS AND REGULATORY REQUIREMENTS 1-6
1.7.1 California State Lands Commission 1-6
1.7.2 Other Agencies 1-7

2.0 PROJECT DESCRIPTION 2-1
2.1 PROJECT WORK AREAS AND OVERVIEW 2-1
2.1.1 Birds Landing Work Site 2-1
2.1.2 Grizzly Island Work Site 2-3
2.1.3 Pipeline Grouting Vent Work Site 2-5
2.2 CONSTRUCTION ACTIVITIES 2-5
2.2.1 Horizontal Directional Drilling 2-5
2.2.2 Pipe String Assembly 2-9
2.2.3 Hydrostatic Testing 2-9
2.2.4 Pullback 2-10
2.2.5 New Pipe Tie-In 2-10
2.2.6 Relocation of Existing Valve Station 2-12
2.2.7 Grouting of the Existing Bay Area Products Line Segment 2-14
2.2.8 Demobilization and Site Restoration 2-14
2.3 SITE ACCESS AND STAGING 2-14
2.4 PROPOSED SCHEDULE 2-15
2.5 EQUIPMENT, WORK FORCE, AND CONSTRUCTION HOURS 2-16

3.0 ENVIRONMENTAL CHECKLIST AND ANALYSIS 3-1
3.1 AESTHETICS 3-4
3.1.1 Environmental Setting 3-4
3.1.2 Regulatory Setting 3-5
3.1.3 Impact Analysis 3-5
3.1.4 Mitigation Summary 3-7
3.2 AGRICULTURE AND FORESTRY RESOURCES 3-8
3.2.1 Environmental Setting 3-8
3.2.2 Regulatory Setting 3-9
3.2.3 Impact Analysis 3-9
3.2.4 Mitigation Summary 3-10
3.3 AIR QUALITY 3-11
3.3.1 Environmental Setting 3-11
3.3.2 Regulatory Setting 3-15
3.3.3 Impact Analysis 3-20

3.3.4 Mitigation Summary 3-24
3.4 BIOLOGICAL RESOURCES 3-25
3.4.1 Environmental Setting 3-25
3.4.2 Regulatory Setting 3-38
3.4.3 Impact Analysis 3-39
3.4.4 Mitigation Summary 3-50
3.5 CULTURAL AND PALEONTOLOGICAL RESOURCES 3-51
3.5.1 Environmental Setting 3-51
3.5.2 Regulatory Setting 3-54
3.5.3 Impact Analysis 3-54
3.5.4 Mitigation Summary 3-57
3.6 CULTURAL RESOURCES - TRIBAL 3-58
3.6.1 Environmental Setting 3-58
3.6.2 Regulatory Setting 3-61
3.6.3 Impact Analysis 3-61
3.6.4 Mitigation Summary 3-62
3.7 GEOLOGY AND SOILS 3-63
3.7.1 Environmental Setting 3-63
3.7.2 Regulatory Setting 3-64
3.7.3 Impact Analysis 3-65
3.7.4 Mitigation Summary 3-68
3.8 GREENHOUSE GAS EMISSIONS 3-69
3.8.1 Environmental Setting 3-69
3.8.2 Regulatory Setting 3-70
3.8.3 Impact Analysis 3-71
3.8.4 Mitigation Summary 3-73
3.9 HAZARDS AND HAZARDOUS MATERIALS 3-74
3.9.1 Environmental Setting 3-74
3.9.2 Regulatory Setting 3-75
3.9.3 Impact Analysis 3-75
3.9.4 Mitigation Summary 3-78
3.10 HYDROLOGY AND WATER QUALITY 3-80
3.10.1 Environmental Setting 3-81
3.10.2 Regulatory Setting 3-81
3.10.3 Impact Analysis 3-82
3.10.4 Mitigation Summary 3-87
3.11 LAND USE AND PLANNING 3-88
3.11.1 Environmental Setting 3-88
3.11.2 Regulatory Setting 3-89
3.11.3 Impact Analysis 3-91
3.11.4 Mitigation Summary 3-92
3.12 MINERAL RESOURCES 3-93
3.12.1 Environmental Setting 3-93
3.12.2 Regulatory Setting 3-93
3.12.3 Impact Analysis 3-94
3.12.4 Mitigation Summary 3-94

3.13 NOISE 3-95
3.13.1 Environmental Setting 3-95
3.13.2 Regulatory Setting 3-97
3.13.3 Impact Analysis 3-101
3.13.4 Mitigation Summary 3-105
3.14 POPULATION AND HOUSING 3-106
3.14.1 Environmental Setting 3-106
3.14.2 Regulatory Setting 3-106
3.14.3 Impact Analysis 3-106
3.14.4 Mitigation Summary 3-107
3.15 PUBLIC SERVICES 3-108
3.15.1 Environmental Setting 3-108
3.15.2 Regulatory Setting 3-109
3.15.3 Impact Analysis 3-110
3.15.4 Mitigation Summary 3-110
3.16 RECREATION 3-111
3.16.1 Environmental Setting 3-111
3.16.2 Regulatory Setting 3-111
3.16.3 Impact Analysis 3-112
3.16.4 Mitigation Summary 3-112
3.17 TRANSPORTATION/TRAFFIC 3-113
3.17.1 Environmental Setting 3-113
3.17.2 Regulatory Setting 3-114
3.17.3 Impact Analysis 3-115
3.17.4 Mitigation Summary 3-117
3.18 UTILITIES AND SERVICE SYSTEMS 3-118
3.18.1 Environmental Setting 3-118
3.18.2 Regulatory Setting 3-119
3.18.3 Impact Analysis 3-119
3.18.4 Mitigation Summary 3-121
3.19 MANDATORY FINDINGS OF SIGNIFICANCE 3-122

4.0 MITIGATION MONITORING PROGRAM 4-1
4.1 PURPOSE 4-1
4.2 ENFORCEMENT AND COMPLIANCE 4-1
4.3 MONITORING 4-1
4.4 MITIGATION MONITORING TABLE 4-2

5.0 OTHER COMMISSION CONSIDERATIONS 5-1
5.1 CLIMATE CHANGE AND SEA-LEVEL RISE 5-1
5.2 ENVIRONMENTAL JUSTICE 5-2
5.3 STATE TIDE AND SUBMERGED LANDS POSSESSING SIGNIFICANT ENVIRONMENTAL VALUES 5-6

6.0 MND PREPARATION SOURCES AND REFERENCES 6-1

6.1 CALIFORNIA STATE LANDS COMMISSION STAFF 6-1
6.2 PROFESSIONAL CONSULTANT AUTHORS..... 6-1
6.3 REFERENCES CITED 6-1

APPENDICES

Appendix A Abridged List of Major Federal and State Laws, Regulations, and Policies Potentially Applicable to the Project

Appendix B Equipment List and Air Emissions Calculation Methodologies

Appendix C Plants and Wildlife Observed During Site Visits

LIST OF TABLES

Table ES-1. Environmental Issues and Potentially Significant Impacts ES-7

Table ES-2. Summary of Proposed Mitigation Measures ES-7

Table 1-1. Anticipated Regulatory Approvals and Permits 1-7

Table 2-1. Project Construction Duration 2-15

Table 3-1. Environmental Issues and Potentially Significant Impacts 3-2

Table 3.3-1. NAAQS, CAAQS, and SFBAAB Attainment Status 3-13

Table 3.3-2. Criteria Air Pollutants Data Summary (Bethel Island Road Station)..... 3-15

Table 3.3-3. Criteria Air Pollutant and Health Risk Significance Thresholds..... 3-17

Table 3.3-4. Project Construction Criteria Pollutant Emissions 3-22

Table 3.4-1. Federally Listed and State-Listed Species that May Occur in the Project Area 3-31

Table 3.4-5. Recommended Interim Guidelines for Potential Noise Effects on Birds..... 3-47

Table 3.4-6. Summary of Impacts to Wetlands 3-48

Table 3.5-1. Cultural Resources within a 0.5-mile Buffer 3-53

Table 3.8-1. Project Construction Greenhouse Gas Emissions 3-72

Table 3.13-1. Caltrans Guidelines for Vibration Annoyance 3-98

Table 3.13-2. Land Use Noise Compatibility Guidelines 3-99

Table 3.13-3. Noise Level Permissible by Receiving Land Use 3-100

Table 3.13-4. Typical Construction Noise Emission Levels 3-101

Table 3.13-5. Typical Construction Equipment Vibration Levels 3-103

Table 3.15-1. Summary of Public Service Providers 3-108

Table 4-1. Mitigation Monitoring Program 4-3

Table 5-1. Environmental Justice Statistics 5-5

LIST OF FIGURES

Figure ES-1. Project Location ES-2
Figure ES-2. Project Area ES-4
Figure 1-1. Project Location 1-2
Figure 1-2. Project Area 1-3
Figure 2-1. Birds Landing Work Site 2-2
Figure 2-2. Grizzly Island Work Site 2-4
Figure 2-3. Pipeline Grouting Vent Site 2-6
Figure 2-4. Cross Section of Typical HDD Process 2-7
Figure 2-5. Valve Station and BAPL Tie-In 2-11
Figure 2-6. Segment of BAPL to be Grouted and Capped 2-13
Figure 3.4-1. Wetlands at the BLWS 3-27
Figure 3.4-2. *Sidalcea* in the Project Area 3-44

LIST OF ABBREVIATIONS AND ACRONYMS

	µin/sec	microinches per second
	µg/m^3	micrograms per cubic meter
A	AADT	annual average daily traffic
	AB	Assembly Bill
	ABAG	Association of Bay Area Governments
	ACM	asbestos-containing material
	ASC	Anthropological Studies Center
B	BAAQMD	Bay Area Air Quality Management District
	BAPL	Bay Area Products Line
	BCDC	San Francisco Bay Conservation and Development Commission
	BLWS	Birds Landing Work Site
	BMP	best management practice
C	CAA	Clean Air Act
	CAAQS	California ambient air quality standards
	CAL FIRE	California Department of Forestry and Fire Protection
	CalEEMod	California Emissions Estimator Model
	Caltrans	California Department of Transportation
	CARB	California Air Resources Board
	CBC	California Building Code
	CCAA	California Clean Air Act
	CDFW	California Department of Fish and Wildlife
	CEQA	California Environmental Quality Act
	CESA	California Endangered Species Act
	CFR	Code of Federal Regulations
	CGS	California Geological Survey
	CH_4	methane
	CNDDB	California Natural Diversity Database
	CNEL	community noise equivalent level
	CNPS	California Native Plant Society
	CO	carbon monoxide
	CO_2	carbon dioxide
	CO_2e	carbon dioxide equivalents
	CPL	Chevron Pipe Line Company
	CSLC	California State Lands Commission
	CTP	Comprehensive Transportation Plan
	CWA	Clean Water Act
D	dB	decibels
	dBA	A-weighted decibels
	DEPM	Division of Environmental Planning and Management
	DOT	U.S. Department of Transportation
	DPM	diesel particulate matter
	DPS	Distinct Population Segment
	DTSC	California Department of Toxic Substances Control

	DWR	California Department of Water Resources
E	EFH	Essential Fish Habitat
	EIR	environmental impact report
	EO	Executive Order
	ESU	Evolutionarily Significant Unit
F	FCAA	federal Clean Air Act
	FESA	federal Endangered Species Act
	FPD	Fire Protection District
	FTA	Federal Transit Administration
G	GHG	greenhouse gas
	GIWS	Grizzly Island Work Site
H	HAPC	Habitat Area of Particular Concern
	HDD	horizontal directional drilling
	HDD3	Horizontal Directional Drill 3
	HMTA	Hazardous Materials Transportation Act
I	I	Interstate
	in/sec	inches per second
	IPCC	Intergovernmental Panel on Climate Change
	IS	Initial Study
L	L_{dn}	day-night average sound level
	L_{eq}	equivalent sound level
	Leq[h]	1-hour, A-weighted equivalent sound level
	L_{max}	maximum sound level
	L_v	velocity level
M	MBTA	Migratory Bird Treaty Act
	mg/m^3	milligrams per cubic meter
	MM	mitigation measure
	MMP	Mitigation Monitoring Program
	MMT	million metric tons
	MND	mitigated negative declaration
	MP	Marsh Protection
	MPA	Marine Protected Area
	MPO	metropolitan planning organization
	MTC	Metropolitan Transportation Commission
	$MTCO_2e$	metric tons of CO_2e
N	N_2O	nitrous oxide
	NAAQS	national ambient air quality standards
	NAHC	Native American Heritage Commission
	NE	not exceeded
	NMFS	National Marine Fisheries Service
	NO_2	nitrogen dioxide
	NOI	notice of intent
	NO_X	oxides of nitrogen
	NPDES	National Pollutant Discharge Elimination System

	NPS	National Park Service
	NWIC	Northwest Information Center
	NTIS	National Technical Information Service
O	O_3	ozone
	OHP	Office of Historic Preservation
	OSPR	Office of Spill Prevention and Response
P	PCBs	polychlorinated biphenyls
	PERP	Portable Equipment Registration Program
	PM_{10}	particulate matter with aerodynamic diameter of ≤ 10 microns
	$PM_{2.5}$	particulate matter with aerodynamic diameter of ≤ 2.5 micrometers
	ppb	parts per billion
	ppm	parts per million
	ppt	parts per thousand
	PVC	polyvinyl chloride
R	RMS	root-mean-square
	ROG	reactive organic gases
	RWQCB	Regional Water Quality Control Board
S	SB	Senate Bill
	SEL	sound exposure level
	SFBAAB	San Francisco Bay Area Air Basin
	SO_2	sulfur dioxide
	SR	State Route
	STA	Solano Transportation Authority
	SWPPP	stormwater pollution prevention plan
	SWRCB	State Water Resources Control Board
T	TAC	toxic air contaminant
U	UPRR	Union Pacific Railroad
	USACE	U.S. Army Corps of Engineers
	USBR	U.S. Bureau of Reclamation
	USCG	U.S. Coast Guard
	USEPA	U.S. Environmental Protection Agency
	USFWS	U.S. Fish and Wildlife Service
	USGS	U.S. Geological Survey
V	VdB	vibration or velocity level in decibels

EXECUTIVE SUMMARY

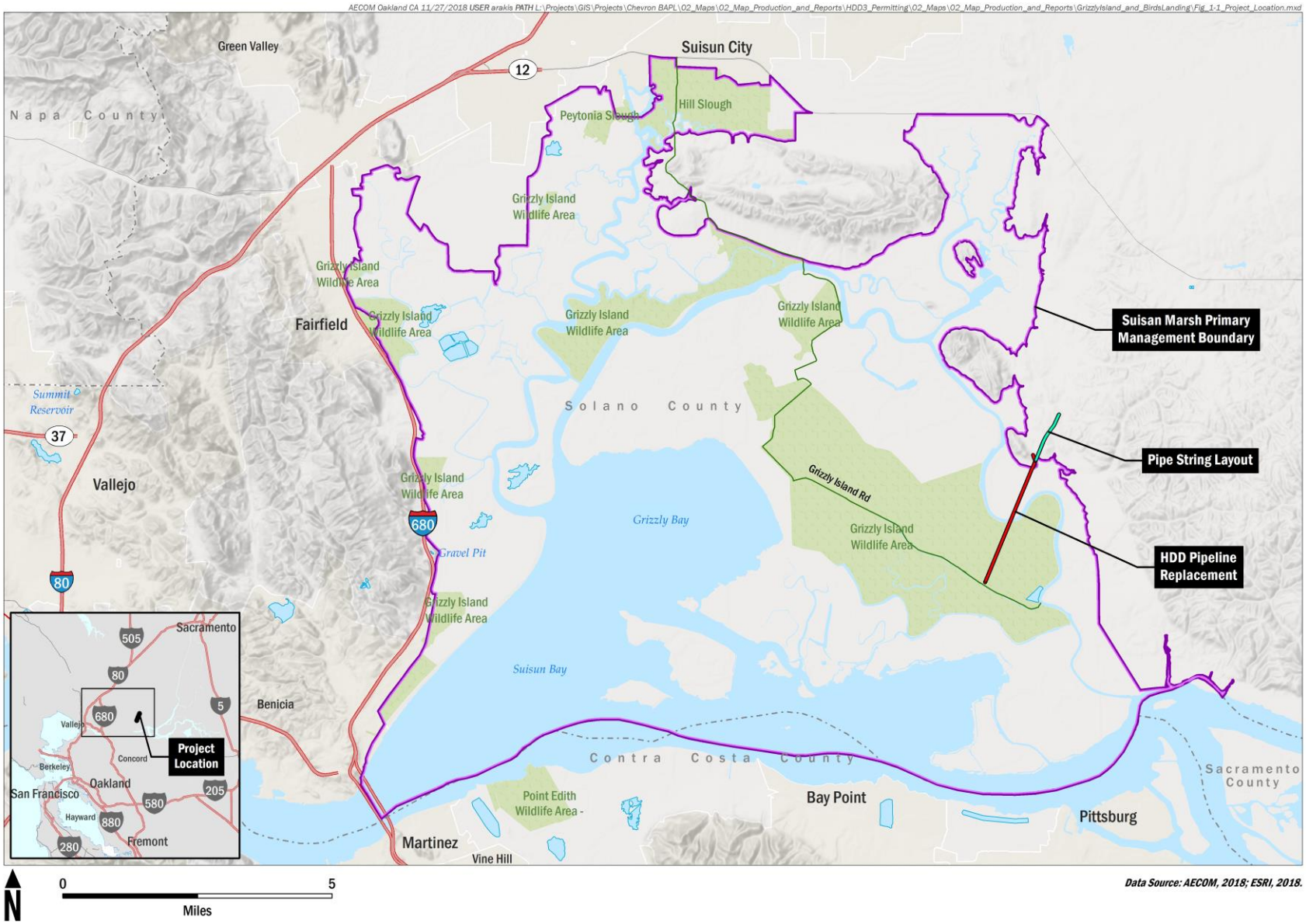
This mitigated negative declaration (MND) has been prepared by the California State Lands Commission (Commission or CSLC), as lead agency under the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.), to analyze and disclose the environmental effects associated with the Chevron Horizontal Directional Drill 3 (HDD3) Pipeline Replacement Project (Project). The Project would authorize Chevron Pipe Line Company (CPL or Applicant) to replace, in kind, part of CPL's Bay Area Products Line (BAPL) system,[1] specifically a segment of the 8-inch Pittsburg-to-Sacramento lateral pipeline that traverses an area located in Solano County (Figure ES-1). The pipeline segment is covered under General Lease – Right-of-Way Use No. PRC 3277.1, which the CSLC issued to Chevron on October 13, 2016, and expires on October 12, 2041.

Recent inspections on the Pittsburg-to-Sacramento lateral pipeline, installed in 1966, identified pipeline anomalies (i.e., potential minor imperfections of the pipe's walls). To eliminate the anomalies, CPL proposes to replace an approximately 2.5-mile pipeline segment that runs through the Grizzly Island Wildlife and Birds Landing Areas in Solano County. The replacement pipeline would be the same diameter as the existing pipe. The Project would not increase the capacity or throughput of the BAPL. The new pipe would be installed by using horizontal directional drilling (HDD) under Suisun Marsh from two entry points located at the Birds Landing Work Site (BLWS) and Grizzly Island Work Site (GIWS).

The CSLC concluded that an MND is the appropriate CEQA document for the Project. The initial study identifies potentially significant impacts related to pipeline replacement; however, after analyzing all of the impacts, the CSLC staff believes that mitigation measures (MMs) incorporated into the Project and agreed to by CPL would avoid or mitigate those impacts to a point that no significant impacts would occur.

[1] The BAPL pipeline system consists of a trunk line that originates at the Richmond Refinery in Richmond and runs to Bethany Station near Brentwood. Three pipeline legs branch from the trunk line: one line from Pittsburg north to Sacramento; a second line from Bethany Station south to the community of Banta in San Joaquin County; and the third line from Bethany Station to San Jose. The BAPL is used to transport refined products (e.g., gasoline, diesel, jet fuel) from the Richmond Refinery to the locations described above.

Figure ES-1. Project Location



PROPOSED PROJECT

CPL is proposing to replace an approximately 2.5-mile portion of an 8-inch lateral pipeline that traverses an area primarily within Suisun Marsh from Grizzly Island Road to Birds Landing Road in Solano County. The Project would replace this portion of CPL's Pittsburg-to-Sacramento lateral pipeline with a new segment of the same diameter as the existing pipe to address anomalies in that portion of the pipeline and reduce the potential for impacts from future maintenance and repairs in Suisun Marsh.

The Project area would have two entry points from which the horizontal drilling would occur, located at the Birds Landing Work Site (BLWS) and Grizzly Island Work Site (GIWS) (Figure ES-2). As described further below, the BLWS is located north of Birds Landing Road in Solano County and is predominantly disturbed farmland. The GIWS is a predominantly upland area located north of Grizzly Island Road, within the Grizzly Island Wildlife Area. The wildlife area is under the jurisdiction of the California Department of Fish and Wildlife (CDFW) and managed pursuant to the Suisun Marsh Preservation Agreement.

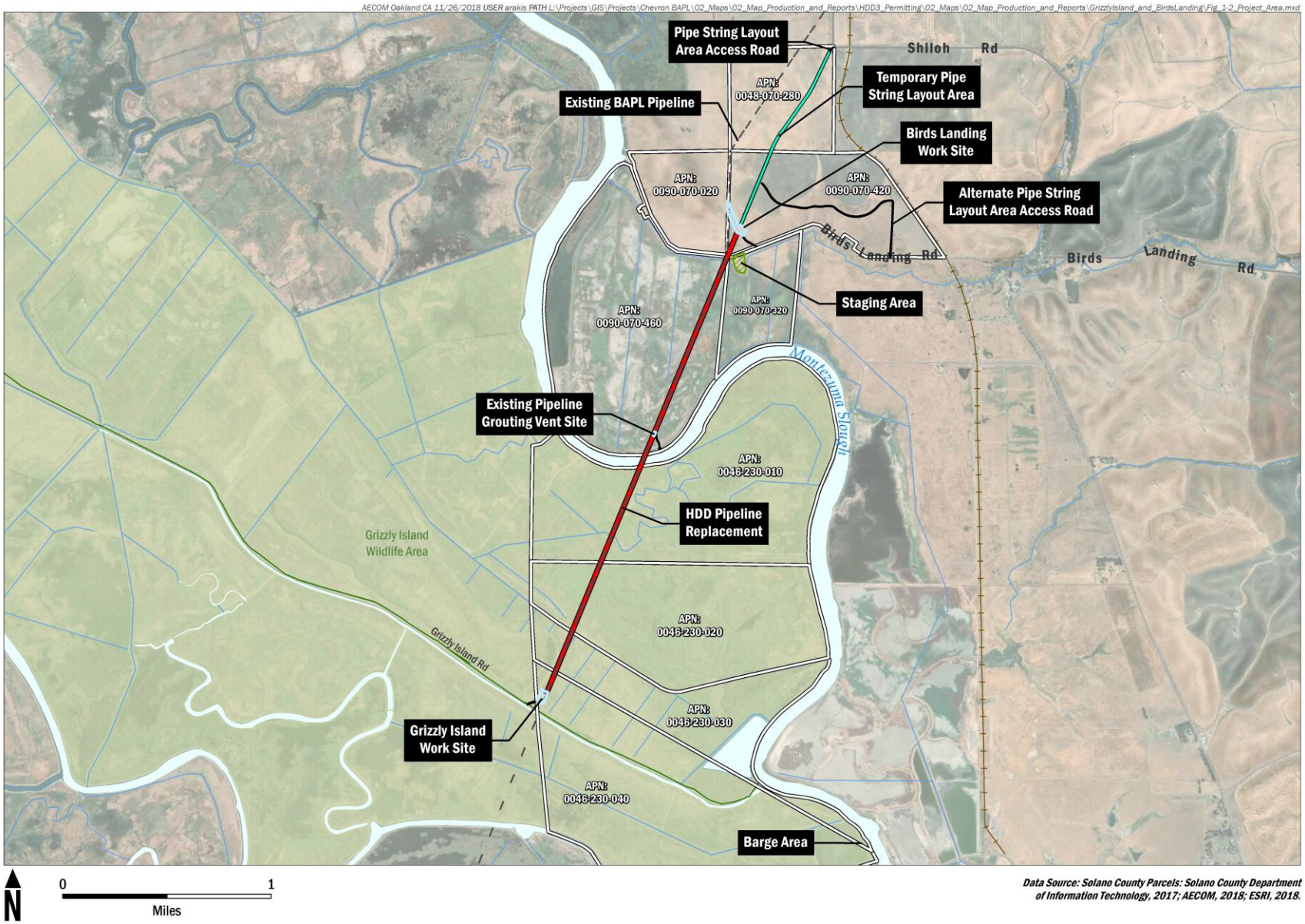
Birds Landing Work Site

The BLWS is an approximately 20-acre work site located north of Birds Landing Road on privately owned, non-irrigated farmland and grazing land (Figure ES-2). Portions of the site and access road are within the Primary Management Area of Suisun Marsh. The Project would require creation of a work site, which would be placed directly on the ground surface. Vegetation trimming may be necessary, but the ground surface would not be cleared to bare ground. Construction mats and temporary fill may be placed if needed to provide a stable work surface that would accommodate the drilling rig and other equipment and materials at the work site.

Equipment at the BLWS would include an approximately 50-foot long drilling rig driven by an approximately 1,700-horsepower diesel power unit, and has a 750,000-pound or greater pushing/ pulling capacity. The rig would include a "dead-man" system consisting of steel road plates or similar for load distribution and installed in front of the drilling rig for counterbalance. Other equipment stationed on the work site during construction would include containers, tanks for mixing drilling fluid or "drilling mud", pumps to transfer the drilling fluid though the system, and several water tanks.

The BLWS would include a system to clean the drilling fluid for reuse (recycling) during drilling. A control unit mounted on a drop deck trailer would provide climate-controlled housing for the drill operator and surveyor. All rig controls and monitoring gauges would be housed in the control unit, along with the equipment used to monitor and record the signals received from the down-hole directional equipment. Portable sanitary facilities for workers and covered, latched trash receptacles would also be available on-site.

Figure ES-2. Project Area



An approximately 150-foot-wide by 4,500-foot-long, temporary work area for pipe string fabrication would be located north of the BLWS drilling rig (Figure ES-2). The pipe string would be assembled from 40-foot sections of pipe and laid out on rollers in three parallel segments along the pipe string layout area, before installation in the borehole.

Grizzly Island Work Site

The Grizzly Island Work Site is an existing work site that was used previously for the Mallard Farms HDD project. This work site would be reused for the HDD3 Project before being removed and restored. The pad was constructed using clean fill material to provide a level, stable work surface for the drilling operation.

The GIWS measures approximately 200 by 300 feet and is located north of Grizzly Island Road, within the boundaries of the Grizzly Island Wildlife Area (Figure ES-2). The wildlife area is under the jurisdiction of CDFW. The surrounding wildlife area consists of seasonally inundated managed brackish marsh, but the habitat in the immediate work site is predominantly upland.

Equipment used at this site would be similar to the equipment at the BLWS, including a similarly sized drilling rig.

Horizontal Directional Drilling and Pipeline Installation

The Project would use an “intersecting drill” method of horizontal directional drilling (HDD) consisting of two entry points, one at the BLWS and the other at the GIWS. Drilling would be completed in three stages:

- The first stage would consist of directionally drilling a pilot hole at approximately 120 feet below the surface and along the existing pipeline alignment. Drilling of this hole would start from each end and would meet at an intersection point along the drilling path.
- The second stage would involve reaming the smaller, conjoined pilot hole to the appropriate size for the outer diameter of the new pipe to be installed.
- The third stage would be the installation of the new section of pipe (also known as the pipe string or back string). The new pipeline would be pulled through the drilled hole, beginning from the BLWS, and pulled southward to the GIWS. This pipe string would be constructed of 40-foot pipe joints laid out and welded together north of the BLWS.

Grouting of Existing Pipeline and Relocation of Valve Site

The existing segment of pipe between the BLWS and GIWS would not remain in operation and would be filled with grout. A temporary air vent would be placed onto the existing line to allow air to escape and grout to fill the line completely. A portion of the line would be excavated just north of Montezuma Slough to install the vent.

When installed, the proposed replacement pipeline would bypass an existing valve station currently located on Birds Landing Road. These valves are required for safe pipeline operation. The existing valve station would be relocated approximately 650 feet northward to the proposed BLWS drill site, to accommodate the new pipeline alignment. The existing valve station would be dismantled and the portion of the existing BAPL pipe between the valve station and the BLWS tie-in point would be removed. The site would be restored in accordance with landowner and right-of-way agreements.

Demobilization and Site Restoration

After completion of construction activities, all equipment and materials would be removed from the work sites, the location of the pipeline grouting vent, and the construction staging areas. All materials used to create the drill pads at the GIWS and BLWS, including any construction mats, drill casing, rock fill, and filter fabric, would be removed.

After completion of the tie-ins and pipeline testing, all temporary structures on-site to support drilling would be removed. As described above, the valve station currently located at the edge of Birds Landing Road would be relocated approximately 650 feet to the northwest.

Drilling fluid/drilling mud waste and soil cuttings would be hauled by truck from the work sites for disposal at an appropriate, permitted disposal facility consistent with a waste management plan that would be developed to support the Project.

All areas of disturbed ground would be restored at the completion of Project work.

ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

The environmental issues checked in Table ES-1 have the potential to be affected by this Project. A checked box indicates that at least one impact would be a “potentially significant impact.” The Applicant has agreed to Project revisions, including implementation of mitigation measures, that would reduce the impacts to “less than significant with mitigation,” as detailed in Section 3.0, *Environmental Checklist and Analysis,* of this MND. Table ES-2 lists the proposed MMs designed to reduce or avoid

potentially significant impacts. With implementation of the proposed MMs, all Project-related impacts would be reduced to less than significant.

Table ES-1. Environmental Issues and Potentially Significant Impacts

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

Table ES-2. Summary of Proposed Mitigation Measures

Aesthetics	**MM AES-1**: Night-Lighting Spillage Minimization
Biological Resources	**MM BIO-1**: Environmental Awareness Training **MM BIO-2**: Biological Monitoring and Surveying **MM BIO-3**: Wildlife Exclusion Fencing **MM BIO-4**: Revegetation and Monitoring Plan **MM AES-1**: Night-Lighting Spillage Minimization **MM HYDRO-1:** Stormwater Pollution Prevention Plan
Cultural and Paleontological Resources and Cultural Resources – Tribal	**MM CUL-1**: Cultural Resource Training **MM CUL-2:** Discovery of Previously Unknown Cultural Resources **MM CUL-3**: Discovery of Previously Unknown Paleontological Resources **MM CUL-4**: Unanticipated Discovery of Human Remains
Geology and Soils	**MM HYDRO-1:** Stormwater Pollution Prevention Plan
Hazards and Hazardous Materials	**MM HAZ-1**: Pipeline Cleaning and Containment **MM HAZ-2:** Asbestos Handling Procedures **MM HAZ-3:** Wildland Fire Prevention
Hydrology and Water Quality	**MM HYDRO-1:** Stormwater Pollution Prevention Plan **MM HYDRO-2:** Inadvertent-Return Contingency Plan
Land Use and Planning	**MM BIO-1**: Environmental Awareness Training **MM BIO-2**: Biological Monitoring and Surveying **MM BIO-3**: Wildlife Exclusion Fencing **MM BIO-4**: Revegetation and Monitoring Plan

PAGE INTENTIONALLY LEFT BLANK

1.0 PROJECT AND AGENCY INFORMATION

1.1 PROJECT TITLE

Chevron Horizontal Directional Drill 3 (HDD3) Pipeline Replacement Project (Project)

1.2 LEAD AGENCY AND PROJECT SPONSOR

Lead Agency California State Lands Commission 100 Howe Avenue, Suite 100 South Sacramento, CA 95825	Contact person Christopher Huitt, Senior Environmental Scientist Environmental Planning and Management Division christopher.huitt@slc.ca.gov (916) 574-2080
Applicant Chevron Pipe Line Company 1400 Smith Street Houston, TX 77002	Contact person Austin Keese, Environmental Specialist jaukeese@chevron.com (713) 372-8067

1.3 PROJECT LOCATION

The Project would authorize Chevron Pipe Line Company (CPL or Applicant) to replace, in kind, an approximately 2.5-mile segment of the 8-inch Pittsburg-to-Sacramento lateral pipeline that runs through the Grizzly Island Wildlife and Birds Landing Areas in Solano County (Figures 1-1 and 1-2). The pipeline is covered under the California State Lands Commission (CSLC) General Lease – Right-of-Way Use No. PRC 3277.1 issued to Chevron on October 13, 2016, for a 25-year term. The majority of the replacement pipe would reside within existing CPL rights-of-way or easements granted by landowners, including CSLC, the California Department of Fish and Wildlife (CDFW), and the California Department of Water Resources; approximately 0.2 mile of new right-of-way at the Birds Landing Work Site (BLWS) would need to be obtained from private property owners. Some easements would be modified to increase widths or allow temporary work access for the Project. The Grizzly Island Wildlife Area is under the jurisdiction of the California Department of Fish and Wildlife and managed by the Suisun Marsh Preservation Agreement.

Suisun Marsh is part of the San Francisco Bay tidal estuary and is the largest contiguous brackish marsh on the West Coast. Formed by the confluence of the Sacramento and San Joaquin Rivers, marshland and sloughs have been managed with engineered earthen levees and exhibit muted or direct tidal influence.

Figure 1-1. Project Location

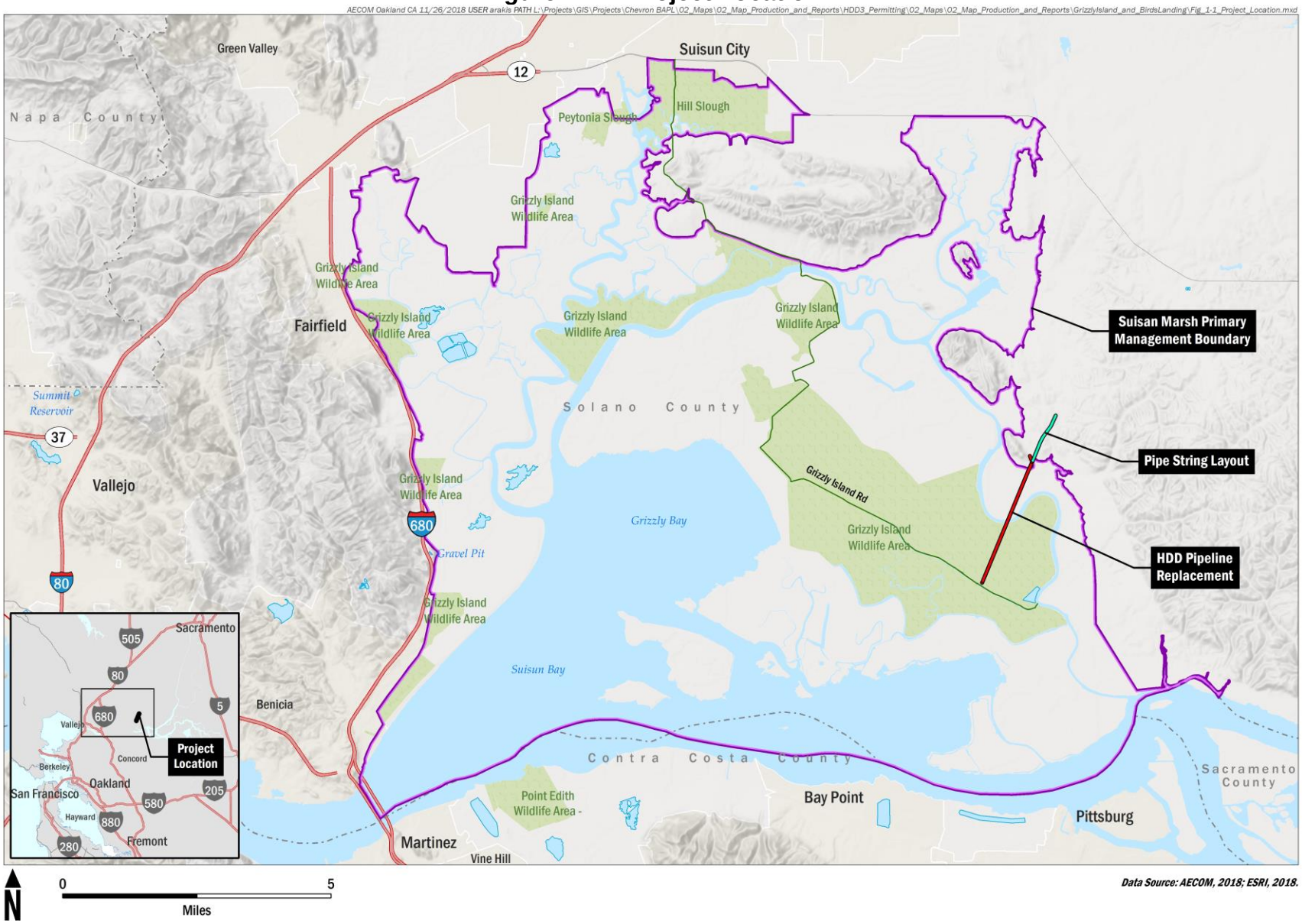
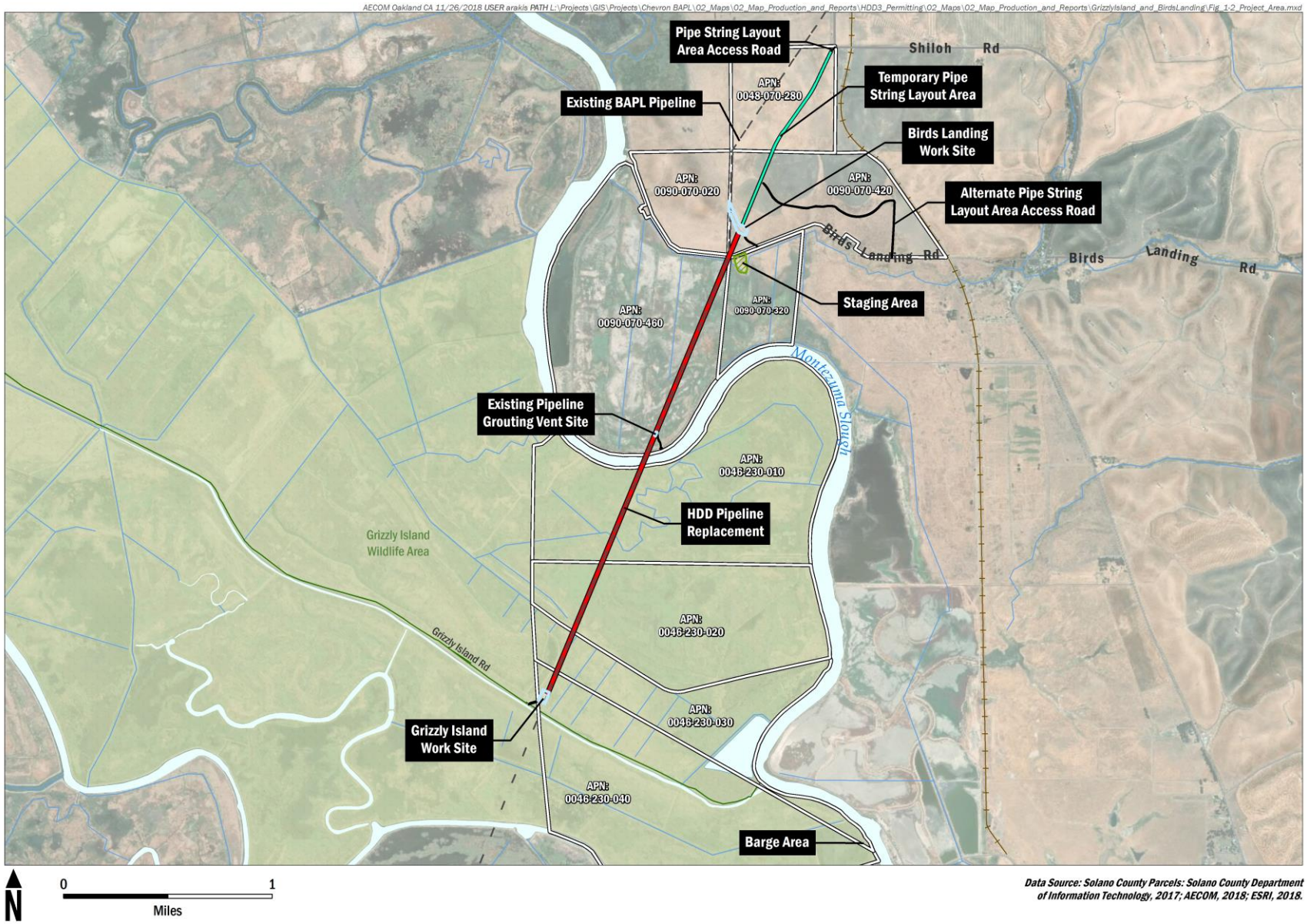


Figure 1-2. Project Area



In 1977 the California State Legislature enacted the Suisun Marsh Preservation Act. A key issue of this Act was the classification of two management areas within the Suisun Marsh: The Primary Management Area and the Secondary Management Area. The Primary Management Area is made up of tidal marshes, seasonal marshes, managed wetlands and lowland grasslands within the Marsh. The Secondary Management Area includes the adjacent agricultural upland areas surrounding the marsh and serves as a buffer between the Primary Management Area and adjacent developed lands. The Project has features in both management areas of the Marsh.

Temporary structures related to work sites and the proposed pipe string staging would be located near Birds Landing and Grizzly Island roads and would occur on a mix of private lands and state-owned lands. Habitat within Suisun Marsh in the Project area consists primarily of managed wetlands and upland habitats used for wildlife viewing, hunting (elk in late summer and waterfowl in fall through early spring), and recreational uses. The area north of Birds Landing Road consists primarily of disturbed farmland with small patches of seasonal wetland.

1.4 ORGANIZATION OF MITIGATED NEGATIVE DECLARATION

This mitigated negative declaration (MND) is intended to provide CSLC, acting as lead agency under the California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.), and other responsible and trustee agencies with the information required to exercise their discretionary responsibilities with respect to the Project. The document is organized as follows.

- **Section 1** provides lead agency and Applicant information; Project background and objectives, a summary of the public review process, and anticipated agency authorizations.
- **Section 2** describes the proposed Project including its layout, equipment, and facilities and provides an overview of the Project's operations and schedule.
- **Section 3** consists of the Initial Study (IS), including the environmental setting; identification and analysis of potential impacts; and discussion of Project changes and measures that, if incorporated into the Project, would mitigate or avoid those impacts, such that no significant effect on the environment would occur. The IS was conducted by CSLC pursuant to State CEQA Guidelines section 15063.[2]
- **Section 4** presents the Mitigation Monitoring Program (MMP).
- **Section 5** discusses other Commission considerations relevant to the Project

[2] The State CEQA Guidelines are found in California Code of Regulations, title 14, section 15000 et seq.

that are in addition to CEQA review, such as climate change and sea-level rise, environmental justice, and the Significant Lands Inventory.

- **Section 6** presents information on report preparation and references.
- **Appendices** include specifications, technical data, and other information supporting the analysis presented in this MND:
  - Appendix A: Abridged List of Major Federal and State Laws, Regulations, and Policies Potentially Applicable to the Project
  - Appendix B: Equipment List and Air Emissions Calculation Methodologies
  - Appendix C: Plants and Wildlife Observed during Site Visits

1.5 PROJECT BACKGROUND, OBJECTIVES, AND SCOPE

Chevron owns and operates the Bay Area Products Line (BAPL). The BAPL pipeline system consists of a trunk line that originates at the Richmond Refinery in Richmond, California, and runs to Bethany Station near Brentwood. Three pipeline legs branch from the trunk line. One line begins in Pittsburg and travels north to Sacramento; a second line runs from Bethany Station south to the community of Banta in San Joaquin County; and the third line extends from Bethany Station to San Jose. The BAPL is used to transport refined products (e.g., gasoline, diesel, jet fuel) from the Richmond Refinery to the locations described above.

CPL performs regular maintenance on the pipeline to provide public safety, protect the environment through which the pipeline runs, and comply with the regulations and requirements established by the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration. Recent inspections of the Pittsburg-to-Sacramento lateral pipeline, originally installed in 1966, show anomalies of the pipe's walls in the segment that traverses the Project location in Suisun Marsh. Until permits are obtained and the pipeline replacement completed, CPL is implementing measures to address these anomalies and protect the public and the environment, such as pressure reductions ("de-rates") to lower the operating pressure and flow rate of the line.

To eliminate these anomalies and reduce the impacts of future potential maintenance and repairs in Suisun Marsh, CPL proposes to replace an approximately 2.5-mile segment of the 8-inch Pittsburg-to-Sacramento lateral pipeline that runs from Grizzly Island Road to Birds Landing Road in Solano County with a replacement pipeline segment that is the same size as the existing pipe. The Project would not increase the capacity or throughput of the BAPL. The new pipe would be installed by using horizontal directional drilling (HDD) under Suisun Marsh from two points, one located at the BLWS north of Birds Landing Road and the other from the Grizzly Island Work Site (GIWS) north of Grizzly Island Road. The HDD method allows for lesser impacts on the

environment than would result from alternative installation techniques, such as conducting separate repairs to the existing line using open trenching in the marsh. In 2018, Chevron completed the replacement of a segment of the BAPL from Honker Bay to Grizzly Island Road, called the Mallard Farms Project, using a similar technique.

The objectives of the Project are:

- Protect people and the environment by maintaining near- and long-term integrity and reliability of the pipeline.
- Minimize impacts on high-value wetlands that are part of the Suisun Marsh Preservation Agreement.
- Reduce the impacts from future maintenance and repairs in the Suisun Marsh primary and secondary management areas.

1.6 PUBLIC REVIEW AND COMMENT

Pursuant to State CEQA Guidelines sections 15072 and 15073, a lead agency must issue a proposed MND for a minimum 30-day public review period, during which agencies and the public have an opportunity to review and comment on the document. Responses to written comments received by the CSLC during the 30-day public review period will be incorporated into the MND. In accordance with State CEQA Guidelines section 15074, subdivision (b), the CSLC will review and consider the MND, together with any comments received during the public review process, prior to taking action on the MND and Project at a noticed public hearing.

1.7 APPROVALS AND REGULATORY REQUIREMENTS

1.7.1 California State Lands Commission

All tidelands and submerged lands granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the common law Public Trust. The State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable lakes and waterways upon its admission to the United States in 1850. The state holds these lands for the benefit of all people of the state for statewide Public Trust purposes, which include but are not limited to waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space.

On tidal waterways, the state's sovereign fee ownership extends landward to the ordinary high-water mark, which is generally reflected by the mean high-tide line, except for areas of fill or artificial accretion. CSLC's authority is set forth in division 6 of the Public Resources Code and the agency is regulated by the California Code of Regulations, title 2, sections 1900–2970. CSLC has authority to issue leases or permits for the use of sovereign lands held in the Public Trust, including all ungranted tidelands,

submerged lands, and the beds of navigable lakes and waterways, as well as certain residual and review authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions (Pub. Resources Code, §§ 6301, 6306). CSLC has received an application to amend the existing lease for the Project (PRC 3277.1). The CSLC must comply with CEQA when it undertakes an activity defined by CEQA as a "project" that must receive discretionary approval (i.e., CSLC has the authority to approve or deny the requested lease, permit, or other approval) and that may cause either a direct physical change in the environment or a reasonably foreseeable indirect change in the environment. CEQA requires CSLC to identify the significant environmental impacts of its actions and to avoid or mitigate those impacts, if feasible.

1.7.2 Other Agencies

In addition to CSLC, the Project is subject to the review and approval of other federal, state, and local entities with statutory and/or regulatory jurisdiction over various aspects of the Project (see Table 1-1). As part of the Project, all required permits would be acquired before the start of construction.

Table 1-1. Anticipated Regulatory Approvals and Permits

Permitting Agency		Anticipated Approvals/ Regulatory Requirements
Local	Solano County	• Land use permit • Marsh development permit • Grading permit • Encroachment permit
State	California State Lands Commission	• CEQA lead agency • Lease amendment
	San Francisco Bay Conservation and Development Commission	• Suisun Marsh development permit amendment for the Primary Management Area
	California Department of Water Resources	• Plan review notice
	California Department of Fish and Wildlife	• Temporary entry permit • Incidental take permit
	San Francisco Bay Regional Water Quality Control Board	• Water quality certification pursuant to Clean Water Act Section 401 • Construction general permit
Federal	U.S. Army Corps of Engineers, San Francisco District	• Clean Water Act Section 404 permit; Nationwide Permit #12 to place temporary fill within waters of the United States, including wetlands
	U.S. Fish and Wildlife Service	• Endangered Species Act Section 7 consultation

PAGE INTENTIONALLY LEFT BLANK

2.0 PROJECT DESCRIPTION

Chevron Pipe Line Company (CPL) is proposing to address anomalies in a portion of the 8-inch Pittsburg-to-Sacramento lateral pipeline that traverses an area, primarily within Suisun Marsh, that extends from Grizzly Island Road to Birds Landing Road in Solano County (see Section 1.3, *Project Location*, and Figures 1-1 and 1-2). To eliminate these anomalies and reduce the impacts of future maintenance and repairs in Suisun Marsh, CPL proposes to replace an approximately 2.5-mile segment of the pipeline with a new segment of the same size as the existing pipe. The new pipe would be installed using horizontal directional drilling (HDD).

2.1 PROJECT WORK AREAS AND OVERVIEW

The Project area would have two entry points from which the drilling would occur, located at the Birds Landing Work Site (BLWS) and Grizzly Island Work Site (GIWS), as shown in Figure 1-2. BLWS is located north of Birds Landing Road in Solano County, and is predominantly disturbed farmland. GIWS is a predominantly upland area located just north of Grizzly Island Road, within Grizzly Island Wildlife Area. The wildlife area is under the jurisdiction of the California Department of Fish and Wildlife (CDFW) and managed pursuant to the Suisun Marsh Preservation Agreement.

The Project would also have a small work area, at approximately the midpoint of the total pipeline replacement (see Figure 1-2), that would support existing pipeline grouting operations.

2.1.1 Birds Landing Work Site

The BLWS is an approximately 20-acre work site located north of Birds Landing Road on privately owned, predominantly disturbed farmland (Figure 2-1). Small portions of the site and access road are within the Primary Management Area of Suisun Marsh, with the majority of the work site in the Secondary Management Area. The work site would be created directly on the ground surface where vegetation trimming may be necessary. Construction mats, temporary fill or grading may be utilized, if needed, to provide a stable work surface to accommodate the drilling rig and other equipment and materials at the work site.

Equipment at the BLWS would include an approximately 50-foot long horizontal drilling rig driven by an approximately 1,700-horsepower diesel power unit, and has a 750,000-pound or greater pushing/ pulling capacity. A “dead-man” system consisting of steel road plates or similar for load distribution would be installed in front of the drilling rig for counterbalance. Other equipment stationed on the drill pad during construction would include equipment and tool containers, up to ten, 10,000 gallon tanks for mixing drilling

Figure 2-1. Birds Landing Work Site

fluid/drilling mud, a pump to transfer the drilling fluid though the system, and up to 30, 21,000-gallon water tanks. A system to separate the drilling fluid and soil cuttings would also be present to allow reuse (recycling) of the drilling fluid during drilling.

A control unit mounted on a drop deck trailer would provide housing for the drill operator and surveyor. All rig controls and monitoring gauges would be housed in the control unit, along with the equipment used to monitor and record the signals received from the directional drilling equipment. A diesel generator would supply power. Portable sanitary facilities for workers and secured trash receptacles would also be available on-site.

An approximately 150-foot-wide by approximately 4,500-foot-long, temporary work site for pipe string fabrication would be located north of the BLWS drilling rig (Figure 2-1). The pipe string would be assembled from 40-foot sections of pipe and laid out on rollers in three parallel segments along the pipe string layout area before installation in the borehole.

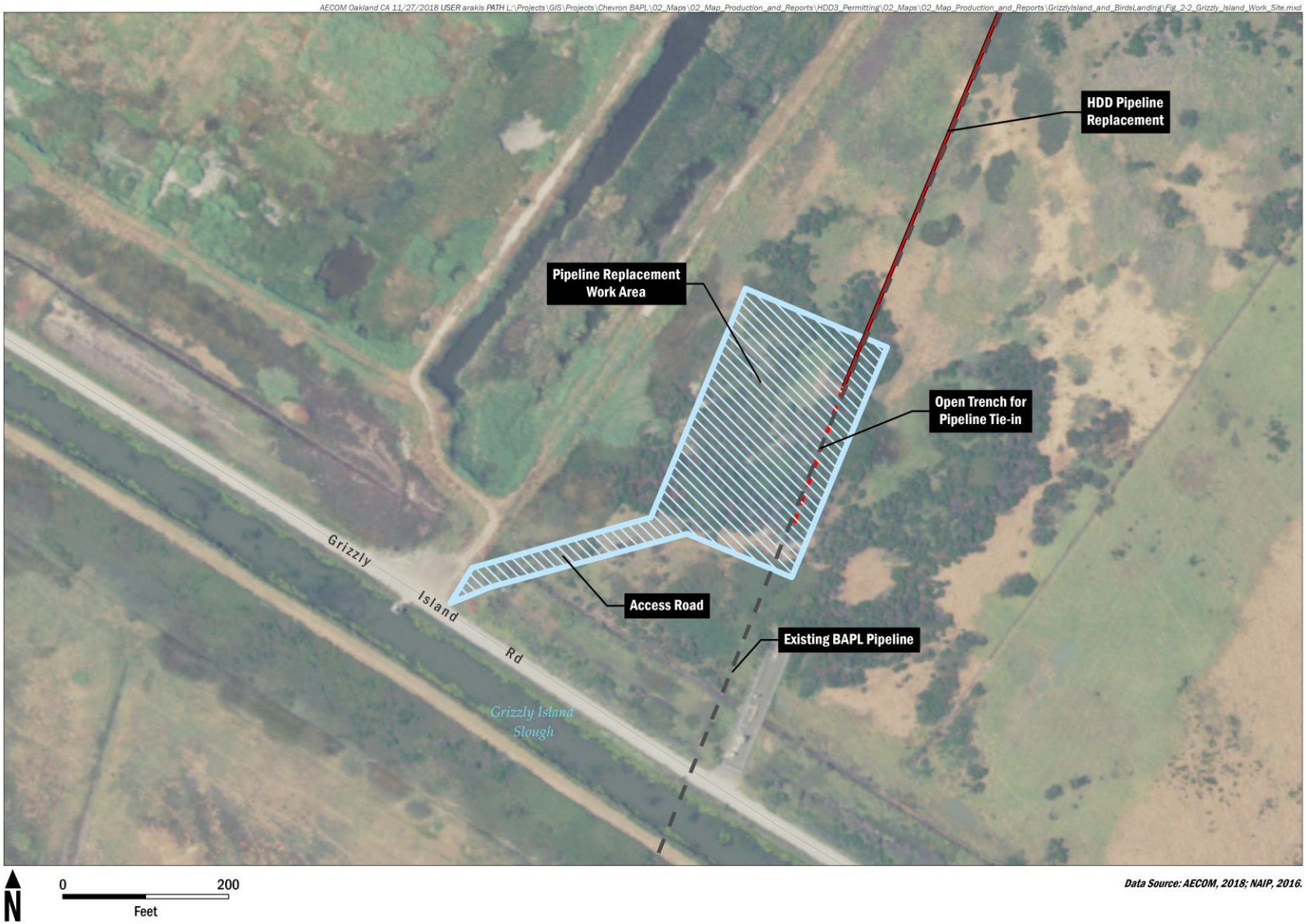
2.1.2 Grizzly Island Work Site

The GIWS is an existing work site that was previously used for the Mallard Farms HDD project. This pad would be left in place at the completion of the Mallard Farms project and would be reused for this Project before being removed and restored. The pad was constructed using clean fill material to provide a level, stable work surface for the drilling operation. The GIWS measures approximately 200 by 300 feet and is located north of Grizzly Island Road, within the boundaries of the Grizzly Island Wildlife Area (Figure 2-2). The wildlife area is under the jurisdiction of CDFW. The habitat in the immediate pad area is predominantly upland, with potentially jurisdictional wetlands in the lower lying areas.

An approximate 50-foot buffer of trimmed vegetation would be maintained from the completion of the Mallard Farms HDD project to discourage breeding by migratory birds close to the work area and avoid impacts on potentially nesting migratory birds.

Equipment at the GIWS would include a horizontal drilling rig with a “dead-man” system installed for counterbalance and lateral load support. The drilling rig would be the same as described for the BLWS. Other equipment stationed on the drill pad during construction would include equipment and tool containers, tanks for mixing drilling fluid/drilling mud, pumps to transfer the drilling fluid though the system, and water tanks, similar to those described for the BLWS. A system would be in place to separate the drilling fluid and soil cuttings so that the drilling fluid could be reused (recycled) during drilling. A control unit mounted on a drop deck trailer would provide housing for the drill operator and surveyor. All rig controls and monitoring gauges would be housed in the control unit, along with the equipment used to monitor and record the signals received

Figure 2-2. Grizzly Island Work Site



from the directional drilling equipment. A diesel generator will supply power. Portable sanitary facilities for workers and secured trash receptacles would also be available on-site.

2.1.3 Pipeline Grouting Vent Work Site

The existing segment of pipe between the BLWS and GIWS would no longer remain in operation and would be filled with grout. A temporary air vent would be placed onto the existing line to allow air to escape and grout to fill the line completely. The vent work site would be located north of Montezuma Slough, at approximately the midpoint between the BLWS and the GIWS, on California Department of Water Resources (DWR) property (Figures 1-2 and 2-3). This approximately 100-foot by 30-foot work site would include an excavation area to expose the existing pipeline and to install an air release vent. The excavation would be made by a light, tracked or rubber tired mini-excavator.

The site would be accessed from the north levee road along Montezuma Slough. For any heavy equipment access, construction mats would be placed from the Montezuma Slough levee road along an existing road in the marsh out to the proposed work site.

2.2 CONSTRUCTION ACTIVITIES

2.2.1 Horizontal Directional Drilling

The Project would use an “intersecting drill” method consisting of two entry points, one located at the BLWS and the other at the GIWS. Drilling would be completed in three stages, depicted in Figure 2-4:

- The first stage would consist of directionally drilling a pilot hole adjacent to the existing pipeline alignment. Drilling of this hole would start from each end and meet at an intersection point along the drilling path.
- The second stage would involve reaming the smaller, conjoined pilot hole to the appropriate size for the outer diameter of the new pipe to be installed.
- In the third stage, the new section of pipe (also known as the pipe string or back string) would be pulled through the drilled hole, beginning from the BLWS and pulling southward to the GIWS.

Figure 2-3. Pipeline Grouting Vent Site

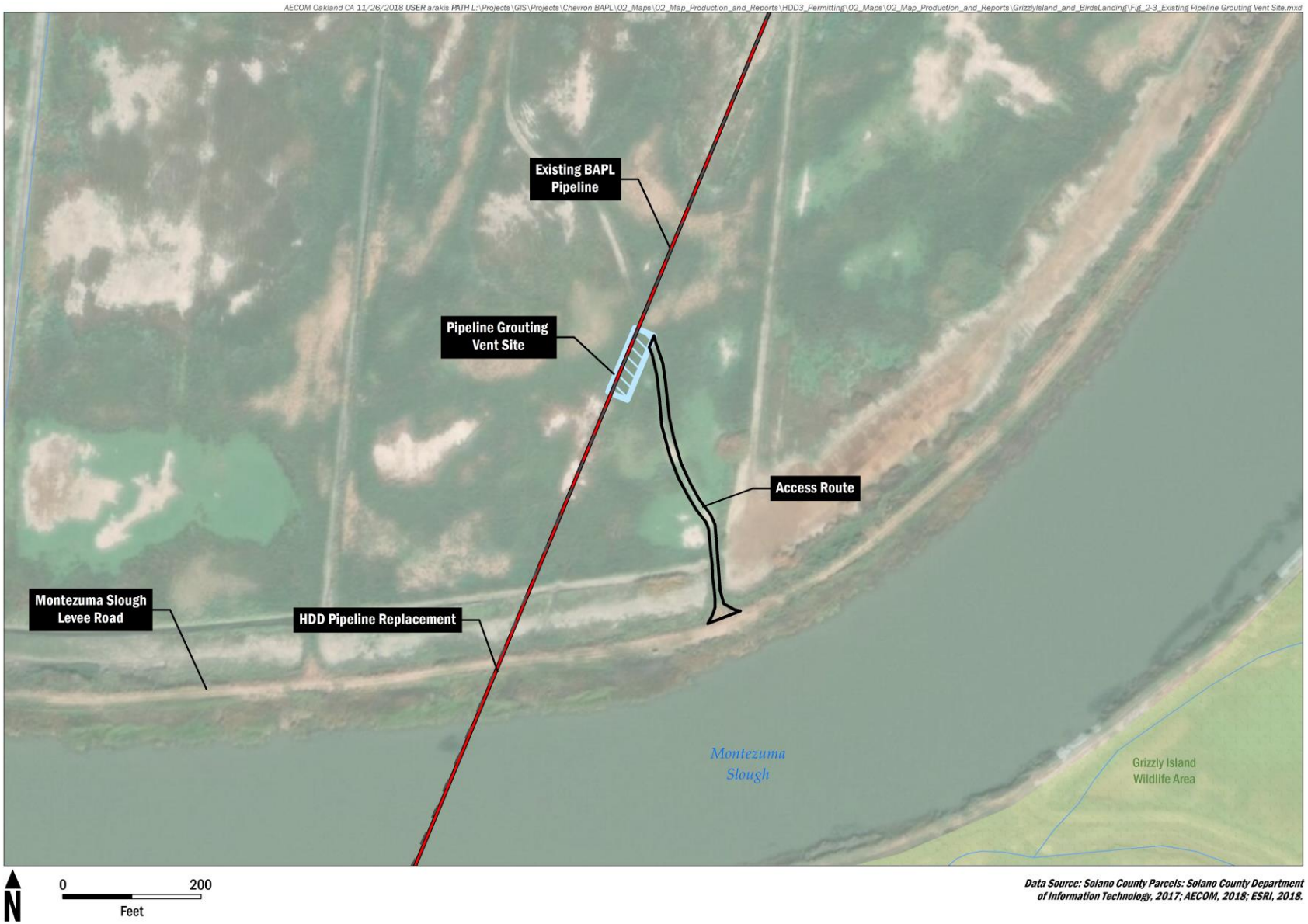
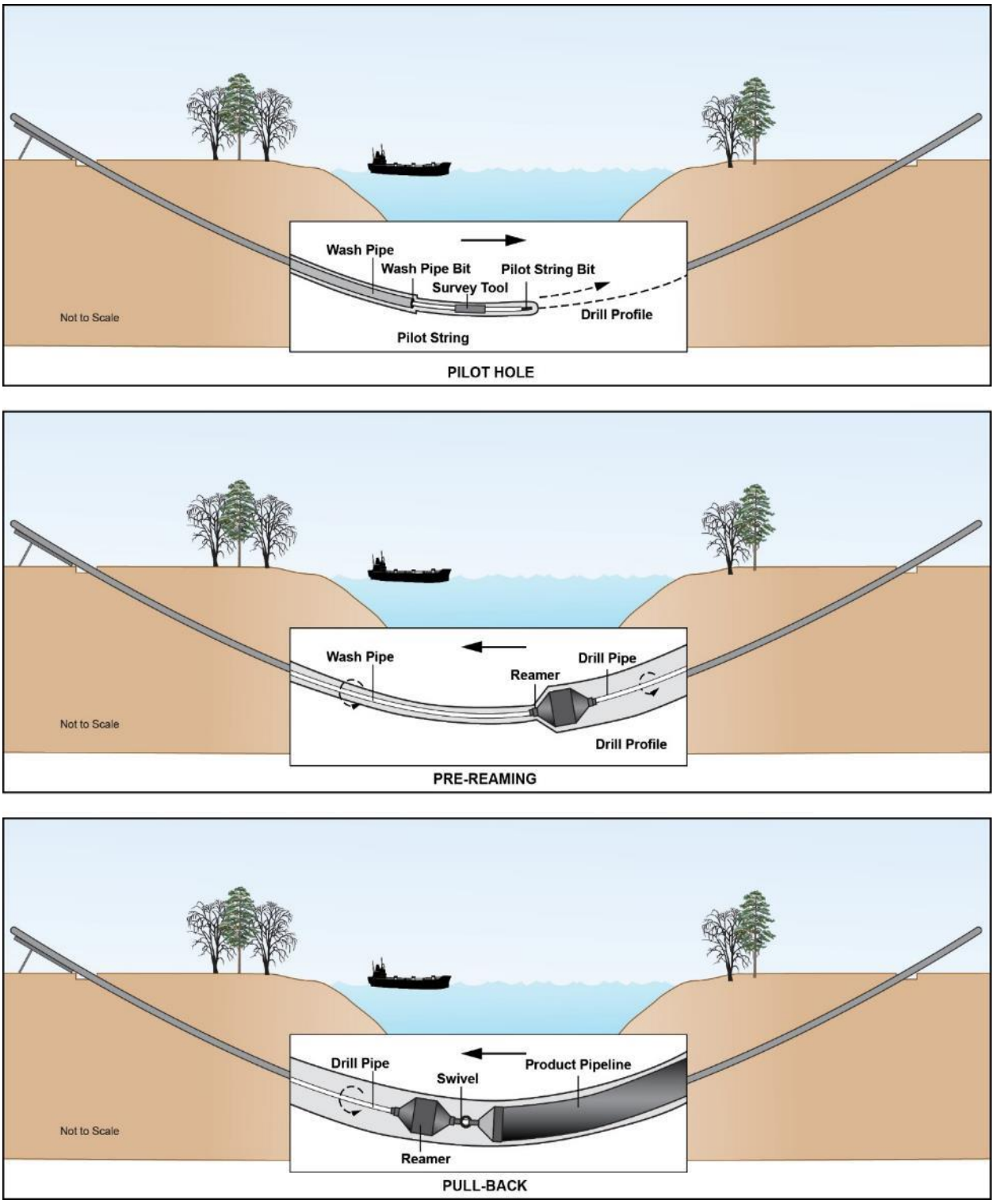


Figure 2-4. Cross Section of Typical HDD Process



2.2.1.1 Pilot Hole and Reaming

At the BLWS and GIWS, drill pits would be excavated in the work pad before the start of drilling. The pits would be approximately 12 feet wide by 12 feet long by 5 feet deep. Soils excavated from the pit would be stockpiled until construction is complete; upon completion, the soils would be backfilled into the pit. During drilling, fluid/mud returns from the borehole would be sent to a fluid/mud cleaning system, separating the solids from the drilling fluid/mud so the liquids could be recycled as much as possible to reduce freshwater usage. A steel conductor casing would be installed, using a pneumatic pipe ram, in the same line and grade as the HDD profile, and at an angle matching the entry angle of the pilot drill, down to a depth that would provide adequate lateral support for the anticipated installation loads. The conductor casing would aid in maintaining drilling fluid returns and would provide anchorage support for the drilling rig during drilling operations. The drill string would be inserted into this casing.

To begin the HDD, a pilot hole would be drilled starting from each entry location (BLWS and GIWS), continuing along the designed drill path, and eventually intersecting at approximately the midpoint location (approximately 1.25 miles from each drill point). The borehole will be approximately 120 feet below the surface for most of its length. After the pilot hole is drilled, the second phase of drilling would enlarge the pilot hole to the final size by passing a larger cutting tool, known as a back reamer, through the pilot hole. Reaming would include connecting a 16-inch cutter on the south end of the drill and pulling it to the north end, using the drill rig for pulling and rotating the drill string and cutter. The drilling of the pilot hole and reaming may continue as a continuous (24/7) operation.

2.2.1.2 Drilling Fluid

Directional drilling would use a nonhazardous bentonite clay-based drilling fluid/drilling mud to coat and lubricate the drill stem, drill bit, and borehole during drilling; stabilize the borehole from collapse; and remove the drill cuttings. Bentonite is an inert, nontoxic, and naturally occurring clay that is used for conventional drilling projects. During drilling, the drilling fluid would be pumped from the fluid/mud system tanks through the drill stem (drill pipe) to the drill bit. The fluid would then return up the annulus to the fluid/mud system tanks on the work site. A centrifugal transfer pump would send the drilling slurry to the cleaning equipment (reclaimer), where the soil and solids would be separated from the drilling fluid before being pumped back through to the drill stem. After the completion of drilling, excess drilling fluid (approximately 9,000 gallons) would be removed via vacuum trucks located at both work sites and transported to an appropriately permitted landfill (Class II or Class III) for disposal.

During drilling, the drilling fluid would be pumped into the borehole under pressure. If cracks or fissures exist in the underground substrate, drilling fluid/mud could move

through these cracks and potentially exit at the ground surface. This release at the ground surface is known as an “inadvertent return” of drilling fluid with a surface expression. The potential for inadvertent returns would be reduced by establishing the proper borehole depth and target operating pressures during the design phase, using information collected from prior geotechnical studies completed for the Project.

To promote safe, low-impact Project execution, additional precautions would include conducting continuous monitoring of drilling fluid pressures by the driller and having a contingency plan in place to immediately initiate inspections of the drill path for potential inadvertent returns.

2.2.1.3 Water Use during Drilling

Water required for mixing the drilling fluid/mud would be obtained from the City of Fairfield or another municipal supplier with sufficient capacity. The water would be trucked to the BLWS and either trucked or barged to the GIWS. Portable storage tanks at the work sites would be used to store the water. Approximately 12,000 cubic yards of water would be used for drilling and construction.

2.2.2 Pipe String Assembly

The approximately 2.5-mile pipe string would be assembled from 40-foot sections of pipe (delivered by flatbed truck) and laid out on rollers in three parallel segments along the pipe string layout area. To level the rollers, they would be dug into place on bare ground or placed on shims. The three sections would be welded together in stages as one continuous pipeline segment during the installation of the pipe string into the borehole (see Section 2.2.4, *Pullback* below).

2.2.3 Hydrostatic Testing

After the completion of welding and weld joint inspection of the new pipe segments, the segments would be individually hydrostatically pressure-tested to ensure the integrity of all weld points. Before installation in the ground, the pipe would be tested hydrostatically for 4 continuous hours to ensure that no leaks are in the new pipe. Water used for hydrostatic testing would come from the same municipal source as water for the drilling fluid. After installation of the new pipe in the ground, a second hydrostatic test would be completed (as described above, but for a total of 8 hours) to ensure that the pipe string maintained its integrity during the pullback. Water used in the first test would be captured in a portable storage tank and contained on-site to be reused for the second test. The hydrostatic test would use approximately 34,000 gallons of water.

After the completion of hydrostatic testing, the test water would be contained in portable storage tanks and tested. The water would then be discharged to the surrounding

uplands, in accordance with the appropriate state agencies water discharge requirements. This would include the Regional Water Quality Control Board's discharge requirements for surface waters. If the testing indicates that the water contains contaminants higher than permitted levels, the water would be transported off-site for disposal at a permitted commercial disposal facility.

2.2.4 Pullback

In preparation for the installation of the pipe in the drilled hole (pullback), the new pipe string would be lifted by crane into alignment with the borehole, fed along rollers, and connected to the back reamer (previously used to enlarge the borehole) with a swivel connection. It would then be pulled back through the hole, using the drilling rig stationed at the GIWS. During the pullback operation, the three pipe segments in the layout string would be welded together into one continuous pipeline segment. As the first segment is nearly pulled into the borehole, the second segment would be welded on and pulled through. The third segment would be welded on in a similar fashion. The pullback operation must be completed as a continuous, uninterrupted process to prevent the borehole from collapsing; thus, this process would entail night work.

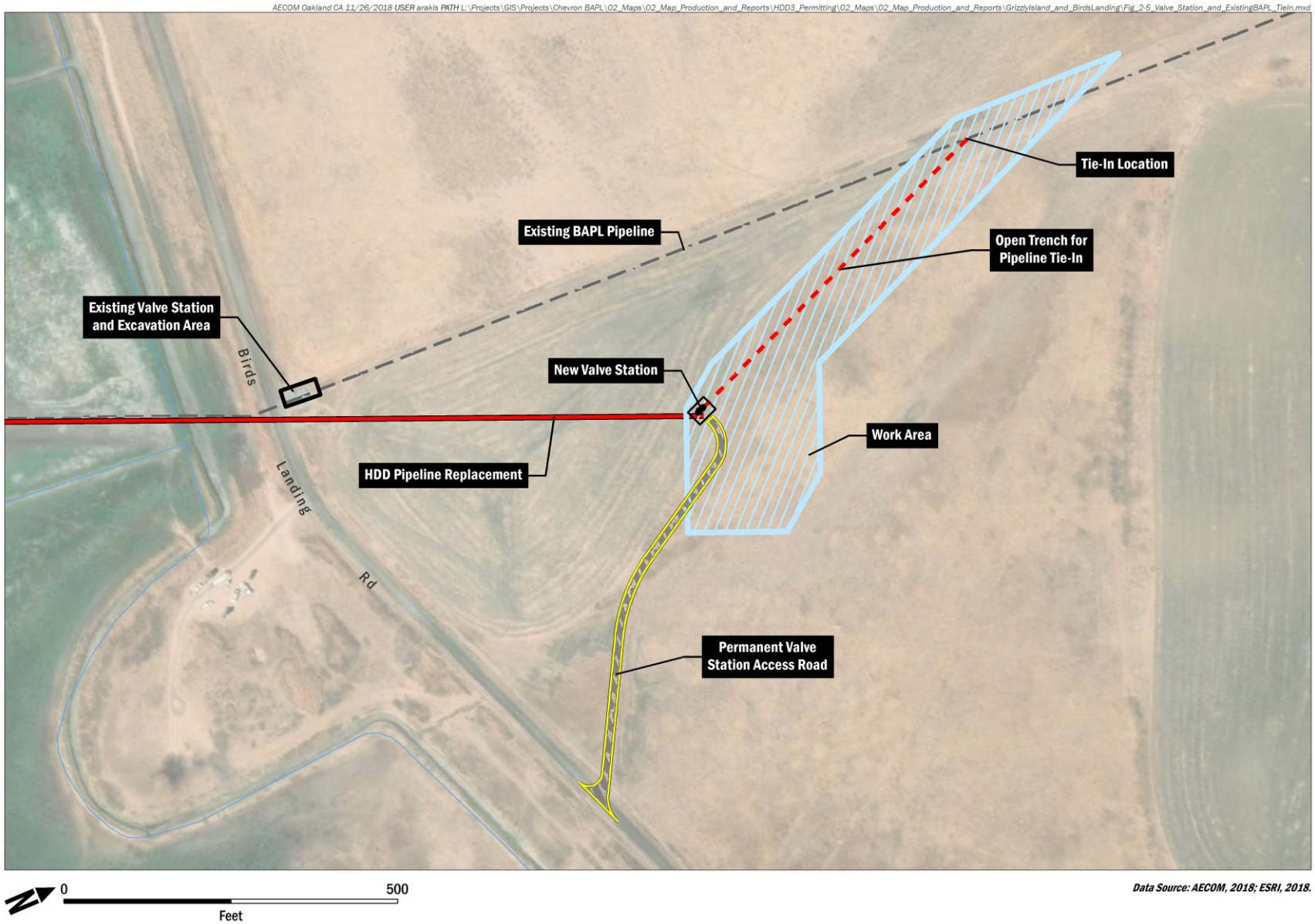
2.2.5 New Pipe Tie-In

The "new pipe tie-in" refers to connecting the newly installed pipe to the existing Bay Area Products Line (BAPL). The existing BAPL would be shut down, emptied of any product, and purged with nitrogen before cutting for the tie-in.

To connect the new pipe to the BAPL at the BLWS, an open trench would be excavated from the end of the new pipe northwest to the BAPL (Figure 2-5). This trench would pass through upland habitat (farmland) and would be approximately 800 feet long, 30 feet wide, and 8 feet deep. Appropriate shoring or trench boxes may be used. During excavation of the trench, the upper 6 inches of soil (topsoil) would be removed and stockpiled separately from the deeper soils. The new pipe would be "tied in" or welded to the existing pipeline. After welding of the new pipeline to the existing pipeline, the welds would be x-rayed to allow inspection of the weld points for quality and integrity. After completion of the tie-in, the trench would be backfilled with the soils excavated from the deeper portions, and the original topsoil would be spread evenly over the top.

At the GIWS, the newly installed pipe would be connected with the new pipe previously installed as part of the Mallard Farms project at the same pad location, and the existing BAPL between the Mallard Farms project and the HDD3 project HDD exit locations would be removed. To accomplish this, the HDD equipment would be demobilized from the site. An approximately 200-foot-long by 30-foot-wide trench would be created by first removing the rock material used to create the pad. Topsoil would be excavated and

Figure 2-5. Valve Station and BAPL Tie-In



stockpiled separately. Soils would then be excavated to approximately 8 feet deep between the two pipe segments. The pipe would be tied in as described above, the old pipe will be removed, and the excavation would be backfilled with the soils, with the topsoil material placed on the surface. Given the location of the GIWS in the Suisun Marsh, dewatering of the trench may be necessary.

A permanent cathodic protection test station would be installed on both the GIWS and the BLWS to monitor protection of the pipeline against corrosion. This system would consist of an approximately 3-inch-diameter polyvinyl chloride (PVC) pipe, or similar, installed vertically in the ground near the installed pipeline. Within this cathodic protection test station pipe, metal wires would connect to the pipeline, allowing testing with a slight electrical current that would indicate effective cathodic protection of the pipeline from corrosion. Four guard posts would be installed at each location to mark the location and protect the cathodic protection system from damage.

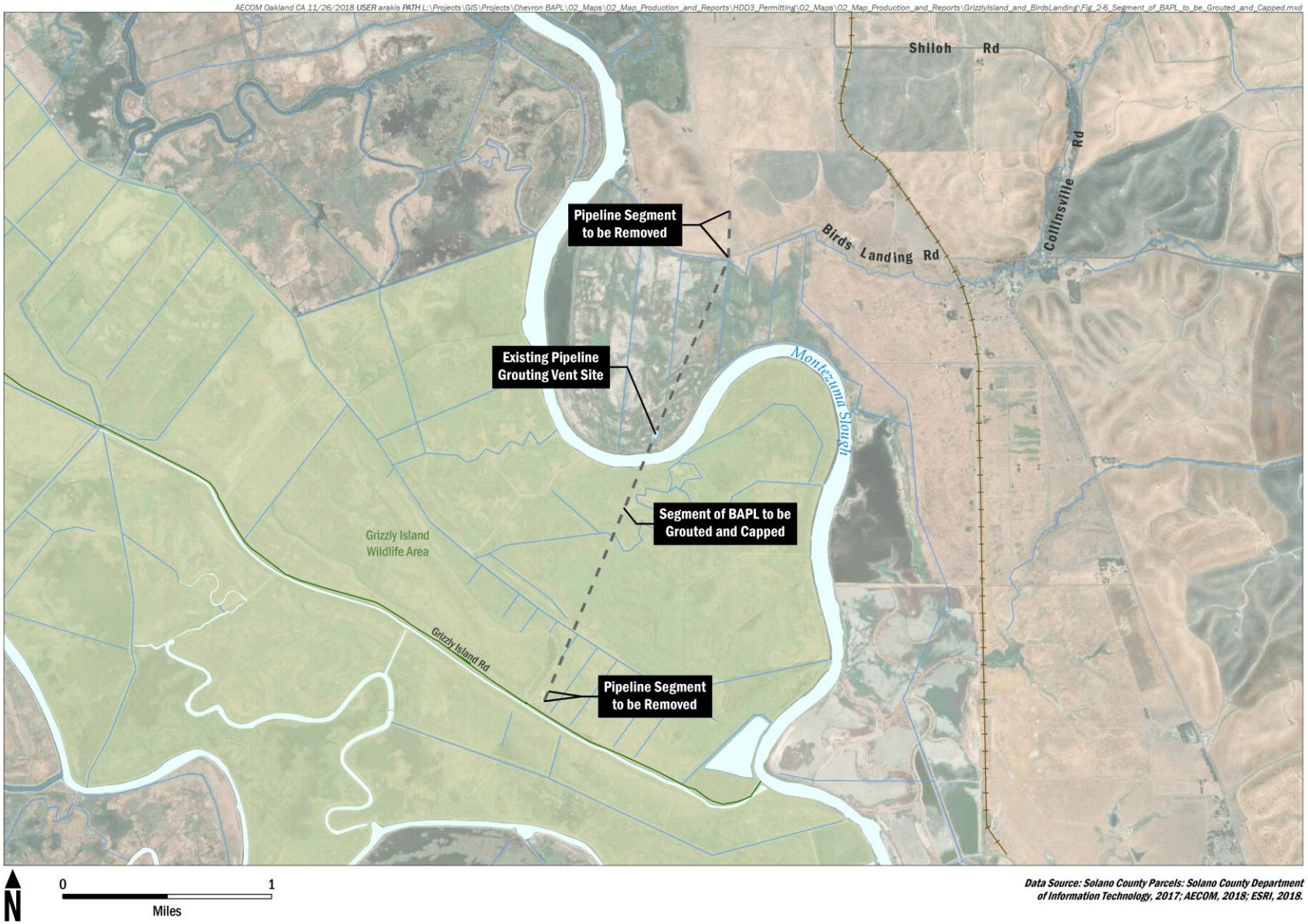
2.2.6 Relocation of Existing Valve Station

When installed, the proposed replacement pipeline would bypass an existing valve station currently located on Birds Landing Road (Figure 2-5). These valves are required for the safe operation of the pipeline; therefore, to accommodate the new pipe tie-in, the existing valve station would be relocated approximately 650 feet northward to the proposed BLWS drill site (Figure 2-5). The existing valve station would be dismantled by excavating an area approximately 55 feet by 25 feet wide and 6 feet deep with a backhoe to remove the below-ground features of the valve station. The excavation would be refilled, and the site would be restored in accordance with right of way and landowner agreements.

The new valve station would be approximately 40 feet by 35 feet and would contain several aboveground valves for pipeline operation. The aboveground pipeline and valves would be surrounded by chain-link security fencing and the area within the fencing would be graveled. To support regular maintenance access to the valve site, the approximately 12-foot-wide access road to the BLWS would be connected to the valve site location. This would be an extension of the existing road through the property that would be used for access to the temporary work area. Construction may include vegetation clearing, grading of the road surface, and placement of base rock to provide all-weather access to the valve station.

The decommissioned portion of the existing BAPL between the old valve site and the new tie-in location, approximately 1,200 feet, would be removed by creating an approximately 30-foot-wide trench (Figure 2-6). As with other excavations at the BLWS, the trench would be refilled, and the site would be restored in accordance with right of way and landowner agreements.

Figure 2-6. Segment of BAPL to be Grouted and Capped



2.2.7 Grouting of the Existing Bay Area Products Line Segment

The replaced existing segment of pipe between the BLWS and GIWS would no longer remain in operation. The existing 8-inch line would be filled with grout from both ends of the pipeline toward the middle of the line. Once filled with grout, the pipeline segment would be capped at each end. Figure 2-6 shows the segment that would be grouted and capped.

A temporary air vent would need to be placed onto the existing line to allow air to escape and grout to fill the line completely. The air vent location is shown in Figures 1-2 and 2-3. The location would be accessed using the north levee road along Montezuma Slough. Construction mats would be laid down along an existing road on the marsh out to the vent location, approximately 400 feet from the levee. At the vent location, an approximately 40-foot-long by 20-foot-wide by 8-foot deep pit would be excavated to expose the existing pipe. Topsoil would be stockpiled separately and would be replaced when the excavation is refilled at the completion of construction. The total work area including the pit, equipment, and room to stockpile soil would be approximately 100 feet long by 30 feet wide.

2.2.8 Demobilization and Site Restoration

After construction activities are completed, all equipment and materials would be removed from the work sites, vent location, and construction staging areas. All temporary fill used to create the work areas, including any construction mats, rock fill, and filter fabric would be removed. Areas of disturbed ground at the BLWS, GIWS, and grouting vent work site would be restored in accordance with Project Revegetation Plan **(MM BIO-4)** and any landowner and right of way agreements and regulatory permit conditions, as applicable. All wastes would be hauled by truck from the work sites for disposal at an appropriate, permitted disposal facility consistent with a waste management plan that would be developed to support the Project.

2.3 SITE ACCESS AND STAGING

Construction equipment would be transported to the BLWS using public roads, including Birds Landing Road and Shiloh Road. Access from Birds Landing Road to the BLWS would be via an existing dirt road in the field that traverses two wetland areas. Base rock would be spread over the road for stability, but the wetlands would be avoided.

Access to the pipe string layout area would be from Shiloh Road and an alternate existing private dirt road (unnamed) (see Figure 1-2). Equipment would be trucked to the GIWS via Grizzly Island Road, with access to the pad provided by the existing ramp between the road and the work pad created for the previous Mallard Farms project.

Work crews at the BLWS would park in an area south of Birds Landing Road (Figure 2-1). This area would also be used for staging. Workers at the GIWS would drive to Grizzly Island Wildlife Area and park at the hunter control station approximately 4 miles west of the GIWS. From there, they would use passenger vans to mobilize to the GIWS.

A barge loading/offloading area would be located to the east along Montezuma Slough (Figure 1-2). This would be used to mobilize and demobilize certain pieces of equipment and may also be used to offload certain materials for the GIWS. This area is a turnout in the constructed levee that has been previously graded, compacted, and graveled. Barges would temporarily moor in Montezuma Slough and load/offload equipment or materials using a crane mounted on the barge. When needed for water deliveries, a catwalk would be placed between the barge and shore and a hose would be placed on the catwalk to pump water to trucks on shore. No permanent infrastructure or ground-disturbing construction would be needed in Montezuma Slough or the turnout for this loading/offloading area.

2.4 PROPOSED SCHEDULE

Grizzly Island Wildlife Area, where the GIWS is located, has active hunting seasons when construction generally must be avoided. Elk hunting season begins in late July and runs through late September; waterfowl hunting season begins in October and runs through February. During these hunting seasons, CDFW restricts access to Grizzly Island Wildlife Area.

Because of these access restrictions, the only periods available with no hunting restrictions at the GIWS are during the spring and early summer months. Project construction is anticipated to last approximately four months, if no unanticipated delays occur. Any potential delays, due to events such as equipment malfunction, could extend the project construction duration. Table 2-1 shows the approximate activity durations, with no delays.

Table 2-1. Project Construction Duration

Activity	Duration (days)
Access Improvements and Mobilization (including preparation of work areas)	20
Horizontal Directional Drilling	73
Pipe String Assembly (timing simultaneous with horizontal directional drilling)	73
Pullback	2
New Pipe Tie-In	14
Demobilization and Site Restoration	14
Total Duration	**123***

Note: *Some activities would occur simultaneously. All durations are estimates.

2.5 EQUIPMENT, WORK FORCE, AND CONSTRUCTION HOURS

Construction would include the following types of equipment: diesel-powered drilling rigs, control units, fluid/mud cleaner systems, desilters, generators, forklifts, backhoes, a pipe trailer, cranes, supply trailers, dewatering tanks and pumps, a track excavator, and interlocking all-weather mats.

Drilling of the HDD borehole would require about 50 workers, with about 35 workers in the BLWS and 15 in the GIWS. Separate work crews would work simultaneously in both locations.

Construction activities are expected to occur at both work sites 7 days a week, typically from 30 minutes after sunrise to 30 minutes before sunset. Certain activities, such as drilling, reaming, pullback, hydrostatic testing, and pipe tie-ins, would proceed as continuous activities and would require night work. Other tasks may need to be performed during night shifts to maintain the schedule. The estimated duration of construction activities is shown in Table 2-1.

3.0 ENVIRONMENTAL CHECKLIST AND ANALYSIS

This section contains the initial study (IS) that was completed for the proposed Chevron Pipe Line Company (CPL or Applicant) BAPL Horizontal Directional Drill 3 (HDD) Pipeline Replacement Project (Project), in accordance with the requirements of the California Environmental Quality Act (CEQA). The IS identifies site-specific conditions and impacts, evaluates their potential significance, and discusses ways to avoid or lessen impacts that would be potentially significant.

The information, analysis, and conclusions included in the IS provide the basis for determining the appropriate document needed to comply with CEQA. For the Project, based on the analysis and information contained herein, the California State Lands Commission (CSLC) staff has found and the IS shows that there is substantial evidence that the Project may have a significant effect on the environment. Nonetheless, revisions to the Project, in the form of mitigation measures (MMs) and best management practices (BMPs), would avoid or mitigate the effects to a point where clearly no significant effect on the environment would occur. As a result, CSLC has concluded that a mitigated negative declaration (MND) is the appropriate CEQA document for the Project.

The evaluation of environmental impacts provided in this document is based in part on the impact questions contained in Appendix G of the State CEQA Guidelines; these questions, which are included in an impact assessment matrix for each environmental category (e.g., Aesthetics, Agriculture/Forestry Resources, Air Quality, Biological Resources), are “intended to encourage thoughtful assessment of impacts.” Each question is followed by a check-marked box with column headings that are defined below.

- **Potentially Significant Impact.** This column is checked if there is substantial evidence that a Project-related environmental effect may be significant. If there are one or more “potentially significant impacts,” an environmental impact report (EIR) would be prepared for the Project.
- **Less than Significant with Mitigation.** This column is checked when the Project may result in a significant environmental impact, but the incorporation of identified Project revisions or MMs would reduce the identified effect(s) to a less than significant level.
- **Less than Significant Impact.** This column is checked when the Project would not result in any significant effects. The Project’s impact would be less than significant even without the incorporation of Project-specific MMs.
- **No Impact.** This column is checked when the Project would not result in any impact in the category, or when the category does not apply.

The environmental factors checked below (Table 3-1) have the potential to be affected by this Project. A checked box indicates that at least one impact would be a "potentially significant impact," except that the Applicant has agreed to Project revisions, including implementation of MMs, to reduce the impacts to "less than significant with mitigation."

Table 3-1. Environmental Issues and Potentially Significant Impacts

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

Detailed descriptions and analyses of impacts from Project activities and the basis for their significance determinations are provided for each environmental factor on the following pages, beginning with Section 3.1, Aesthetics. Relevant laws, regulations, and policies potentially applicable to the Project are listed in the Regulatory Setting for each environmental factor analyzed in this IS/MND.

AGENCY DETERMINATION

Based on the environmental impact analysis provided by this Initial Study:

☐ I find that the proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

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

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

_____ _____

Signature Date

Christopher Huitt, Senior Environmental Scientist

California State Lands Commission

3.1 AESTHETICS

AESTHETICS – Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☒	☐	☐

3.1.1 Environmental Setting

The Project is located within Suisun Marsh, in Solano County. The Project area is comprised of two separate work areas: Grizzly Island Work Site (GIWS) and the Birds Landing Work Site (BLWS) (Figure 1-1). The GIWS is within the Grizzly Island Wildlife Area and is located north of Grizzly Island Road. It is located within the Primary Management Area of Suisun Marsh. Primary access to Grizzly Island is from Suisun City from the north via Grizzly Island Road.

The BLWS is located north of Birds Landing Road and portions of the site and access road are within the Secondary Management Area of the Suisun Marsh. There are two residences located 0.5 mile away from BLWS, one to the east and one to the west. The nearest communities are Bay Point and Pittsburg to the south and Suisun City and Fairfield to the north.

Suisun Marsh is the largest contiguous brackish marsh remaining on the west coast of North America and is a critical part of the San Francisco Bay/Sacramento–San Joaquin Delta estuary ecosystem, serving as a resting and feeding ground for tens of thousands of wintering and migrating waterfowl and providing habitat for more than 221 species of birds. Encompassing 116,000 acres, the marsh includes 52,000 acres of managed wetlands, 30,000 acres of bays and sloughs, 27,700 acres of uplands, and 6,300 acres of tidal wetlands. It is also home to public waterfowl hunting areas and 158 private duck hunting clubs.

Suisun Marsh is flat and formed by the confluence of the Sacramento and San Joaquin Rivers. The channels in the marsh are contained by the low levees that contributed to

maintaining historical natural channel patterns. A few human-made channels were created to allow access to areas of the marsh. The marsh's large open space and proximity to urban areas makes it suited for wildlife viewing, hiking, canoeing, large mammal and duck hunting, and other recreation opportunities. The area is used by the public for recreational use year-round.

3.1.2 Regulatory Setting

State laws and regulations pertaining to aesthetics and relevant to the Project are identified in Appendix A. The Scenic Resources section of the Suisun Marsh Policy Addendum in the Solano County General Plan includes policies regarding marshlands (Solano County 2008a), including Policy 4, which may be applicable to the Project: "Since such a flat and expansive natural environment tends to exaggerate vertical elements, undergrounding of utility lines is highly recommended."

3.1.3 Impact Analysis

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

Less than Significant Impact. The Project site is characterized by open space with marsh at the GIWS and an agricultural use at the BLWS. The Solano County General Plan identifies the marsh areas as places that provide scenic beauty (Solano County 2008d). As such, the Project area contains places of importance scenic beauty to the County.

The Project includes the construction of an underground pipeline using the HDD method. Project construction would include mobilizing construction equipment, drilling activities, and assembling and installing pipe sections, followed by de-mobilizing the construction equipment and site restoration. Such activities would be temporary in nature and would only last for the duration of construction. The two work sites would contain equipment that would be visible during the approximately 4-month construction period. At the end of construction, all equipment would be removed, and the sites would be restored. The Project would not include extensive operational activities, like maintenance. As such, visual impacts on scenic vistas would be short term and temporary in nature, therefore, the Project would have a less than significant impact.

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

No Impact. State Route (SR) 37, the closest eligible state scenic highway to the Project site, is located 18 miles west of the Project site (Caltrans 2011). The Project site is not within view of any officially designated or otherwise eligible state scenic highways. As such, the Project would have no impact on scenic resources located within a state scenic highway.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?

Less than Significant Impact. The Project site's visual character is that of an undeveloped area, with some agricultural and recreational uses. The Project site is undeveloped with the closest residences located 0.5 mile east and west of the BLWS. There are no residences in the vicinity of the GIWS. As described in item (a) above, project construction would introduce new elements in this largely undeveloped area for a 4-month timeline. Project construction would be temporary in nature and the Project site would be restored to pre-Project conditions upon Project completion. Therefore, the Project would not degrade the existing visual character and quality of the site and its surroundings and would have a less than significant impact.

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

Less than Significant with Mitigation. The Project area is largely undeveloped and does not contain any nighttime lighting, although light spillage from surrounding communities occurs in the Project area. The majority of Project-related construction would take place during daylight hours (typically from 30 minutes after sunrise to 30 minutes before sunset) during spring and early summer. However, night lighting would be necessary during multiple activities, including pulling the assembled pipe segment into the borehole, as this is done in a continuous process. Use of night lighting would be required in order to maintain the Project schedule or to address issues encountered during drilling.

There are two residences located near BLWS, one 0.5 mile east and one 0.5 mile west, both along Birds Landing Road. The residence located 0.5 mile west of the Project site is shielded from the Project site by several low hills, and it has no direct views of the work area. The residence located 0.5-mile east is surrounded by mature trees and it faces away from the Project site. Nonetheless, because of the undeveloped nature of the Project area, impacts associated with nighttime work would be potentially significant for the residence located to the east and **MM AES-1** would be implemented.

MM AES-1: Night-Lighting Spillage Minimization. Night-lighting required during nighttime activities shall be shielded and directed downward toward the work area to minimize light trespass to adjacent areas.

With implementation of **MM AES-1**, project impacts due to nighttime work would be less than significant.

3.1.4 Mitigation Summary

Implementation of the following MM would reduce potential Project-related impacts on Aesthetics to less than significant.

- MM AES-1: Night-Lighting Spillage Minimization

3.2 AGRICULTURE AND FORESTRY RESOURCES

AGRICULTURE AND FORESTRY RESOURCES[3] – Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	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 Natural 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 Pub. Resources Code, § 12220, subd. (g)), timberland (as defined by Pub. Resources Code, § 4526), or timberland zoned Timberland Production (as defined by Gov. Code, § 51104, subd. (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?	☐	☐	☒	☐

3.2.1 Environmental Setting

The Project would occur on a mix of private lands, state lands, and the Grizzly Island Wildlife Area. According to the California Department of Conservation the land located near the BLWS is categorized as Grazing Land (Dept. of Conservation, 2016). Grazing land is not considered prime farmland, unique farmland or land of local importance. The Relocated Valve Station and pipe string layout construction sites are located on land with a County Agriculture land use designation and an ASM-160 (Suisun Marsh Ag Area 160) acres zoning designation. Additionally, the land that the relocated valve station will

[3] In determining whether impacts on agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts on 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.

be located on is under a Williamson Act Contract and is designated Non-Prime Agricultural (Dept. of Conservation 2014).

No other agricultural or forest resources are present in the Project area.

3.2.2 Regulatory Setting

State laws and regulations pertaining to air quality and relevant to the Project are identified in Appendix A. The Solano County General Plan, Chapter 3 Agriculture, outlines the County's policies as they relate to protection of agricultural lands. Additionally, Chapter 28 Suisun Marsh Agricultural District lists the uses of land that may be allowed within the Suisun Marsh agricultural zoning districts. Pipeline uses are allowed by right for placement in an existing right of way, and with a use permit for location outside of the right of way. (Solano County, 2012)

3.2.3 Impact Analysis

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Natural Resources Agency, to non-agricultural use?

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

Less than Significant Impact. As outlined above, the BLWS and the pipe string layout work areas are located on land classified as grazing land and zoned as ASM-160. The valve station and pipe string layout areas are located on land designated as Williamson Act Non-Prime Agricultural. The valve station location would be approximately 40 feet by 35 feet (0.03 acre) and would be accessed via a 12-foot-wide access road that would also be used for light maintenance purposes upon Project completion. The Project applicant is in the process of attaining the right of way for the access road and valve station. Compared to the overall parcel, the acquired right of way is a small percentage of the whole area. The current land owner would be able to maintain the Williamson Act contract and the Project would not conflict with existing zoning for a Williamson Act contract. Additionally, pipelines are a compatible use under the Williamson Act contract and County ordinances.

With the exception of the valve station and access road uses, the Project would not modify the existing use on the site, and the Project area would be restored to pre-Project conditions post construction. Additionally, the Project applicant would obtain a use permit as outlined in Solano County Zoning Code Chapter 28, Suisun Marsh Agricultural District, for any work performed outside of the existing right of way (Solano County 2018a). As such, the Project would not conflict with existing zoning for agricultural use. With implementation of Solano County regulations as they pertain to

permitting of pipelines in agricultural areas, and due to the Project's temporary nature, the Project would have a less than significant impact on agricultural land.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Pub. Resources Code, § 12220, subd. (g)), timberland (as defined by Pub. Resources Code, § 4526), or timberland zoned Timberland Production (as defined by Gov. Code, § 51104, subd. (g))?

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

No Impact. The Project area does not contain any forest uses; therefore, the Project would have no impact on forest land and would not convert 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?

Less than Significant Impact. The Project would replace an existing pipeline. It would not expand services to new areas, nor would it induce growth in a manner that could result in future conversion of farmland to nonagricultural uses or forest land to non-forest uses. The Project would relocate the existing valve station and restore grazing land, resulting in no net loss of grazing land. Therefore, the Project would have a less than significant impact.

3.2.4 Mitigation Summary

The Project would have no impacts on Agriculture and Forestry Resources; therefore, no mitigation is required.

3.3 AIR QUALITY

AIR QUALITY – Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
c) 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

3.3.1 Environmental Setting

3.3.1.1 Topography, Meteorology, and Climate

The Project site is located in the southwestern portion of Solano County, which is part of the San Francisco Bay Area Air Basin (SFBAAB) and Carquinez Strait climatological subregion. The SFBAAB is comprised of complex terrain types, including coastal mountain ranges, inland valleys, and the San Francisco Bay. The SFBAAB is generally bordered on the west by the Pacific Ocean, on the north by the Coast Ranges, and on the east and south by the Diablo Range. Meteorological conditions in the SFBAAB are warm and mainly dry in summer, and mild and moderately wet in winter. Marine air has a moderating effect on the climate throughout much of the year. Winds flow through the Golden Gate from the Pacific Ocean, but direct flow into eastern Alameda County is impeded by the East Bay hills. Marine air is mostly blocked from the area until late afternoons or on days when deep marine inversions develop with strong onshore flows. The Carquinez Strait climatological subregion stretches from Rodeo in the southwest and Vallejo in the northwest to Fairfield on the northeast and Brentwood on the southeast. Prevailing winds are from the west in the Carquinez Strait, particularly during the summer when high pressure offshore and thermal low pressure in the Central Valley draws marine air eastward through the Carquinez Strait. During the winter, easterly flow through the strait is more common when the pressure gradient reverses.

3.3.1.2 Local Air Quality Conditions

The determination of whether a region's air quality is healthful or unhealthful is made by comparing contaminant levels in ambient air samples to California ambient air quality standards (CAAQS) and national ambient air quality standards (NAAQS). Both the California Air Resources Board (CARB) and U.S. Environmental Protection Agency (USEPA) ambient air concentrations are monitored throughout the SFBAAB to designate an area's attainment status with respect to the CAAQS and NAAQS, respectively, for criteria air pollutants. The purpose of these designations is to identify areas with air quality problems and thereby initiate planning efforts for improvement. The three basic designation categories are "nonattainment," "attainment," and "unclassified" (the latter is used in an area that cannot be classified on the basis of available information as meeting or not meeting the standards). Table 3.3-1 lists recent attainment designations with respect to the SFBAAB. With respect to the CAAQS, the SFBAAB is designated as a nonattainment area for ozone, particulate matter less than 10 micrometers (PM_{10}), and particulate matter less than 2.5 micrometers ($PM_{2.5}$), and as an attainment or unclassified area for all other pollutants. With respect to the NAAQS, the SFBAAB is designated as a marginal nonattainment area for ozone and $PM_{2.5}$, and as an attainment or unclassified area for all other pollutants.

The Bay Area Air Quality Management District (BAAQMD) maintains multiple air quality monitoring stations that continually measure the ambient concentrations of major air pollutants throughout the Bay Area. Within the Carquinez Strait subregion, the closest such monitoring station to the Project site is Bethel Island Road, about 16 miles to the southeast. Table 3.3-2 summarizes ambient air quality data recorded at this station for the past 5 years. As shown, only concentrations for ozone and 24-hour $PM_{2.5}$ exceeded standards in one or two occasions during this period. This subregion contains a variety of industrial air pollution sources, including but not limited to chemical and petroleum operations. The subregion is also traversed by major freeways, including Interstate 80 (I-80). Traffic and congestion, and the motor vehicle emissions they generate, are increasing due to population increase in the San Francisco Bay Area.

3.3.1.3 Sensitive Receptors

Some receptors are considered more susceptible to potential health impacts from poor air quality than others. The reasons for greater than average sensitivity include preexisting health problems, proximity to emissions source, or duration of exposure to air pollutants. The BAAQMD identifies a sensitive receptor as "facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples include schools, hospitals and residential areas." Recreational uses may also be considered sensitive due to the greater exposure to ambient air quality conditions because people engaging in vigorous exercise have higher breathing rates.

Table 3.3-1. NAAQS, CAAQS, and SFBAAB Attainment Status

Pollutant	Averaging Time	California Standards[1]		National Standards[2]	
		Concentration	Status	Primary	Status
Ozone (O_3)	1 Hour	0.09 ppm (180 µg/m^3)	Nonattainment	—	—
	8 Hours	0.070 ppm (137 µg/m^3)	Nonattainment[9]	0.070 ppm (137 µg/m^3)	Nonattainment[4]
Respirable Particulate Matter (PM_{10})	24 Hours	50 µg/m^3	Nonattainment	150 µg/m^3	Unclassified
	AAM	20 µg/m^3	Nonattainment[7]	—	—
Fine Particulate Matter ($PM_{2.5}$)	24 Hours	—	—	35 µg/m^3 [10]	Nonattainment
	AAM	12 µg/m^3	Nonattainment[7]	12.0 µg/m^3 [15]	Attainment/ Unclassified
Carbon Monoxide (CO)	8 Hours	9.0 ppm (10 mg/m^3)	Attainment	9 ppm (10 mg/m^3)	Attainment[6]
	1 Hour	20 ppm (23 mg/m^3)	Attainment	35 ppm (40 mg/m^3)	Attainment
Nitrogen Dioxide (NO_2)[7]	AAM	0.030 ppm (57 µg/m^3)	Attainment	0.053 ppm (100 µg/m^3)	Attainment
	1 Hour	0.18 ppm (339 µg/m^3)	Attainment	0.100 ppm (188 µg/m^3)[11]	Unclassified
Sulfur Dioxide (SO_2)[12]	24 Hours	0.04 ppm (105 µg/m^3)	Attainment	0.14 ppm (365 µg/m^3)	Attainment
	1 Hour	0.25 ppm (655 µg/m^3)	Attainment	0.075 ppm (196 µg/m^3)	Attainment
	AAM	—	—	0.030 ppm (80 µg/m^3)	Attainment
Lead (Pb)[13]	30-Day Average	1.5 µg/m^3	Attainment	—	—
	Calendar Quarter	—	—	1.5 µg/m^3	Attainment
	Rolling 3-Month Average [14]	—	—	0.15 µg/m^3	Attainment[14]
Visibility-Reducing Particles (VRP)[11]	8 Hours	See footnote[8]	Unclassified	No national standards	
Sulfates	24 Hours	25 µg/m^3	Attainment		
Hydrogen Sulfide (H_2S)	1 Hour	0.03 ppm (42 µg/m^3)	Unclassified		
Vinyl Chloride (C_2H_3Cl)	24 Hours	0.010 ppm (26 µg/m^3)	No information available		

Source: Bay Area Air Quality Management District (BAAQMD) 2017c.
Acronyms: mg/m^3 = milligrams per cubic meter; ppb = parts per billion; ppm = parts per million; µg/m^3 = micrograms per cubic meter; AAM = Annual Arithmetic Mean; CARB = California Air Resources Board; NAAQS = National Ambient Air Quality Standards; SIP = State Implementation Plan; USEPA = U.S. Environmental Protection Agency.

Notes:

[1] California standards for O_3, CO (except Lake Tahoe), SO_2 (1-hour and 24-hour), NO_2, suspended particulate matter - PM_{10}, and visibility reducing particles are values that are not to be exceeded. The standards for sulfates, lead, H_2S and C_2H_3Cl are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour or 24-hour average (i.e., all standards except for lead and PM_{10} annual standard), then some measurements may be excluded. In particular, measurements are excluded that CARB determines would occur less than once per year on the average.

[2] National standards shown are the "primary standards" designed to protect public health. National standards other than for O_3, particulates and those based on annual averages are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent 3-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one. The 8-hour O_3 standard is attained when the 3-year average of the 4th highest daily concentrations is 0.075 ppm (75 ppb) or less. The 24-hour PM_{10} standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than 150 µg/m^3. The 24-hour $PM_{2.5}$ standard is attained when the 3-year average of 98th percentiles is less than 35 µg/m^3. Except for the national particulate standards, annual standards are met if the annual average falls below the standard at every site. The national annual particulate standard for PM_{10} is met if the 3-year average falls below the standard at every site. The annual $PM_{2.5}$ standard is met if the 3-year average of annual averages spatially-averaged across officially designed clusters of sites falls below the standard.

[3] National air quality standards are set by the USEPA at levels determined to be protective of public health with an adequate margin of safety.

[4] On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm. An area will meet the standard if the fourth-highest maximum daily 8-hour ozone concentration per year, averaged over three years, is equal to or less than 0.070 ppm.

[5] The national 1-hour O_3 standard was revoked by the USEPA on June 15, 2005.

[6] In April 1998, the Bay Area was redesignated to attainment for the national 8-hour CO standard.

[7] In June 2002, CARB established new annual standards for $PM_{2.5}$ and PM_{10}.

[8] Statewide VRP Standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

[9] The 8-hour California ozone standard was approved by CARB on April 28, 2005 and became effective May 17, 2006.

[10] On January 9, 2013, the USEPA issued a final rule to determine that the Bay Area attains the 24-hour $PM_{2.5}$ national standard. This USEPA rule suspends key SIP requirements as long as monitoring data continue to show that the Bay Area attains the standard. Despite this USEPA action, the Bay Area would continue to be designated as "nonattainment" for the national 24-hour $PM_{2.5}$ standard until such time as the Air District submits a "redesignation request" and a "maintenance plan" to the USEPA, and the USEPA approves the proposed redesignation.

[11] To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010).

[12] On June 2, 2010, the USEPA established a new 1-hour SO_2 standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. The existing 0.030 ppm annual and 0.14 ppm 24-hour SO_2 NAAQS however must continue to be used until 1 year following the USEPA's initial designations of the new 1-hour SO_2 NAAQS.

[13] CARB has identified lead and C_2H_3Cl as "toxic air contaminants" with no threshold level of exposure below which there are no adverse health effects determined.

[14] National lead standard, rolling 3-month average: final rule signed October 15, 2008. Final designations effective December 31, 2011.

[15] In 2012, the USEPA strengthened the annual $PM_{2.5}$ NAAQS from 15.0 to 12.0 µg/m^3. In December 2014, the USEPA issued final area designations for the 2012 primary annual $PM_{2.5}$ NAAQS. Areas designated "unclassifiable/attainment" must continue to take steps to prevent their air quality from deteriorating to unhealthy levels. The effective date of this standard is April 15, 2015.

Table 3.3-2. Criteria Air Pollutants Data Summary (Bethel Island Road Station)

Pollutant	Averaging Time	Applicable Standard	2012	2013	2014	2015	2016
Ozone (O_3)	1 Hour	Maximum Concentration (ppm)	0.098	0.082	0.092	0.080	0.089
		Days > CAAQS (0.09 ppm)	1	0	0	0	0
	8 Hours	Maximum Concentration (ppm)	0.087	0.075	0.071	0.072	0.080
		Days > NAAQS (0.075 ppm)	2	0	0	0	0
		Days > NAAQS/ CAAQS (0.070 ppm)	4	1	1	1	2
Particulate Matter (PM_{10})	24 Hours	Maximum Concentration ($\mu g/m^3$)	52.3	50.7	61.3	33.0	26.0
		Days > CAAQS (50 $\mu g/m^3$)	1	1	1	0	0
		Days > NAAQS (150 $\mu g/m^3$)	0	0	0	0	0
	Annual	State Annual Average (20 $\mu g/m^3$)	14.1	n/a	n/a	n/a	n/a
Carbon Monoxide (CO) [1]	1 Hour	Maximum Concentration (ppm)	1.5	1	0.9	1.1	2
		Days > CAAQS (20 ppm)	0	0	0	0	0
		Days > NAAQS (35 ppm)	0	0	0	0	0
	8 Hours	Maximum Concentration (ppm)	0.99	0.8	0.7	0.9	1
		Days > CAAQS (9.0 ppm)	0	0	0	0	0
Nitrogen Dioxide (NO_2)	1 Hour	Maximum Concentration (ppm)	0.032	0.033	0.034	0.029	0.032
		Days > CAAQS (0.18 ppm)	0	0	0	0	0
	Annual	Arithmetic Average (0.053 ppm)	0.006	n/a	0.005	0.005	0.005

Source: California Air Resources Board (CARB) 2018 and U.S. Environmental Protection Agency (USEPA) 2018.

Acronyms: AAQS = California ambient air quality standards; $\mu g/m^3$ = micrograms per cubic meter; NAAQS = national ambient air quality standards; ppm = parts per million; n/a = sufficient data not available to determine the value.

Notes:

[1] 8-hour CO averages and 1-hour CO monitored data are from USEPA Monitor Values Report from Outdoor Air Quality Data Website: https://www.epa.gov/outdoor-air-quality-data/monitor-values-report.

* Ambient data for SO_2 and airborne lead are not included in this table since the Basin is currently in compliance with state and federal standards for these pollutants.

The land surrounding the Project site consists primarily of natural lands managed for wildlife, hunting, and similar uses. The nearest residential sensitive receptor is a single-family residence located approximately 0.5-mile northwest of the northern work area (BLWS) and one to the east and single-family residences located in the Contra Costa County community of Bay Point, approximately 5 miles south of the Grizzly Island Work Site and Honker Bay. The closest school is Shore Acres Elementary School, which is also located in Bay Point, approximately 5.5 miles south of the GIWS. The nearest medical facility is Concentra Medical Center located in Pittsburg, approximately 6 miles southeast of the Project site.

3.3.2 Regulatory Setting

Federal and state laws and regulations pertaining to air quality and relevant to the Project are identified in Appendix A.

3.3.2.1 Bay Area Air Quality Management District

At the regional level, the BAAQMD has jurisdiction over the nine-county SFBAAB and is responsible for attaining and maintaining air quality in the SFBAAB within federal and state air quality standards, as established by the federal Clean Air Act (CAA) and California Clean Air Act (CCAA), respectively. The BAAQMD has the responsibility to monitor ambient air pollutant levels throughout the SFBAAB and to develop and implement strategies to attain applicable federal and state standards. The BAAQMD (2017a) adopted the most recent air quality plan, the 2017 Clean Air Plan, on April 19, 2017. The 2017 Plan serves to:

- Update the 2010 Clean Air Plan Ozone Strategy in accordance with the requirements of the CCAA to implement all feasible measures to reduce ozone;
- Provide a control strategy to reduce ozone, particulate matter, air toxics, and GHGs in a single, integrated plan; and
- Establish emission-control measures to be adopted or implemented.

The 2017 Clean Air Plan contains the following primary goals:

- Protect public health through a comprehensive control strategy to be implemented by the BAAQMD over 3–5 years; and
- Protect climate by reducing Bay Area GHG emissions 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050.

The 2017 Clean Air Plan represents the most current applicable air quality plan for the SFBAAB. Consistency with this plan is the basis for determining whether the Project would conflict with or obstruct the implementation of air quality plans.

Criteria Air Pollutants

In accordance with the state and federal CAAs, air pollutant standards are identified for six criteria air pollutants: ozone, CO, PM, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. These pollutants are termed criteria air pollutants because they are regulated by developing specific criteria based on public health and welfare as the basis for setting permissible levels. In general, the SFBAAB experiences low concentrations of most pollutants when compared to federal or state standards. The SFBAAB is designated as either in attainment or unclassified for most criteria pollutants with the exception of ozone, $PM_{2.5}$, and PM_{10}, for which these pollutants are designated as nonattainment for either state or federal standards (see Table 3.3-1, above).

Regional air pollution is largely a cumulative impact in that no single project is sufficient in size to, by itself, result in nonattainment of air quality standards. Instead, a project's

individual emissions contribute to existing cumulative air quality impacts. If a project's incremental contribution to cumulative air quality impacts is considerable, then the Project's impact on air quality would be significant.

Land use projects may contribute to regional criteria air pollutants during project construction and operation. Table 3.3-3 identifies air quality significance thresholds based on the BAAQMD's CEQA Air Quality Guidelines (BAAQMD 2017b). Projects that would result in criteria air pollutant emissions below these thresholds would not violate an air quality standard, contribute substantially to an air quality violation, or result in a cumulatively considerable net increase in criteria air pollutants within the SFBAAB.

Table 3.3-3. Criteria Air Pollutant and Health Risk Significance Thresholds

Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (pounds/day)	Average Daily Emissions (pounds/day)	Maximum Annual Emissions (tons/year)
ROG	54	54	10
NOx	54	54	10
PM_{10}	82 (exhaust)	82	15
$PM_{2.5}$	54 (exhaust)	54	10
Fugitive Dust	Construction Dust Ordinance or other BMPs	Not Applicable	
Risk and Hazards for new sources and receptors (Individual Project)	Same as Operational Thresholds	Compliance with Qualified Community Risk Reduction Plan **OR** Increased cancer risk of > 10.0 in a million Increased noncancer risk of > 1.0 Hazard Index (Chronic or Acute) Ambient PM2.5 increase: > 0.3 µg/m^3 annual average	
Risk and Hazards for new sources and receptors (Cumulative Threshold)	Same as Operational Thresholds	Compliance with Qualified Community Risk Reduction Plan **OR** Cancer: > 100 in a million (from all local sources) Noncancer: > 10.0 Hazard Index (from all local sources) (Chronic) $PM_{2.5}$: > 0.8 µg/m^3 annual average (from all local sources)	

Source: BAAQMD 2017a.
Acronyms: µg/m^3 = micrograms per cubic meter; BMP = Best Management Practice; NOx = oxides of nitrogen; PM_{10} = particulate matter with aerodynamic diameter less than 10 microns; $PM_{2.5}$ = particulate matter with aerodynamic diameter less than 2.5 micrometers; ROG = reactive organic gases.

Ozone Precursors

The SFBAAB is designated as nonattainment for ozone and PM. Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and oxides of nitrogen (NOx). The potential for a project to result in a cumulatively considerable net increase in criteria air pollutants, which may contribute to an existing or projected air quality violation, are based on the CCAA and federal CAA emissions limits for stationary sources. To ensure

that new stationary sources do not cause or contribute to a violation of an air quality standard, BAAQMD Regulation 2, Rule 2 requires that any new source that emits criteria air pollutants above a specified emissions limit must offset those emissions. For ozone precursors ROG and NOx, the offset emissions level is an annual average of 10 tons per year (or 54 pounds per day). These levels represent emissions by which new sources are not anticipated to contribute to an air quality violation or result in a considerable net increase in criteria air pollutants.

Particulate Matter (PM_{10} and $PM_{2.5}$) and Fugitive Dust

The federal New Source Review program was created by the federal CAA to ensure that stationary sources of air pollution are constructed in a manner that is consistent with attainment of federal health-based ambient air quality standards. Emissions limits under the federal New Source Review for PM_{10} and $PM_{2.5}$ are 15 and 10 tons per year (82 and 54 pounds per day), respectively. These limits represent levels at which a source is not expected to impact air quality. Although the regulations specified above apply to new or modified stationary sources, land use development projects result in ROG, NOx, PM_{10}, and $PM_{2.5}$ emissions from increases in vehicle trips, architectural coating, and construction activities. Therefore, the above thresholds can be applied to the construction and operational phases of land use projects, and those projects that result in emissions below these thresholds would not be considered to contribute to an existing or projected air quality violation or result in a considerable net increase in ozone precursors or particulate matter. Due to the temporary nature of this Project's activities, only the average daily thresholds are applicable to construction-phase emissions.

Fugitive dust emissions are typically generated during construction phases. Studies have shown that the application of individual best management practices (BMPs) at construction sites can reduce fugitive dust by 10 to 98 percent depending on the measure (Western Regional Air Partnership 2006). The BAAQMD has identified several BMPs to control fugitive dust emissions from construction activities.

BAAQMD (2017a) published quantitative thresholds of significance in their CEQA guidelines in 2017. However, the BAAQMD CEQA Air Quality Guidelines may inform environmental review for development projects in the SFBAAB, but do not commit local governments or the BAAQMD to any specific course of regulatory action. The BAAQMD CEQA Air Quality Guidelines are for informational purposes only and should be followed by local governments at their own discretion (BAAQMD 2017a). The thresholds for criteria pollutants were developed through quantitative examination of statewide nonattainment emissions are used for the analysis of project-generated emissions. These thresholds are presented in Table 3.3-3.

Local Health Risks and Hazards

In addition to criteria air pollutants, individual projects may emit toxic air contaminants (TACs). TACs collectively refer to a diverse group of air pollutants that are capable of causing chronic (i.e., long duration) and acute (i.e., severe but short-term) adverse effects to human health, including carcinogenic effects. Human health effects of TACs include birth defects, neurological damage, cancer, and mortality. There are hundreds of different types of TACs with varying degrees of toxicity. Individual TACs vary greatly in the health risk they present; at a given level of exposure, one TAC may pose a hazard that is many times greater than another.

Unlike criteria air pollutants, TACs do not have ambient air quality standards but are regulated by the BAAQMD using a risk-based approach to determine which sources and pollutants to control as well as the degree of control. A health risk assessment is an analysis in which human health exposure to toxic substances is estimated and considered together with information regarding the toxic potency of the substances, to provide quantitative estimates of health risks.

The BAAQMD CEQA Air Quality Guidelines establish a relevant zone of influence for an assessment of project-level and cumulative health risks to sensitive receptors within 1,000 feet of a project site from exposure to TACs. Project construction-related or operational TAC impacts on sensitive receptors within the zone of influence that exceed any of the following thresholds are considered significant:

- An excess cancer risk level of more than 10 in one million or a noncancer hazard index greater than 1.0.
- An incremental increase of greater than 0.3 micrograms per cubic meter ($\mu g/m^3$) for annual average $PM_{2.5}$ concentrations.

Cumulative impacts from TACs emitted from freeways, state highways, or high volume roadways (i.e., the latter defined as having traffic volumes of 10,000 vehicles or more per day or 1,000 trucks per day), and from all BAAQMD-permitted stationary sources within the zone that exceed any of the following thresholds at any sensitive receptor, are considered cumulatively significant:

- A combined excess cancer risk level of more than 100 in one million.
- A combined noncancer hazard index greater than 10.0.
- A combined incremental increase in annual average $PM_{2.5}$ concentrations greater than 0.8 $\mu g/m^3$.

These local health risk and hazard thresholds are also listed above in Table 3.3-3.

3.3.2.2 Solano County

At the local level, the Solano County General Plan's Public Health and Safety Chapter includes policies and implementation programs that aim to improve local and regional air quality throughout the County (Solano County 2015a). The following air quality policies may be applicable to the Project:

- Policy HS.P-44: Minimize health impacts from sources of toxic air contaminants, both stationary (e.g., refineries, manufacturing plants) as well as mobile sources (e.g., freeways, rail yards, commercial trucking operations).
- Implementation Program HS.I-54: Require the implementation of best management practices to reduce air pollutant emissions associated with the construction of all development and infrastructure projects.

3.3.3 Impact Analysis

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

Less than Significant Impact. The BAAQMD guidelines recommend that a project's potential to conflict with the 2017 Clean Air Plan be determined by evaluating the Project's consistency with BAAQMD CEQA significance thresholds. The Project would generate emissions during construction from construction and marine equipment, and haul and worker vehicle trips. As discussed in Checklist Item ***b)***, emissions of ROG, NOx, and PM generated during Project construction would not exceed BAAQMD CEQA significance thresholds.

The Project would replace an approximately 2.5-mile segment of the Bay Area Products Line (BAPL) that runs through the Grizzly Island Wildlife and Birds Landing Areas in Solano County. The replacement pipeline segment would be the same size as the existing pipe, and the Project would not increase BAPL capacity or throughput. Therefore, the Project would not result in a change in operational emissions compared to existing conditions and would not be anticipated to result in operational emissions exceeding BAAQMD CEQA significance thresholds.

Because construction and operational emissions would not exceed BAAQMD CEQA significance thresholds, the Project would not have regionally significant impacts impeding the implementation of the control strategies or the attainment of goals set in the BAAQMD's 2017 Clean Air Plan. Therefore, the Project would have a less than significant impact on the implementation of applicable air quality plans.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Less than Significant Impact. The Project would generate emissions during both construction and operation.

- Project construction emissions would result from construction equipment, and haul truck and worker vehicle trips. These emissions are discussed in greater detail below.
- Regarding pipeline operations, the replacement pipe segment would be the same size as the existing pipe, and the Project would not increase the capacity or throughput of the BAPL. Therefore, operations would not be anticipated to result in an increase beyond existing conditions. Thus operational emissions and impacts would be less than significant, and are not discussed further in this document.

Emissions from construction equipment and vehicle trips were calculated using the California Emissions Estimator Model (CalEEMod) v2016.3.2. CalEEMod uses widely accepted models for emission estimates and default data from sources such as USEPA AP-42 emission factors, CARB vehicle emission models, and agency studies such as by the California Energy Commission (California Air Pollution Control Officers Association 2013). Emissions from marine barge equipment were estimated using CARB OFFROAD methodology for harbor craft equipment and are based on the estimated duration of marine equipment usage. Project-specific data, including equipment lists, operating schedules, and vehicle activity rates, were used as inputs to the model. Detailed emission estimates, CalEEMod model output and the construction equipment list are included in Appendix B.

Total Project construction emissions were estimated, and a daily average emissions rate was calculated for comparison with applicable significance thresholds. Based on the construction schedule, this analysis assumes that construction activities would be completed over approximately 4 months total. Average daily emissions were calculated using this 4-month construction duration, totaling 123 working days. Emissions calculations are summarized in Table 3.3-4 and further details are included in Appendix B. As shown in Table 3.3-4, the Project would not violate any air quality standards or contribute substantially to any existing or projected air quality violation because Project-related construction emissions would not exceed BAAQMD significance thresholds.

Table 3.3-4. Project Construction Criteria Pollutant Emissions

Work Component	ROG	NOx	Exhaust PM_{10}	Exhaust $PM_{2.5}$
Horizontal Directional Drilling and Other Activities (tons)	0.17	3.30	0.08	0.08
Average Daily Construction Emissions (lbs/day)	**2.8**	**53.7**	**1.3**	**1.3**
BAAQMD Daily Threshold (lbs/day)	**54**	**54**	**82**	**54**
Exceeds Threshold?	**No**	**No**	**No**	**No**

Acronyms: BAAQMD = Bay Area Air Quality Management District; lbs/day = pounds per day; NOx = oxides of nitrogen; PM_{10} and $PM_{2.5}$ = particulate matter less than or equal to 10 microns in diameter or 2.5 micrometers in diameter, respectively; ROG = reactive organic gases.

Notes:

[1] Totals in the table may not exactly add up due to rounding.

[2] Average daily emissions calculated assuming construction activities occur over 4 months at 30 days per month.

The BAAQMD does not have quantitative mass emissions thresholds for fugitive PM_{10} and $PM_{2.5}$ dust. Instead, the BAAQMD recommends the implementation of applicable BMPs to reduce fugitive dust emissions, such as the following Basic Construction Mitigation Measures listed in the BAAQMD 2017 CEQA Guidelines:

- 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. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
- 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 [Cal. Code Regs., tit. 13, § 2485]). 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 visible emissions evaluator.
- Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and

take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

The Project would incorporate applicable dust control measures that are consistent with BAAQMD-recommended control measures. Therefore, construction-related emissions and fugitive dust impacts from Project construction would be less than significant.

c) 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 (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Less than Significant Impact. The SFBAAB is designated as a nonattainment area for state and national ozone standards and national particulate matter ambient air quality standards. Past, present, and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project does not exceed the identified significance thresholds, its emissions would not be cumulatively considerable, resulting in less than significant air quality impacts on the region's existing air quality conditions. Therefore, additional analysis to assess cumulative impacts is unnecessary. Based on the Project-level analysis described above in Checklist Item ***b)***, Project construction-related criteria pollutant emissions would not exceed BAAQMD CEQA significance thresholds. Further, operation of the Project would be the same as existing conditions. Therefore, the Project would not be cumulatively considerable, and would result in a less than significant cumulative impact.

d) Expose sensitive receptors to substantial pollutant concentrations?

Less than Significant Impact. Diesel particulate matter (DPM) exhaust emissions generated during Project construction would result from the use of heavy equipment and marine engines. DPM is classified as a TAC by the CARB and poses potential carcinogenic and chronic noncancer health risks. No sensitive receptors are located within the 1,000-foot zone of influence around the Project site recommended by the BAAQMD for screening of Project-level and cumulative health risks. The closest sensitive receptor locations to the construction area are two single family residences approximately 0.5-mile northwest and east of the BLWS, Shore Acres Elementary School in Bay Point, approximately 5.5 miles south of the GIWS. Based on the construction schedule, substantial distance to the nearest sensitive receptors, and the dispersive properties of DPM (Zhu et al. 2002), the Project would not expose sensitive receptors to substantial pollutant concentrations. Therefore, the Project's impact would be less than significant.

e) Create objectionable odors affecting a substantial number of people?

Less than Significant Impact. The occurrence and severity of odor impacts depends on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of the receptors. Although offensive odors rarely cause any physical harm, they can be very unpleasant, leading to considerable distress among the public and cause citizens to submit complaints to local governments and regulatory agencies. Projects with the potential to frequently expose individuals to objectionable odors are deemed to have a significant impact. Typical odor-generating facilities include wastewater treatment facilities, sanitary landfills, composting facilities, petroleum refineries, chemical manufacturing plants, and food processing facilities.

As described in Checklist Item ***d)*** above, Project construction equipment would generate DPM exhaust, which some individuals consider offensive; however, the Project area is not located near any sensitive receptors. Because of the distance and the temporary nature of construction activities, the potential for objectionable odors to reach the nearest receptor is expected to be negligible. These distant and temporary activities are not expected to cause a significant odor impact on a substantial number of sensitive receptors, nor would they expose a substantial number of receptors to odor emissions. Therefore, the Project's impact would be less than significant.

3.3.4 Mitigation Summary

The Project would not result in significant impacts on Air Quality; therefore, no mitigation is required.

3.4 BIOLOGICAL RESOURCES

BIOLOGICAL RESOURCES – Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan?	☐	☒	☐	☐

3.4.1 Environmental Setting

The Project is located within Suisun Marsh, north of Honker Bay, in Solano County. Suisun Marsh is the largest contiguous brackish marsh remaining on the west coast of North America and is a critical part of the San Francisco Bay/Sacramento–San Joaquin Delta estuary ecosystem. Suisun Marsh serves as the resting and feeding ground for tens of thousands of wintering and migrating waterfowl and provides habitat for more than 221 species of birds.

The area around the BLWS and pipe string assembly area is located north of Birds Landing Road on private land that is predominantly tilled farmland. The southern portion of the Project area around the GIWS is dominated by brackish marsh, brackish water slough, open-water, and ruderal vegetation. A series of levees and tide gates regulate water movement within the Project area.

The BLWS, pipe string layout area, and the access road are located primarily within the Secondary Management Area of Suisun Marsh, while the GIWS is located within the Primary Management Area of Suisun Marsh.

3.4.1.1 Habitat Types

Wetlands

BLWS and Pipe String Layout Area. Wetlands in the Project area north of Birds Landing Road consist of three distinct wetland areas, as delineated in March 2018. These brackish, emergent wetlands were identified in the Project vicinity near BLWS access roads and work area (Figure 3.4-1).

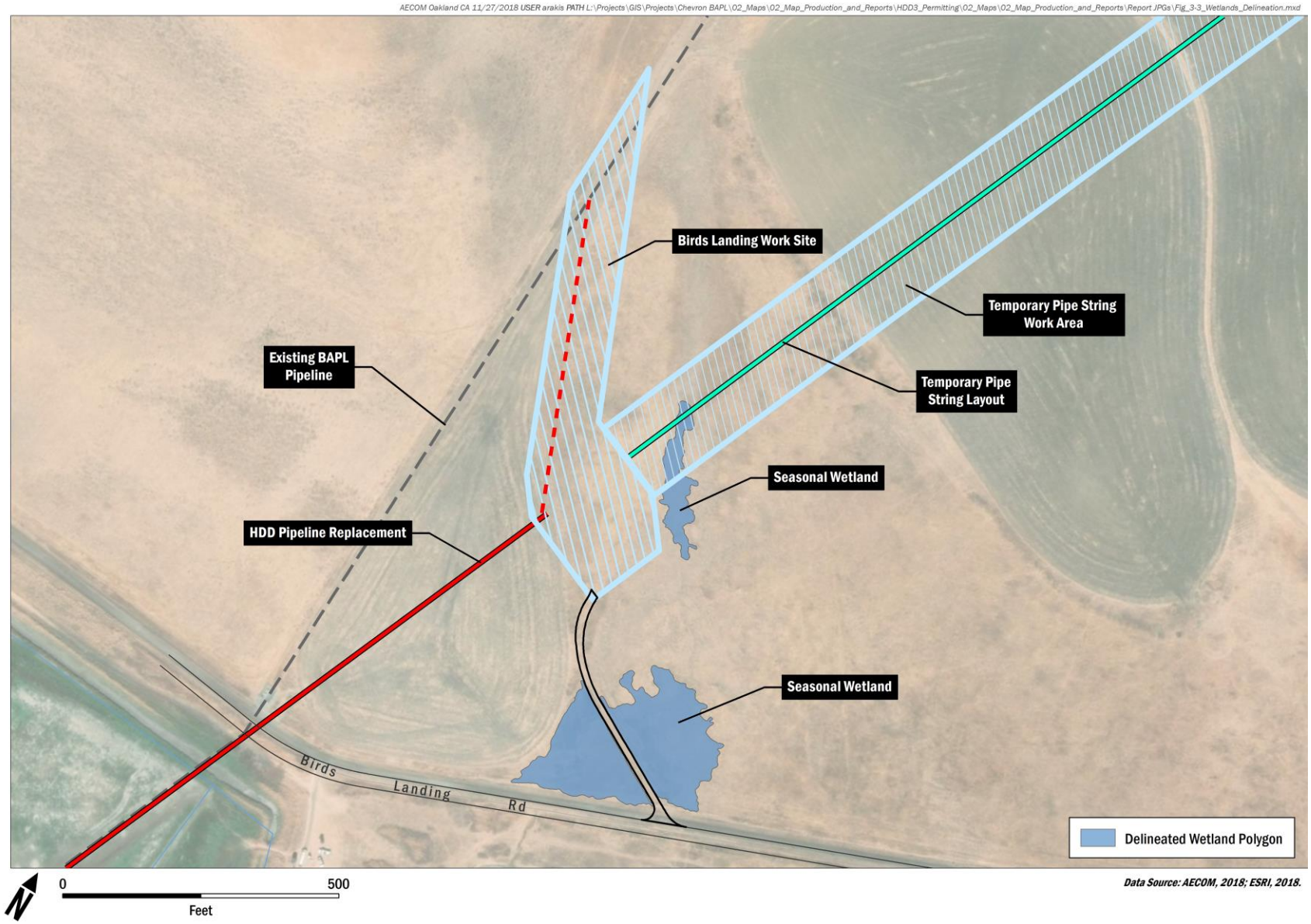
GIWS and Pipeline Grouting Air Vent Location. Wetlands in the Project area south of Birds Landing Road are managed wetlands characterized by brackish water, which results from the mixing of more saline tidal waters from Suisun Bay and freshwater inputs from the Sacramento River and sloughs that pass through Suisun Marsh on their way into Suisun Bay. Marshland and sloughs on-site are either currently or historically managed with engineered earthen levees and tide gates, and exhibit either muted tidal influence or inundation managed using culverts and gates.

Vegetation Communities

BLWS. The BLWS and pipe string layout areas are characterized by cultivated agricultural fields and annual grasslands and several areas of seasonal wetland.

Agricultural and Pasture: The tilled and planted agricultural fields between Birds Landing Road and Shiloh Road are generally characterized by a variety of annual crops, typically grown as a monoculture that is planted in spring and harvested in summer or fall. Common crops grown in the area include cotton, barley, and asparagus (DWR 2001). During the site visit conducted in 2018, the fields were tilled, but not yet planted.

Figure 3.4-1. Wetlands at the BLWS



Pasture habitat is characterized by grazed habitat that consists of a mix of annual and perennial grasses that provide 100 percent canopy closure planted on hilly, rolling terrain. Species occurring in this habitat type include barleys (*Hordeum* spp.), sweetclover (*Melilotus indicus*), and ryegrasses (*Festuca* spp.). Annual grasses were present; however, they were dead/senesced or immature at the time of the survey and were therefore difficult to identify.

Annual Grassland: The majority of the area near BLWS is annual grassland, characterized by open grassland dominated by annual, nonnative grass species that are generally found on flat plains or rolling hills. Grass species found in the BLWS include Italian ryegrass (*Festuca perennis*), barleys (*Hordeum marinum*, *H. murinum*), and slender wild oats (*Avena barbata*). Common forbs found with this habitat include blow wives (*Achyrachaena mollis*), yarrow (*Achillea millefolium*) and slender owl's clover (*Castilleja exserta* ssp. *exserta*).

Pipeline Grouting Vent Work Site. The grouting vent site is in a managed wetland, which is seasonally flooded in winter months and drained in the summer months. The vegetation at the grout venting site and on the access road primarily consists of alkali heath marsh, with dominant but patchy cover of alkali heath (*Frankenia salina*) and alkali Russian thistle (*Salsola soda*). Other alkaline marsh species are present but less abundant throughout this area, such as saltgrass (*Distichlis spicata*), pickleweed (*Salicornia pacifica*), and Mexican rush (*Juncus mexicanus*). Large patches of the vegetation in this area are standing dead thatch, likely representing the remains of these same species from the previous growing season (i.e., summer 2017). A small patch of common reed marsh, dominated by common reed (*Phragmites australis*) is present along the access road, just below the levee. Just below the levee, the surface of the access road contains a small area of perennial rye grass fields, dominated by Italian rye grass (*Festuca perennis*), with other non-native invasive species, such as wild radish (*Raphanus sativus*), fennel (*Foeniculum vulgare*), and poison hemlock (*Conium maculatum*).

Along the Montezuma Slough levee road that would be used to access the site, the vegetation mostly consists of California bulrush marsh, dominated by California bulrush (*Schoenoplectus californicus*) and/or hardstem bulrush (*Schoenoplectus acutus* var. *occidentalis*). However, patches of vegetation on the road surface itself consist of nonnative grasses and Mexican rush.

GIWS. Prior to construction of the Mallard Farms North Work Area (which would be repurposed as the GIWS under the proposed project), the majority of the central and eastern portions of the Work Area were a mosaic of dense shrubby communities interspersed with swaths of herbaceous cover and areas of wetland. The shrub composition was primarily coyote brush (*Baccharis pilularis*), a woody upland shrub. Interspersed within the coyote brush is California Rose (*Rosa californica*) and

herbaceous species including cudweed (*Pseudognaphalium canescens*). Toward the south-central portion of the GIWS, an herbaceous upland vegetation community dominated by Harding grass (*Phalaris aquatica*) was present.

The tops and edges of levees near the work and staging areas primarily featured invasive herbaceous species including poison hemlock (*Conium maculatum*), perennial pepperweed (*Lepidium latifolium*), wild radish (*Raphanus sativus*), and fennel (*Foeniculum vulgare*). Native upland species along the marsh edges include California rose, coyote brush, and saltmarsh sand spurry (*Spergularia marina*). Along Grizzly island road, at the southern-most end of the Work Site, the vegetation is primarily fennel, poison hemlock, and bristly ox-tongue (*Helminthotheca echioides*).

The low-lying land near the levee road was dominated by dense stands of Baltic rush (*Juncus balticus*) where scattered pickleweed (*Salicornia pacifica*) mats were present. Dense pickleweed patches were absent and only five sparse patches of pickleweed plants were observed in the area.

Disturbed Areas

The staging area for the GIWS is in a graded area consisting largely of unvegetated, barren landscape that serves as an unpaved parking area used by CDFW for their hunter check station. The staging area for the BLWS is also a disturbed upland area vegetation largely with ruderal vegetation. The barge loading/offloading area is an unvegetated turnout in the constructed levee that has been previously graded, compacted and graveled. The shoreline is primarily rip rap with a thin margin of emergent vegetation.

Open Water

The Project area transects 120 feet beneath Montezuma Slough approximately halfway between work site platforms, on the southeastern portion of Grizzly Island Wildlife Area. The slough is an unvegetated, deep, wide channel connected to the confluence of the San Joaquin and Sacramento Rivers to the north, and Grizzly Bay to the south.

Wetland features within the Project vicinity are hydrologically connected by a drainage swale to tributary channels of the Montezuma Slough. Salinity varies in the slough due to managed tide gates, salinity gates, the construction of drains, and the leaching out of soil salts by diversion of water from the slough to privately owned agricultural land. Fresh water is typically available to be drained from the slough for 8 months per year (December through July).

Sensitive Natural Communities and Designated Critical Habitat

No sensitive natural communities are present in the Project area. During the field review, dominant vegetation in the GIWS was mapped in general accordance with the Manual of California Vegetation (Sawyer et al. 2009). The results of the vegetation mapping were compared with the List of Vegetation Alliances and Associations (or Natural Communities List) (CDFW 2010) to determine if any of the identified natural communities represent a high-quality example of a sensitive natural community (those with a State Rank[4] of 3 or higher).

Habitat for fish species and designated critical habitat for Delta smelt are present in the Project area in Montezuma Slough. However, the horizontal directional drilling (HDD) pipeline installation would occur approximately 120 feet under the mudline of the slough and would not affect fish habitat or designated critical habitat for Delta smelt.

3.4.1.2 Special-Status Species

Based on reviews of the California Natural Diversity Database (CNDDB), an official species list from the National Marine Fisheries Service (NMFS), a U.S. Fish and Wildlife Service (USFWS) Information Planning and Conservation official species list, a California Native Plant Society (CNPS) query, other available public documents, and in coordination with CDFW, several special-status species have the potential to occur in the Project vicinity (Table 3.4-1). The determinations for the potential to occur in the Project area are based on the range of the species, the habitat requirements of the species, and the habitats present within the Project area, as well as a number of site visits conducted to gather information about the vegetation and wildlife present. Appendix C provides a list of wildlife species observed in the Project area.

The Project area is located outside of the known geographic range and lacks suitable habitat for many of the special-status species identified in the Project area based on background research and coordination with CDFW. For these reasons, these special-status species have no potential to occur in the Project area and are not discussed here. For many other species, the Project area contains marginal habitat, has very poor-quality habitat, or is located on the edge of the species' known geographic or elevation range; for these reasons, these species have very low potential to occur in the Project area based on background research and coordination with CDFW. These species are included in the analysis because potentially suitable habitat is present and the Project is located in the known geography and elevation range of the species; in some instances, these species are also included because there are known occurrences in close

[4] State Rank 3 is a community that is classified as vulnerable. The community is vulnerable in California due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

proximity to the Project area. The special-status species that have moderate or high potential to occur, or are present in the Project area, are discussed in more detail in this analysis. In total, nine federally-listed species, three state-listed species, and one other special-status or rare species have the potential to occur in the Project area.

Table 3.4-1. Federally Listed and State-Listed Species that May Occur in the Project Area

Common Name	Scientific Name	Federal Status	State Status	Potential to Occur
Amphibians				
California red-legged frog	*Rana draytonii*	threatened	none	Not likely to occur. Inhabits permanent and seasonal freshwater (nonbrackish) such as streams, lakes, marshes, natural and artificial ponds, and ephemeral drainages with dense shrubby or emergent riparian vegetation in valley bottoms and foothills.
California tiger salamander	*Ambystoma californiense*	threatened	threatened	Potential to occur. Upland and dispersal habitat occurs in the Project area. Needs underground refuge (small-mammal burrows) for most of the species life history. Species also requires vernal pools or other seasonal, freshwater (nonbrackish) sources that pond long enough for breeding, which do not occur in the Project area.
Reptiles				
Alameda whipsnake	*Masticophis lateralis euryxanthus*	threatened	threatened	Not likely to occur; inhabits chaparral-coastal sage scrub and northern coastal scrub in Contra Costa, Alameda, and parts of San Joaquin and Santa Clara counties.
Giant garter snake	*Thamnophis gigas*	threatened	threatened	Low potential to occur along Grizzly Island Road access route adjacent to Montezuma Slough, based on a recorded CNDDB occurrence. Not likely to occur in Project work areas. Inhabits freshwater marsh, slow-flow streams, canals, and irrigation ditches. Freshwater habitat in Project area has no slow-water habitat for snakes. Water is likely too saline for the species.
Birds				
California least tern	*Sterna antilarum*	endangered	threatened	Potential to occur incidentally in the area. Least tern nesting colony exists on the east side of Montezuma Slough where it intersects with Grizzly Island Road. Terns may be flying over and foraging within Montezuma Slough.
Ridgway's (California clapper) rail	*Rallus obsoletus*	endangered	endangered	Unlikely to occur. Salt-water and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay; associated with abundant growths of pickleweed, but feeds away from cover on invertebrates from mud-bottomed sloughs. Project area is on the fringe of this species range and according to CDFW none have been observed in the habitats of the Project area.

Table 3.4-1. Federally Listed and State-Listed Species that May Occur in the Project Area

Common Name	Scientific Name	Federal Status	State Status	Potential to Occur
California black rail	*Laterallus jamaicensis coturniculus*	not listed	threatened	Low Potential to Occur. Marsh vegetation in the vicinity of the GIWS may provide temporary shelter but does not support roosting or nesting habitat. Project work areas are not tidally influenced.
Swainson's hawk	*Buteo swainsoni*	not listed	threatened	Low Potential to Occur**.** No suitable nesting and roosting habitat in the Project area, but the species was observed during a site visit. Potential foraging habitat in the marsh.
Fish				
Central Valley DPS steelhead	*Oncorhynchus mykiss irideus*	threatened plus Designated Critical Habitat	none	Potential to occur in waters adjacent to Project. No potential to occur in work areas. Populations occur in the Sacramento and San Joaquin rivers and their tributaries; migratory runs pass through the Sacramento–San Joaquin Delta.
Sacramento River winter-run Chinook salmon	*Oncorhynchus tshawytscha*	endangered, plus Designated Critical Habitat	endangered	Potential to occur in waters adjacent to Project. No potential to occur in work area. Populations occur in the Sacramento River and all its tributaries; migratory runs pass through the Sacramento–San Joaquin Delta.
Delta smelt	*Hypomesus transpacificus*	threatened plus Designated Critical Habitat	endangered	Potential to occur in waters adjacent to Project. No potential to occur in the work areas. Range includes San Pablo and Suisun bays up to freshwater tributaries; most common in low salinities (0.2 to 5.0 ppt), high turbidities, and moderate temperatures.
Longfin smelt	*Spirinchus thaleichthys*	candidate	threatened	Potential to occur in waters adjacent to Project area. No potential to occur in work area. Found in open waters of estuaries, mostly in middle or bottom of water column in salinities of 15 to 30 ppt.
Mammals				
Salt marsh harvest mouse	*Reithrodontomys raviventris*	endangered	endangered	Potential to occur in the marsh area of the pipeline ROW. Found only in the saline emergent wetlands of San Francisco Bay and its tributaries, and adjacent uplands. Pickleweed is its primary habitat. They do not burrow, but build loosely organized nests and require higher areas for flood escape.
Invertebrates				
Delta Green Ground Beetle	*Elaphrus viridis*	threatened	none	Not likely to occur; occurs in margins of vernal pools in grassland areas between Jepson prairie and Travis AFB.
Lange's metalmark butterfly	*Apodemia mormo langei*	endangered	none	Not likely to occur. Occupies sand dune habitat, believed to be restricted to Antioch Dunes. Host plants not present in Project area.
Conservancy fairy shrimp	*Branchinecta conservatio*	endangered	none	Not likely to occur. Inhabits large, turbid freshwater pools in the northern two-thirds of the Central Valley.

Table 3.4-1. Federally Listed and State-Listed Species that May Occur in the Project Area

Common Name	Scientific Name	Federal Status	State Status	Potential to Occur
Vernal pool fairy shrimp	*Branchinecta lynchi*	threatened	none	Not likely to occur. Endemic to the grasslands of the central valley, central coast mountains, and south coast mountains, in astatic rain-filled pools. Inhabits small, clear-water sandstone-depression pools and grassy swale, earth slump, or basalt-flow depression pools.
Vernal pool tadpole shrimp	*Lepidurus packardi*	endangered	none	Not likely to occur. Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid fresh water. Pools commonly found in grassy bottomed swales of unplowed grasslands; some pools are mud-bottomed and highly turbid.
Plants				
Antioch Dunes evening-primrose	*Oenothera deltoides* ssp. *howellii*	endangered	endangered	Not likely to occur. Occurs in interior dunes on remnant river bluffs and sand dunes east of Antioch. Elevations 0 to 30 meters.
Colusa grass	*Neostapfia colusana*	threatened	threatened	Not likely to occur. Occurs in vernal pools, freshwater ponds, deep stockponds, and streambeds in Sacramento and San Joaquin Valleys. Elevations 0 to 105 meters.
Contra Costa goldfields	*Lasthenia conjugens*	endangered	endangered	Not Likely to occur. Occurs in vernal pools in valley grasslands. Elevations 0 to 470 meters. Not likely to occur in work areas which lack suitable habitat; nearest CNDDB record over 6 miles northwest of the Project area.
Keck's checkerbloom	*Sidalcea keckii*	endangered	none	Potential to occur; based on a historical CNDDB record located 1 mile from Birds Landing Road, and recent surveys (with unconfirmed species distinctions) in Solano County (USFWS 2012). Occurs in cismontane woodland, valley, and foothill grasslands on grassy slopes in blue oak woodland. Elevation 180 to 425 meters.
San Joaquin Valley Orcutt Grass	*Orcuttia inaequalis*	endangered	endangered	Not likely to occur. Occurs in small valley grasslands, freshwater wetlands, and seasonal ponds.
Soft bird's-beak	*Chloropyron molle* ssp. *molle*	endangered	rare	Not likely to occur. Occurs in coastal salt marsh from San Pablo Bay to Suisun Bay. Known from only 11 occurrences.
Solano Grass	*Tuctoria mucronata*	endangered	endangered	Not likely to occur. Occurs in warm, turbid, alkaline vernal pools.
Suisun thistle	*Cirsium hydrophilum* var. *hydrophilum*	endangered	none	Not likely to occur. Occurs in riparian, salt, and brackish marshes.

Plants

There are four federally listed plant species with the potential to occur in the Project area: Contra Costa goldfields (*Lasthenia conjugens*); Keck's checkerbloom (*Sidalcea*

keckii); soft bird's-beak (*Chloropyron [Cordylanthus] mollis*); and Suisun thistle (*Cirsium hydrophilum* var. *hydrophilum*).

For these species, field surveys indicated that the Project area is largely devoid of suitable habitat, the habitat present is degraded (e.g., staging areas), or the habitat management regime (flooding/draining) is inappropriate for these species. No critical habitat for federally listed plants exists in the Project area.

Surveys of the BLWS and pipe string layout area found checkerbloom (*Sidalcea* sp.) in the northern portion of the pipe string layout area. Checkerbloom in Solano county have been treated as the common fringed checkerbloom (*Sidalcea diploscypha*) but were re-annotated to Keck's checkerbloom by Hill (2009) in his study of the genus. The plants found within the Project area have morphological characteristics more closely aligned with listed Keck's checkerbloom than the common fringed checkerbloom. Photos were sent to Dr. Steven Hill (pers. comm. 2018) who noted that a photo of a checkerbloom plant in the Project area and the morphology observed in the field suggested that the plants are Keck's checkerbloom. Based on the currently available data, the plants within the Project area will conservatively be treated as Keck's checkerbloom.

Reptiles

Only one special-status reptile or amphibian has potential to occur in the Project area: the giant garter snake (*Thamnophis gigas*). The area south of the northern BLWS contains suitable upland habitat and burrows for giant garter snake and is adjacent to tidal sloughs that are tributary to Montezuma Slough. The GIWS is adjacent to a levee access road within Grizzly Island Wildlife Area, which may provide marginal upland habitat for this species. Montezuma Slough, which transects the Project alignment, could provide aquatic habitat, dependent upon salinity conditions in the slough. Overall, habitat in the area is considered unsuitable for this species due to high salinity and tidal influence.

The nearest recorded giant garter snake occurrence is 1.10 miles east of the GIWS, located in the Project area on Grizzly Island Road, adjacent to Montezuma Slough. This occurrence was reported in 2010, where a giant garter snake was observed on the levee road near Montezuma Slough. Although this occurrence was reported in the CNDDB, the aquatic habitat in the Project area is brackish and relatively unsuitable for giant garter snake. As part of the consultation for the previous Mallard Farms HDD Project, the USFWS concurred with the Corps determination that the proposed project was not likely to adversely affect giant garter snake due to the relatively unsuitable habitat in the area.

Fish

Habitat for fish species and designated critical habitat for Delta smelt are present in the Project area in Montezuma Slough. However, the horizontal directional drilling (HDD) pipeline installation would occur approximately 120 feet under the mudline of the slough and would not affect fish habitat or designated critical habitat for Delta smelt.

There is no potential for special-status fish to occur at the GIWS as the surrounding area is not inundated with enough water to support fish species. No special-status fish species are anticipated to be present in the BLWS, as it is located overland.

Birds

A number of special-status bird species could be present within the Project area. Special-status bird species include both migratory birds protected under the Migratory Bird Treaty Act (MBTA), as well as birds listed under the federal Endangered Species Act (FESA) and the California Endangered Species Act (CESA). Nesting birds have been observed in the Project area and may be present in the Project area during construction.

Three special-status bird species protected under the FESA and CESA have the potential to occur in or near the Project area: Ridgway's rail (*Rallus obsoletus*), California black rail (*Laterallus jamaicensis coturniculus)* and California Least Tern (*Sternula antillarum browni*).

Both Ridgway's rail and black rail are known to occur in portions of the Suisun Marsh year-round. The nearest CNDDB record of Ridgway's rail to the Project is located on Ryer Island, approximately 5.5 miles west of the Project area (CDFW 2018b). The Suisun Marsh Habitat Management Plan shows rail occurrence and breeding habitat along the west shore of Grizzly Bay, north of Hill Slough and close to Suisun City, approximately 6 miles northwest from the Project area (ICF 2013, CDFW 2018b).

The higher marsh habitat in the pipeline alignment between work sites could provide marginal breeding habitat for this species. However, rail species are unlikely to nest in the habitat in the Project area because the area is low lying, lacks regular tidal inundation, and may be seasonally flooded, which would inundate potential rail nesting habitat. The Project area also lacks extensive marsh vegetation cover, and seasonally contains water that would be too deep for rail foraging. Ridgway's rail or black rail occurrence is unlikely at, or in the vicinity of, the work sites and staging areas due to poor-quality vegetative cover and openness related to managed tidal ponding. In 2017, protocol level surveys were conducted for Ridgway's Rail at the GIWS (BioMAas 2017). No Ridgway rails were detected. Ridgway's and black rail occurrence are unlikely at the GIWS, BLWS, and the rest of the Project area due to a lack of suitable habitat.

The aquatic areas surrounding the Project area provide suitable foraging habitat for least terns. Least terns would only occur actively flying or diving in the vicinity of Montezuma Slough and surrounding waterways near the Project area, but not in the Project footprint. The nearest CNDDB record shows a California Least Tern nesting colony approximately 0.2 miles outside the Project area, across Montezuma Slough where it intersects the end of Grizzly Island Road. Over 100 least terns, and over 20 chicks, were observed at this colony in 2006. Given the near proximity of a breeding colony, there is potential for California Least Tern to fly over the Project area, or to forage in surrounding sloughs. Nonetheless, there is low potential for terns to move through or land in the Project area.

Migratory birds may also be present within the Project area. While wintering and nonbreeding migratory birds are not anticipated to be present during Project construction, there is a moderate to high potential for shoreline, wading, waterfowl, and select passerines species to be present near the GIWS and grouting air vent location based on an evaluation of the site conditions and the list of observed species. Raptors and other tree-dependent passerines may also be present, using the Project area for foraging, but the abundance of water and lack of suitable tree or large shrub nesting habitat in proximity to the Project likely precludes these species from nesting in the Project area.

Mammals

Only one special-status mammal species has potential to occur in the Project area: the salt marsh harvest mouse (*Reithrodontomys raviventris*). Known occurrences of the salt marsh harvest mouse are documented in marshes north, east, and west of the Project area; therefore, salt marsh harvest mice may occur in the Project area. Although the habitat at the GIWS does not appear to be suitable, according to CDFW, the species has been found in similar habitats within Grizzly Island Wildlife Area (Thompson 2016). Salt marsh harvest mice could potentially occur in the Project area south of Birds Landing road. Known occurrences of salt marsh harvest mouse are present where denser and more contiguous pickleweed vegetation is present.

One record is in the pipeline alignment between Montezuma Slough and the BLWS. This occurrence record is from a 2009 trapping surveys in an area described as a diked field vegetated by salt marsh vegetation, including some pickleweed. More vigorous stands of pickleweed were identified outside the pipeline alignment (CDFW 2018b). The record ends at the levee road, and does not continue into upland habitat on the north side of Birds Landing Road where the BLWS is located. The second record is along the north side of Grizzly Island Road, where the existing GIWS was constructed. This record is from trapping surveys in 2002. An additional six records of salt marsh harvest mouse occur in the marshland surrounding the Project area, varying from approximately 0.5 to 1.5 miles from the GIWS and BLWS. However, the low quality and lack of

pickleweed habitat reduces the likelihood that salt marsh harvest mouse would be present in the Project footprint.

3.4.1.3 Management in the Suisun Marsh

The Project area occurs in a number of natural resource planning areas, including the Grizzly Island Wildlife Area, the Suisun Marsh Habitat Management, Preservation, and Restoration Plan, and the future Solano Multispecies Habitat Conservation Plan. They are briefly described below.

Grizzly Island Wildlife Area

The Grizzly Island Wildlife Area contains eight distinct parcels consisting primarily of tidal wetlands and artificial (diked) marshes. The area is managed by CDFW to create more than 12,000 acres of seasonal ponds. Management practices are targeted toward providing habitat for 100,000 waterfowl that winter in the area each year. The wildlife area offers recreation, hunting, and fishing, and is closed to the public during the hunting seasons for tule elk (late July through late September) and waterfowl (October through the end of February). It is open the last 2 weeks of September for other recreational uses.

Suisun Marsh Habitat Management, Preservation, and Restoration Plan

The EIR for the Suisun Marsh Habitat Management, Preservation, and Restoration Plan was completed and certified in 2014. Implementation is expected to be completed over a 30-year period and is intended to balance the benefits of tidal wetland restoration and managed wetland enhancements. The plan addresses habitats and ecological process, public and private land use, levee system integrity, and water quality through the restoration of 5,000 to 7,000 acres of tidal marsh and the enhancement of more than 40,000 acres of managed wetlands, maintaining the heritage of waterfowl hunting, improving water quality for fish and wildlife habitat, and providing other recreational opportunities. The EIR for the plan also requires the implementation of MMs, including the testing, repair, or replacement of pipelines that have the potential for failure.

Solano Multispecies Habitat Conservation Plan

Developed to support an application for incidental take authorization under the FESA, the Solano Multispecies Habitat Conservation Plan covers 37 species, including both federal and state-listed species. The draft plan area includes the Project area, which falls within Covered Activity Zone 3. This zone is primarily for the Habitat Conservation Plan reserve system, which includes the restoration, enhancement, and creation of wetlands. Because this plan is currently being developed by the Solano County Water

Agency and has not been formally adopted, potential conflicts are not discussed further in this analysis (Solano County Water Agency 2012, USFWS 2018).

3.4.2 Regulatory Setting

Federal and state laws and regulations pertaining to biological resources and relevant to the Project are identified in Appendix A. At the local level, Solano County has developed a number of policies to protect and enhance the County's natural habitats and diverse plant and animal communities (Solano County 2008b):

- **RS.P-1:** Protect and enhance the County's natural habitats and diverse plant and animal communities, particularly occurrences of special-status species, wetlands, sensitive natural communities, and habitat connections.
- **RS.P-2:** Manage the habitat found in natural areas and ensure its ecological health and ability to sustain diverse flora and fauna.
- **RS.P-3:** Focus conservation and protection efforts on high-priority habitat areas.
- **RS.P-5:** Protect and enhance wildlife movement corridors to ensure the health and long-term survival of local animal and plant populations. Preserve contiguous habitat areas to increase habitat value and to lower land management costs.

In addition, the following Solano County policies are a component of the Suisun Marsh Local Protection Program. The following policies apply specifically to the Suisun Marsh area. These policies address the requirements of the Suisun Marsh Protection Plan and the Suisun Marsh Protection Act of 1977 (Solano County 2008a):

- **RS.P-10:** The County shall preserve and enhance wherever possible the diversity of wildlife and aquatic habitats found in the Suisun Marsh and surrounding upland areas to maintain these unique wildlife resources.
- **RS.P-11:** The County shall protect its marsh waterways, managed and natural wetlands, tidal marshes, seasonal marshes, and lowland grasslands, which are critical habitats for marsh related wildlife.
- **RS.P-12:** Existing uses should continue in the upland grasslands and cultivated areas surrounding the critical habitats of the Suisun Marsh in order to protect the marsh and preserve valuable marsh-related wildlife habitats. Where feasible, the value of the upland grasslands and cultivated lands as habitat for marsh-related wildlife should be enhanced.
- **RS.P-15:** In marsh areas, the County shall encourage the formation and retention of parcels of sufficient size to preserve valuable tidal marshes,

seasonal marshes, managed wetlands, and contiguous grassland areas for the protection of aquatic and wildlife habitat.

- **RS.P-16:** The County shall ensure that development in the County occurs in a manner which minimizes impacts of earth disturbance, erosion and water pollution.
- **RS.P-18:** The County shall ensure that public access at appropriate locations is provided and protected along the County's significant waterways within the Suisun Marsh.

3.4.3 Impact Analysis

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?

No permanent, direct impacts on special-status species or their habitats are anticipated to occur in the Project area; however, Project-related noise and construction activities may result in minor and temporary direct impacts. Indirect impacts (i.e., Project-related impacts that are reasonably certain to occur later in time) are not expected to occur. Following Project completion, habitat in the Project area would be returned to pre-Project conditions. Potential impacts on habitats and special-status species resulting from Project-related activities are discussed below.

3.4.3.1 Injury and Mortality

Less than Significant with Mitigation. The potential for the injury and mortality of special-status species varies by species and work area locations, as discussed below.

The following special-status wildlife species have the potential to occur in the Project area:

- **Salt marsh harvest mouse:** Salt marsh harvest mouse is not likely to occur around the BLWS, the pipe string assembly area north of the BLWS, and levee access roads due to a lack of suitable habitat in those areas. Salt marsh harvest mouse is likely to occur in the Project area in the vicinity of the GIWS and where the excavation would occur for the air vent. In the event that salt marsh harvest mouse is present in the Project area, impacts on individuals due to the movement of equipment or vehicles would be potentially significant. As such, mitigation measures **MM BIO-1**, **MM BIO-2** and **MM BIO-3** to avoid or minimize potential effects on this species and its associated habitats will be implemented, as outlined below.

- **Ridgway's rail:** Ridgway's rail occurrence is unlikely at, or in the vicinity of, the work sites and staging areas due to poor-quality vegetative cover and openness related to managed tidal ponding. In 2017, protocol level surveys were conducted for Ridgway's Rail at the GIWS (BioMAas 2017). No Ridgway rails were detected. The GIWS contains higher-elevation brackish marsh, however, habitat quality is poor due to the vegetation types present (alkali heath, broadleaf cattails, and common reed), low or no cover, and lack of tidal fluctuations. Seasonal flooding at the GIWS also inundates the potential (low-quality) nesting habitat. Despite regular surveys, this species has not been observed within Grizzly Island Wildlife Area since 2008 (Graham 2016). Ridgway's rail occurrence is unlikely at the GIWS, BLWS, and the rest of the Project area due to a lack of suitable habitat. For these reasons the species is not likely to occur in the Project area, and no impacts are anticipated.
- **California black rail:** Suitable habitat for this species is not present along the access roads, in the staging areas, or the BLWS. There are known occurrences and observations of the species in the Grizzly Island Wildlife Area (CDFW 2018b; Graham 2016); however, the species was not observed near the GIWS during the field surveys. Nonetheless, there is low potential for the species to occur. As such, mitigation measures **MM BIO-1**, **MM BIO-2**, and **MM BIO-3** to avoid or minimize potential effects on this species and its associated habitats will be implemented.
- **California least tern:** A California least tern nesting colony has been recorded east of the Project area (east of Montezuma Slough), but the Project footprint itself has no suitable nesting habitat. The aquatic areas surrounding the Project area provide suitable foraging habitat for least terns. Least terns would only occur actively flying or diving in the vicinity of Montezuma Slough and surrounding waterways near the Project area, but not in the Project footprint. Impacts to this species are not expected. Project activities would not preclude foraging in the Project area.
- **Giant garter snake:** The brackish wetlands in the Project area likely preclude the giant garter snake from the majority of the Project area; however, a recent occurrence from a nearby levee road suggests that habitat may be present along levee access roads associated with the Project. Despite this occurrence, the giant garter snake is not likely to occur within the Project area because the species is not known to be associated with brackish or salt water environments present within and adjacent to the Project area and overall, habitat in the area is considered unsuitable for this species due to high salinity and tidal influence. However, because of the recorded occurrence of this species, its presence cannot be ruled out. If giant garter snakes were present project activities could result injury or mortality to individuals that might occur on access paths or other areas where equipment might be

moving from place to place. Mitigation measures **MM BIO-1**, **MM BIO-2**, and **MM BIO-3** would be implemented.

- **California tiger salamander:** Potentially suitable upland dispersal and aestivation habitat surrounds the BLWS. The BLWS is located off Birds Landing Road, on agricultural and pasture lands characterized by annual grassland species. The pipeline layout area for the new pipeline between Birds Landing Road and Shiloh Road also contains potentially suitable upland habitat. Seasonal wetlands were identified on either side of the BLWS access road during the March 2018 delineation. The ground was saturated, but there was no evidence of ponding. It is unlikely that the identified wetlands pond long enough to provide suitable aquatic habitat for CTS. Other small ponds were identified from aerial images within 1 mile of the Project area (within the dispersal range of CTS). Because the Project site provides suitable habitat for the species, the Project could result in injury or mortality to individuals present during construction activities. Project impacts would be potentially significant and mitigation measures **MM BIO-1** and **MM BIO-2**, as outlined below, would be implemented.
- **Migratory birds:** As discussed in the environmental setting, migratory birds protected under the MBTA would also be present within the Project area. There is a moderate to high potential for shoreline, wading, waterfowl, and select passerines species to be present near the GIWS and air vent location based on an evaluation of the site conditions and the list of observed species. Work activities could disturb nests or nesting activity near the work sites.

Mitigation measures described below that include the use environmental awareness training **(MM BIO-1**); biological monitoring and surveying (**MM BIO-2**)**;** and the use of exclusion fencing (**MM BIO-3**) are proposed to mitigate potential impacts on these species. With the implementation of these measures, the Project would have less than significant impacts on special-status species.

MM BIO-1: Environmental Awareness Training. CPL shall ensure that all construction personnel receive mandatory environmental awareness training. The training shall be provided by a qualified biologist, prior to the start of construction activities, and as new personnel are added to the Project. The environmental awareness training shall familiarize workers with the special-status species and their habitats, explain the regulatory requirements to protect special-status species, and describe measures that must be implemented to avoid and minimize impacts). The training materials shall be developed and submitted to CSLC staff for approval at least 2 weeks prior to the start of Project activities. CPL shall identify a representative as the person for any employee or contractor to contact if a special-status species is observed in the defined project area and shall provide the contact information for both this representative and the qualified biologist to

U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, and CSLC staffs before construction commences. The qualified biologist shall maintain a list of contractors who have received training and shall submit a summary of the awareness training to CSLC staff within 30 days after construction begins and after construction is completed.

MM BIO-2: Biological Monitoring and Surveying. CPL shall ensure that the following surveys and/or monitoring activities are conducted. Surveys shall be conducted by a qualified biologist, approved by CSLC staff in consultation with California Department of Fish and Wildlife (CDFW), or U.S. Fish and Wildlife Service (USFWS) staffs.

- Preconstruction Surveys: A preconstruction survey shall be conducted within 15 days prior to the start of construction at each work site and staging area. If sensitive species are identified during the survey, the area where the species is present will be avoided, and CPL will coordinate with USFWS and/or CDFW.
- Biological Monitoring during Construction: An approved qualified biologist shall be on-site during initial ground-disturbance activities at the BLWS and air vent location. The biologist shall have the authority to stop activities in the event that a special-status species is observed. In the event that a special-status species is encountered in the defined Project area during Project activities that could result in take of the species, associated work activities at the location shall be halted immediately and CPL shall, if necessary, contact the appropriate agency (i.e., CDFW, USFWS) and CSLC staff to discuss ways to proceed with the Project.
- Migratory Bird Monitoring and Protection Measures: For work conducted within the migratory bird breeding season (February 15 and August 31), the approved qualified biologist shall survey periodically to determine if migratory birds protected under the Migratory Bird Treaty Act (MBTA) are actively nesting within the Project work areas. Active nests will be avoided or relocated in consultation with USFWS.
- Bird deterrents may also be used to reduce bird nesting at the work sites. Deterrents, if used, shall be installed by or under the supervision of the biological monitor and replaced as needed during construction at the work sites. Deterrents shall be regularly inspected and modified as necessary.

MM BIO-3: Wildlife Exclusion Fencing. The contractor shall inspect the installed salt marsh harvest mouse exclusion fencing around the GIWS under the supervision of the biological monitor, prior to commencing construction. The biological monitor shall check the fence at regular intervals to monitor proper installation and report maintenance needs and check for the presence of wildlife. Fence inspection intervals shall be based on the planned construction activities, recent and

forecasted weather events, and the results of preconstruction surveys and previous fence checks. This fencing would also serve to exclude other wildlife species from the work area, such as black rail, if present in the vicinity.

There are four federally listed plant species with the potential to occur in the Project area:

- Contra Costa goldfields (*Lasthenia conjugens*) – Endangered;
- Keck's checkerbloom (=Checker-mallow) (*Sidalcea keckii*) – Endangered;
- soft bird's-beak (*Chloropyron [Cordylanthus] mollis*) – Endangered; and
- Suisun thistle (*Cirsium hydrophilum* var. *hydrophilum*) – Endangered.

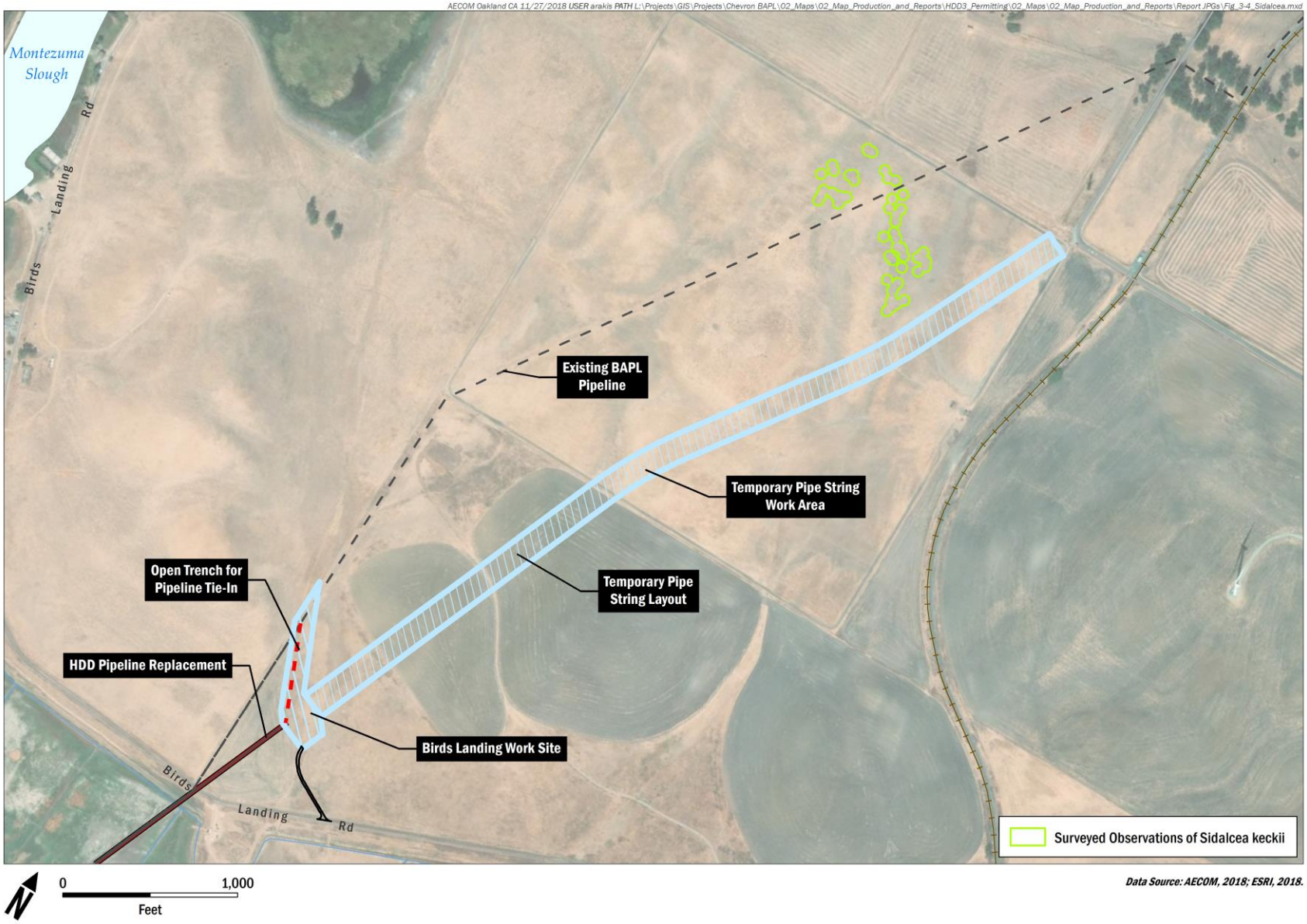
As described in the environmental setting section, *Sidalcea* was observed in the pipe string layout area. Though the species is not confirmed, these observations are being treated as the listed Kecks Checkerbloom. As shown in Figure 3.4-2, the pipe string layout would avoid the areas where plants were found and would not impact this species. Construction mats would be placed on the ground to preserve the seedbank if avoidance is not possible. Additionally, the implementation of preconstruction surveys under **MM BIO-2** would ensure that potential impacts on special-status or rare plant species would be avoided. The Project would not result in loss of habitat and no permanent impacts are anticipated.

<u>Staging Areas</u>: Due to the existing disturbed conditions and lack of habitat within the staging areas, special-status species are not expected to occur, and injury and mortality to special-status species are not anticipated.

<u>Access Roads</u>: Special-status species are generally not expected to use the access and levee roads except temporarily when moving from one area to another. While it is not expected that the movement of heavy equipment, daily worker trips, and materials deliveries on these roads would result in impacts on most special-status species, there was one recent observation, as described above, of a giant garter snake from a nearby levee road. As a result, there is a potential for injury and mortality should special-status species, like the giant garter snake, be present on access and levee roads during vehicle trips to and from the Project area; however, implementation of **MM BIO-1** and **MM BIO-2** would ensure that potential impacts on these species would be avoided or mitigated to less than significant.

<u>Summary of Injury and Mortality</u>: As described above, the potential for the injury and mortality of special-status species varies by species and work area locations; however, the potential for these effects would be temporary, short in duration, and occur over a small geographic area.

Figure 3.4-2. *Sidalcea* in the Project Area



In addition, suitable habitats and other similar habitats are abundant in the region. Injury and mortality of fully protected species (e.g., salt marsh harvest mouse, California black rail) would be avoided through the implementation of MMs. Given the information above and the implementation of **MM BIO-1**, **MM BIO-2**, and **MM BIO-3**, potential impacts on special-status species resulting in injury or mortality would be avoided or mitigated to less than significant.

3.4.3.2 Temporary Habitat Disturbance

Less than Significant with Mitigation. While the Project would temporarily disturb habitat in the Project area, no permanent habitat loss would occur. The temporary disturbance, however, would be considered a potentially significant impact. Therefore, implementation of **MM BIO-4** is required. With implementation of **MM BIO-4**, which requires the implementation of a revegetation plan, the Project would have a less than significant impact. The work pad at the GIWS was previously established but will also be restored with the implementation of **MM BIO-4.**

MM BIO-4: Revegetation and Monitoring Plan. Following completion of Project construction, CPL shall restore managed wetland areas within the Suisun Marsh to pre-Project conditions in accordance with a revegetation and monitoring plan. At least 2 weeks prior to conclusion of construction, CPL shall submit the plan to CSLC staff for approval. The plan shall include details for site preparation and revegetation methods, monitoring, performance criteria, and reporting. These elements are subject to modification through consultation with natural resource agencies.

- **Site Preparation and Revegetation:** All equipment, geotextile mats, rock fill, and filter fabric shall be removed. Excavations shall be backfilled with the stockpiled material originally excavated from the pit. Subsoil shall be replaced in the excavation and compacted with machinery. After proper backfilling of the subsoil, the upper 6 inches of topsoil shall be replaced and spread evenly over the pit. Topsoil shall not be mixed with subsoil or used to fill the pit. The contractor shall also apply appropriate erosion control treatment as needed to any disturbed ground prior to the end of the construction season.
- **Monitoring:** After construction, a qualified biologist shall monitor the hydrologic conditions and the vegetation cover and composition. Monitoring shall occur annually for the first 3 to 5 years following revegetation (expected to be 2020 to 2025) with a provision that cessation of monitoring may be requested by CPL if performance criteria for year 5 is met earlier. Restored areas shall be monitored to achieve end-points as agreed upon with the agencies.
- **Performance Criteria:** Revegetation of wetlands shall be deemed successful if total plant cover is greater than 70 percent of adjacent undisturbed areas, at

least one to three dominant species are presented, and there is no increasing trend in invasive, nonnative species relative to the adjacent undisturbed areas. Performance criteria may be revised at the request and in consultation with natural resource agencies.

- **Reporting:** Annual reports and a final monitoring report shall be submitted to the CSLC staff by December 31 of each monitoring year (until CSLC monitoring obligations are complete) or as determined in coordination with natural resources agencies. At their request, copies shall also be provided to San Francisco Bay Conservation and Development Commission, California Department of Fish and Wildlife, Regional Water Quality Control Board, U.S. Army Corps of Engineers, and U.S. Fish and Wildlife Service staffs.

Temporary Night-lighting: While the majority of Project-related construction would occur during daylight hours, pulling the assembled pipe segment through the drilled hole must be conducted in one continuous operation, which is anticipated to take approximately 24 to 48 hours. Also, more extensive use of night lighting may be required for other activities in order to maintain the Project schedule or to address issues encountered during drilling. Potential effects on wildlife (e.g., birds, turtles, fish, and insects) in the Project area include disorientation and interruption of natural behaviors. However, given the temporary use of night-lighting and the implementation of **MM AES-1**, which would shield and direct the light downward toward the work area, potential impacts on wildlife would be avoided or mitigated to less than significant.

Summary of Temporary Habitat Disturbance: As described above, temporary habitat disturbances that could affect special-status species would result from Project-related activities; however, the potential for these effects would be temporary, short in duration, and occur over a small geographic area. Given the information above and the implementation of **MM BIO-1** through **MM BIO-4**, and **MM AES-1**, including post-Project site restoration, temporary habitat disturbance would be avoided or mitigated to less than significant.

3.4.3.3 Water Quality

Less than Significant with Mitigation. Project activities would potentially affect water quality and thus biological resources as a result of spills of materials used during construction (e.g., oils, transmission and hydraulic fluids, fuel) or by generating turbidity. Materials used during construction could accidentally spill and enter the tidal marsh in areas adjacent to the GIWS. The introduction of pollutants to the marsh may harm special-status species if the pollutants cause a reduction in available prey abundance or if contaminated prey are consumed by special-status species. To minimize the potential for impacts due to accidental spills during construction, the Project would implement a stormwater pollution prevention plan SWPPP as outlined in Section 3.10, *Hydrology and*

Water Quality, **MM HYDRO-1**. As such, potential impacts on special-status species would be avoided and impacts would be less than significant.

3.4.3.4 Airborne Noise Effects on Birds

Airborne noise resulting from drilling, heavy equipment operation, and generators could affect species by causing behavioral avoidance of the construction area and/or temporary loss of hearing capacity to sensitive species. The primary sources of noise associated with the proposed Project are the activities at the BLWS and GIWS. The in-air noise values presented here are referenced to 20 microPascal (µPa), which is usually considered the threshold of human hearing (roughly the sound of a mosquito flying 3 meters away) and commonly used to describe airborne noise.

Construction would occur during the nesting season for birds, and thus may potentially affect nesting migratory birds and listed bird species if they are present in the Project area.

Applicable Criteria for Airborne Noise Effects on Birds

While there are no official criteria for airborne noise thresholds related to birds, the California Department of Transportation (Caltrans) has recommended interim guidelines that it uses for assessing noise effects on birds. Those thresholds, which are presented in Table 3.4-5, are used in this analysis.

Table 3.4-5. Recommended Interim Guidelines for Potential Noise Effects on Birds

Noise Type	Hearing Damage	Temporary Threshold Shifts (TTS)
Continuous Noise (Drilling, Construction)	125 dBA	93 dBA

Ambient noise levels in the vicinity of the North and South Work Areas are expected to be low, as there are no major roads, or urban areas in the vicinity.

b) The construction equipment to be used at the site generally produces sound levels from approximately 58 to 87 decibels (see Section 3.13). Project activities would not generate noise levels above the 93 A-weighted decibel (dBA) that would cause temporary threshold shifts (TTS) over any areas potentially supporting special-status bird species. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

No Impact. Habitat for fish species and designated critical habitat for Delta smelt are present in Montezuma Slough. However, the horizontal directional drilling (HDD) pipeline installation would occur approximately 100 feet under the mudline of the slough and would not affect fish habitat or designated critical habitat for Delta smelt. No other critical habitat for federally listed wildlife occurs in the Project area. Because the Project would be implemented 100 feet below existing habitat, the Project would have no impact.

The shoreline at the barge loading/offloading area on Montezuma Slough (Figure 1-2) is rip rap with a thin strip of emergent vegetation. Barges would temporarily moor in Montezuma Slough and equipment loading/offloading would be done with a crane. The barge would not contact the shoreline and no ground-disturbing activities would occur at this location. Therefore, no impact to the shoreline vegetation would occur.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Less than Significant with Mitigation. Wetlands and other waters of the United States would be temporarily impacted during Project activities in the pipe string layout area and the pipeline grouting air vent location. Table 3.4-6 summarizes the area of impact to wetlands from the Project.

Table 3.4-6. Summary of Impacts to Wetlands

Project Area/Component	Area Temporarily Impacted (acres)
GIWS *(existing impact from previously constructed pad, not included in total of new wetland impacts)*	(0.37)
BLWS and pipe string layout area	0.09
Pipeline Grouting Air Vent	0.18
Total	**0.27**

As shown in the table above, 0.37 acres of wetland were previously disturbed at the GIWS as part of the Mallard Farms HDD project to create the existing work site. This disturbance was previously permitted as part of the Mallard Farms CEQA and permitting process. As such, the acreages disturbed are not considered as new impacts for the HDD3 project. Nonetheless, the previously disturbed wetlands would be impacted for a longer period of time though the repurposing of this pad for the HDD3 project.

A wetland area within the pipe string layout area at BLWS would be temporarily impacted during the layout and construction of the pipe string. This area would be protected by laying out portable construction mats over the site to avoid disturbance to

the soil and preserve the seedbank during construction. Wetlands at the air vent location would also be covered with construction mats for protection of the seedbank and soils. For the excavations at the air vent location topsoil would be removed and stockpiled separately from the deeper excavated soils. When work is completed, the excavated areas would be refilled with the native soils and topsoil would be replaced and spread evenly over the excavation area.

As part of project approvals, the applicant would receive required permits from the U.S Army Corps of Engineers (USACE) (Section 404) and San Francisco Bay Regional Water Quality Control Board (RWQCB) (Section 401). The Project would comply with any conditions in these permits relative to restoration or compensation for impacts on the site. Nonetheless, even with implementation of regulatory requirements, impacts on wetlands would be potentially significant. As such, **MM BIO-4** shall be required as outlined above. In addition, **MM HYDRO-1** would reduce impacts to wetland impacts from stormwater runoff during construction. This impact would be less than significant with the implementation of this mitigation measure and regulatory requirements.

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. The Project may result in minor effects to the movement of terrestrial wildlife. Although species may avoid the immediate area during construction, this is not expected to impede wildlife migration or interfere substantially with movement of species within Suisun Marsh. These effects are anticipated to be temporary, short term in nature, and limited to a small area of disturbance. Additionally, Project work areas are not known to be wildlife nursery areas. For these reasons the Project would not substantially interfere with movement of migratory fish or wildlife species or impede the use of native wildlife nursery sites; therefore, the impact would be less than significant.

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

Less than Significant with Mitigation. Solano County implements the Suisun Marsh Local Protection Program, which seeks to preserve and enhance the diversity of wildlife and aquatic habitats in Suisun Marsh and surrounding upland areas, and the Solano County General Plan, which identifies additional goals, objectives, and policies regarding the protection of biological resources. As discussed under Checklist Items ***a)*** through ***c)*** above, the Project could affect special-status species, sensitive habitats, wetlands, and other biological resources; however, any impacts would be temporary, short in duration, and would occur over a relatively small area. With implementation of **MM BIO-1** through **MM BIO-4**, and **MM HYDRO-1**, in accordance with all regulatory

permits, the Project would not conflict with any local policies or ordinances protecting biological resources. Therefore, this impact would be less than significant with mitigation.

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?

Less than Significant with Mitigation. The Project is consistent with the Suisun Marsh Habitat Management, Preservation, and Restoration Plan and associated EIR in that it would replace a portion of the BAPL and would protect the marsh over the long term and ensure the health, safety, and welfare of the public in the Bay Area (e.g., a MM in the EIR requires testing, repair, or replacement of pipelines that have potential for failure). Project compliance would occur pursuant to permits issued by the San Francisco Bay Conservation and Development Commission (BCDC) and other regulatory agency approvals (e.g., USFWS, NMFS, USACE, and San Francisco Bay RWQCB). The Project would likely conflict with the provisions of the Suisun Marsh Habitat Plan, which identifies a construction work window of June 15 to October 1 for restoration work carried out under the plan; however, the Plan also provides that work outside this period could be conducted, but that it would require additional approval from the resource agencies (e.g., BCDC, CDFW, NMFS, and USFWS). The Project is also consistent with the intent of the Primary Management Zone (to remain an existing marsh and retain its associated uses).

Although the Project would have impacts on biological resources within Suisun Marsh, they would be temporary, short in duration, and relatively small in size. With implementation of **MM BIO-1** through **MM BIO-4**, including post-Project site restoration, no change in the existing marsh and its associated uses would occur. Therefore, this impact would be less than significant with mitigation.

3.4.4 Mitigation Summary

Implementation of the following MMs would reduce potential Project-related impacts on Biological Resources to less than significant.

- MM BIO-1: Environmental Awareness Training
- MM BIO-2: Biological Monitoring and Surveying
- MM BIO-3: Wildlife Exclusion Fencing
- MM BIO-4: Revegetation and Monitoring Plan
- MM AES-1: Night-Lighting Spillage Minimization
- MM HYDRO-1: Stormwater Pollution Prevention Plan

3.5 CULTURAL AND PALEONTOLOGICAL RESOURCES

CULTURAL RESOURCES – Would the Project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Cause a substantial adverse change in the significance of a historical resource as defined in § 15064.5?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	☐	☒	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

3.5.1 Environmental Setting

This section reviews potential significant impacts to cultural and paleontological resources in CPL's Bay Area Products Line (BAPL) system, specifically a segment of the 8-inch Pittsburg-to-Sacramento lateral pipeline that traverses an area located in Solano County (Project) area. Information relevant to Tribal cultural resources is provided in Section 3.6, *Cultural Resources – Tribal.*

3.5.1.1 Archeological Setting

The Project area contains two main work areas as defined in Section 2.0, *Project Description*. The GIWS and barge loading/offloading area were previously studied as part of the Mallard Farms Initial Study (SCH 2016072038). A records search was conducted by AECOM on June 9, 2015 (File No. 14-1740) and February 17, 2016 (File No. 15-1180) for the GIWS. Additionally, a pedestrian survey was conducted on February 11, 2016. As part of that document it was found that the GIWS work area had a low possibility of containing buried or unidentified archeological resources. The barge loading/offloading area is a turnout in the constructed levee that has been previously graded, compacted, and graveled. This area would have little to no possibility of containing buried or unidentified archeological resources. In addition, no ground disturbance would occur here. Due to the previous study of the GIWS and barge area, this section presents new information as it relates to the BLWS.

For the purposes of cultural resources, the study area includes the Project area (both work site locations) with a 0.5-mile buffer.

3.5.1.2 Records Search and Results

The Northwest Information Center (NWIC) of the California Historical Resources Information System at Sonoma State University maintains site records for known cultural resource locations and related studies for Solano County. A records search was conducted by AECOM on April 30, 2018 (File No. 14-2597) for cultural resource sites and studies using a 0.5-mile radius on the *Denverton, Calif*. and *Honker Bay, Calif*. USGS 7.5-minute topographic quadrangles.

Review of historic-period maps indicates that the portion of the study area north of Birds Landing Road was historically located on upland terrain along the bayshore margin and the area to the south within the marsh. In addition, the Antioch, California 15-minute quadrangle (1908), Pittsburg, California 15-minute quadrangle (1908), and the Denverton, California 7.5-minute quadrangle (1918) depict an un-named creek less than 0.25-mile east of the study area.

Geologic mapping (Witter et al. 2006) indicates that the study area south of Birds Landing Road is situated on Holocene bay mud, whereas the BLWS is mapped as Holocene alluvial fan deposits. This is significant because alluvial sediments deposited during the Holocene, when people are known to have occupied California, have the potential to contain buried soils (paleosols) and associated prehistoric archaeological deposits. Quaternary geologic data was unavailable for the pipe string layout area, north of the BLWS.

No previously recorded prehistoric archaeological resources were identified in the study area as a result of the records search. Prior work in the vicinity of the study area has yielded similar negative findings. One of the earliest archaeological surveys of the San Francisco Bay Region, which included the nearby Montezuma Hills area, was conducted by N.C. Nelson in 1909. Nelson's (1909) study recorded several sites in the vicinity of the study area but did not identify any shellmounds within or adjacent to the pipeline corridor (Nelson 1909 in Anthropological Studies Center [ASC] 1998a and b).

Similarly, the Anthropological Studies Center's (ASC) (1998a) work in the vicinity of the current study area was negative for prehistoric resources. However, the ASC (1998a) study did identify seven prehistoric archaeological sites "located between 0–20-foot elevation, and, with the exception of two shellmounds…on the south side of Suisun Bay, all are at slope changes and changes in vegetation." The closest mapped prehistoric archaeological resource to the current study area is an isolated obsidian projectile point (SOL-ISO-20), located approximately 2 miles to the southeast (Wills 1992).

A previous geoarchaeological study of the entire Suisun Marsh found that 95 percent of the marsh area (including the existing pipeline corridor) has moderate or low sensitivity for buried archaeological resources (Meyer et al. 2013). This finding is not unexpected,

given that marsh environments are saturated for most or all of the year, making them unsuitable for human occupation. The portion of the study area located in the terrestrial areas outside of the marsh however, has heightened sensitivity for buried archaeology, especially at slope and vegetation changes.

One historic-period resource (P-48-000981) was identified adjacent to the study area. Grizzly Island Road (P-48-000981) was documented by Brookshear (2013a). Grizzly Island Road is the longest of the county-maintained public roads within Suisun Marsh. The road provides access to the marsh's interior islands. As with most roads within the marsh, the Grizzly Island Road is raised on levee embankments on Grizzly Island. Brookshear evaluated this resource in accordance with section 15064.5, subdivision (a)(2) and (3), of the State CEQA Guidelines, using the criteria outlined in section 5024.1 of the California Public Resources Code, and found it ineligible for listing in the CRHR (Brookshear 2013a).

Five resources (P-48-000133, -000199, -000984, -000985, and -000986) were identified within the 0.5-mile buffer. Table 3.5-1 provides a brief description of these resources.

Table 3.5-1. Cultural Resources within a 0.5-mile Buffer

Site Designation	Description
P-48-000133	A historic-period resource consisting of a shed, redwood barn, foundation, privy, brick floor foundation, a depression, a windmill and scattered farming equipment (Peeler and Maniery 1980). Unevaluated.
P-48-000199	Sacramento Northern Railroad; a point of observation located where Shiloh Road crosses the former Sacramento Northern Railroad tracks approximately 10 miles south of State Route 12. The railroad is surrounded by cattle operations and grazing. This portion of the railroad and tracks have been restored and are used for excursions of the Western Railway Museum (Brookshear 2013b).
P-48-000984	Sacramento Northern Railway Historic District. This District is 277 acres in a largely unpopulated section of Solano County, consisting of a 21-mile-long segment of the former Sacramento Northern Railway high speed electric interurban railroad and the Western Railway Museum (Greger 2011).
P-48-000985	Suisun Marsh gates. There are approximately 324 diversions, drains, and gates in the marsh. The gates are concentrated along the edges of Grizzly Island, along Goodyear Slough and scattered through the western marsh. Most of the gates consist of corrugated metal pipes through the levees (Brookshear 2013c). Determined ineligible for the CRHR/NRHP.
P-48-000986	Suisun Marsh pumps. A small number of pumps are located through the marsh. The pumps are placed within the channel of a slough to pump water out (Brookshear 2013d). Determined ineligible for the CRHR/NRHP.

3.5.1.3 Field Survey

On May 11, 2018, AECOM conducted a pedestrian survey of the BLWS.

The pipe string layout and the BLWS was surveyed in parallel transects no more than 50 ft. (15 meters [m]) apart. The Shiloh Road and Birds Landing access roads, and the pipe tie-in area were surveyed in parallel transects no greater than 32 ft. (10 m) apart. Overall, this portion of the study area was generally characterized as an open field with gently rolling hillsides with tall grasses—except for the southern portion of the pipe string layout area, which included freshly planted rows of crops. The BLWS, the southwest extent of the pipe string layout area/northeast end of the pipeline corridor is located at the transition from terrestrial/agricultural to a marsh environment. Boot scrapes were periodically employed to view the native ground surface, except within rows of crops, where exposed soils along the rows were examined for indicators of archaeological resources.

At the time of the pedestrian survey, only a 0.25-mile segment of the surface of the pipeline corridor, south of the Birds Landing Road staging area, was accessible and therefore surveyed in parallel transects no more than 50 ft. (15 m) apart. The vegetation in this area was too dense to employ the use of boot scrapes to view the native ground surface. The remaining 2.25 miles of the pipeline corridor surface was either inundated with water and/or too densely vegetated to access.

<u>Field Survey Results</u>

No previously unidentified cultural resources were identified as a result of the field survey. Approximately 2.25 miles of the HDD3 surface corridor were seasonally or covered by dense marsh vegetation, and the Grizzly Island staging area and barge loading/offloading location consist of previously graded areas. The possibility that buried archaeological resources are present in the study area is also low. Of the entire Suisun Marsh studied by Meyer et al. (2013), 95 percent of the study area has a moderate or lower sensitivity for buried archaeological resources, which includes the current study area. The remaining high (or very high) sensitivity areas are found northwest of, and well beyond, the study corridor and in the uplands to the east near Montezuma Hills.

3.5.2 Regulatory Setting

Federal and state laws and regulations pertaining to this issue area and relevant to the Project are identified in Appendix A. There are no local goals, policies, and/or regulations applicable to this issue are for the Project.

3.5.3 Impact Analysis

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?

a) and b) Less than Significant with Mitigation. One previously recorded cultural resource (P-48-000981, Grizzly Island Road) was identified adjacent to the study area as a result of the NWIC record search. This resource does not appear to meet the criteria consideration of exceptional significance required for listing in the NRHP or the CRHR. No previously unidentified cultural resources were identified as a result of the background research or field survey.

The study area south of Birds Landing Road is located in the marsh and has a low sensitivity for harboring buried prehistoric resources. No Quaternary geological mapping was available for the pipe string lay down area, however, no Project-related ground disturbance is proposed in this location. The BLWS is underlain by Holocene alluvial fan deposits, which have the potential to contain buried soils and associated archaeological deposits. This portion of the study area is also located at the interface of two environmental zones within 0.25-mile of a historic-period creek, making it moderately to highly sensitive for buried prehistoric archaeological resources. However, archaeological surveys of the study area—and within a 0.5-mile radius—have proved negative for prehistoric archaeological resources.

There is, however, always a possibility of encountering unanticipated archaeological resources during project implementation. As such, the impact of finding unrecorded archeological resources would be potentially significant and **MM CUL-1** and **MM CUL-2** would be required.

MM CUL-1: Cultural Resource Training. A preconstruction meeting shall be jointly organized by a professional archaeologist and a Yocha Dehe Tribal Monitor to educate onsite construction personnel as to the sensitivity of archaeological and Tribal cultural resources in the area. The Applicant's personnel shall instruct all construction and Project personnel to avoid removing cultural materials from the Project site if discovered. Evidence of compliance with this mitigation measure shall be documented, and provided to California State Lands Commission staff, prior to construction.

MM CUL-2: Discovery of Previously Unknown Cultural Resources. In the event that potentially significant archaeological or tribal cultural resources are discovered any time during construction, all earth-disturbing work within 100 feet of the discovery shall be temporarily suspended or redirected until a professional archaeologist or a culturally affiliated tribal monitor, have evaluated the nature and significance of the discovery. In the event that a potentially significant archaeological or tribal cultural resource is discovered, CPL, the CSLC, and any local, state, or federal agency with approval or permitting authority over the Project that has requested/required such notification shall be notified within 48 hours. Impacts to previously unknown significant archaeological or tribal cultural resources shall be avoided through

preservation in place if feasible. Damaging effects to tribal cultural resources shall be avoided or minimized following the measures identified in Public Resources Code section 21084.3, subdivision (b), if feasible, unless other measures are mutually agreed to by the lead archaeologist and culturally affiliated tribal monitor that would be as or more effective. A treatment plan developed by the archaeologist and, for tribal cultural resources, the culturally affiliated tribal monitor, shall be submitted to CSLC staff for review and approval. If the lead archaeologist and the culturally affiliated tribal monitor believe that damaging effects to tribal cultural resources will be avoided or minimized, then work in the area may resume.

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

Less than Significant with Mitigation. Paleontological resources are the fossilized evidence of past life found in the geologic record. Despite the prodigious volume of sedimentary rock deposits preserved worldwide and enormous number of organisms that have lived through time, preservation of plant or animal remains as fossils is an extremely rare occurrence. Because of the infrequency of fossil preservation, fossils (particularly vertebrate fossils) are considered to be nonrenewable resources. Because of their rarity, and the scientific information they can provide, fossils are highly significant records of ancient life. Paleontological resource localities are those sites where the fossilized remains of extinct animals and/or plants have been preserved. Rock formations that are considered of paleontological sensitivity are those rock units that have yielded significant vertebrate or invertebrate fossil remains, including, but not limited to, sedimentary rock units that contain significant paleontological resources anywhere within its geographic extent. The Project area is underlain by mud and clay deposits of the Holocene (USGS and Association for American State Geologists 2016).

Although no paleontological resources were identified within the Project area or its immediate surroundings, ground-disturbing activities could adversely affect any unidentified deposits. Such deposits are unlikely given the limited depth of construction and because only minor or shallow excavation may be involved in construction. However, to ensure that potential impacts on paleontological resources are avoided or mitigated to less than significant, the **MM CUL-3** would be implemented.

MM CUL-3: Discovery of Previously Unknown Paleontological Resources. In the event that potentially significant paleontological resources are discovered during Project construction: (1) CPL shall immediately redirect or temporarily suspend all earth-disturbing work within 100 feet of the discovery until a professional paleontologist, approved by CSLC staff, has evaluated the nature and significance of the discovery; and (2) CPL shall immediately notify (within 48 hours) CSLC staff and any local, state, or federal agency with approval or

permitting authority over the Project that has requested/required such notification. A treatment plan developed by the paleontologist shall be submitted to CSLC staff for review and approval. If the lead paleontologist believes that damaging effects to paleontological resources will be avoided or minimized, then work in the area may resume.

d) Disturb any human remains, including those interred outside of formal cemeteries?

Less than Significant with Mitigation. The project is not expected to disturb human remains. While the possibility of the unanticipated discovery of human remains during project implementation is low, it cannot be discounted. If human remains are encountered, **MM CUL-4** would be implemented.

MM CUL-4: Unanticipated Discovery of Human Remains. If human remains are encountered, all work in the vicinity of the remains shall halt, and the Solano County Coroner must be contacted pursuant to Public Resources Code sections 5097.94, 5097.98, and 5097.99. If unknown human remains are discovered no further disturbance would occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code section 5097.98. If the remains are determined to be of Native American descent, the coroner has 24 hours to notify the Native American Heritage Commission. CPL and CSLC staff would also be notified immediately within 24 hours of the discovery.

3.5.4 Mitigation Summary

Implementation of the following MMs would reduce potential Project-related impacts on Cultural and Paleontological Resources to less than significant:

- MM CUL-1: Cultural Resource Training
- MM CUL-2: Discovery of Previously Unknown Cultural Resources
- MM CUL-3: Discovery of Previously Unknown Paleontological Resources
- MM CUL-4: Unanticipated Discovery of Human Remains

3.6 CULTURAL RESOURCES - TRIBAL

CULTURAL RESOURCES – TRIBAL – Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	**Potentially Significant Impact**	**Less Than Significant with Mitigation**	**Less Than Significant Impact**	**No Impact**
a) Listed or eligible for listed in the California Register of Historical Resources, or in local register of historical resources as defined in Public Resources Code section 5020.1(k)?	☐	☒	☐	☐
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	☐	☒	☐	☐

3.6.1 Environmental Setting

This section reviews potential significant impacts to Tribal cultural resources in CPL's Bay Area Products Line (BAPL) system, specifically a segment of the 8-inch Pittsburg-to-Sacramento lateral pipeline that traverses an area located in Solano County (Project) area. Information relevant to archaeological resources is provided in Section 3.5, *Cultural and Paleontological Resources*. The Project area is located primarily within the ethnographic boundaries of the Patwin; but is closely bordered by the Bay Miwok to the south and the Plains Miwok to the east. The following discussion is summarized from Levy (1978) and Johnson (1978).

The term *Patwin* is a native word for "people" that several tribelets used to describe themselves. Patwin groups speak dialects of the Southern Wintuan language group, which belongs to the Penutian language family, along with Miwok, Maidu, and Costanoan Yokuts.

Patwin territory extends along the southern portion of the Sacramento River Valley, from Princeton (in Colusa County) to San Pablo and Suisun bays. The earliest reports from this area described this territory as being occupied by several different tribes, later referred to as "tribelets"; many distinct dialects were spoken. The maximum political unit was the tribelet, consisting of one primary and several satellite villages, with a definite

sense of territoriality and autonomy. Each tribelet differed slightly from the next in cultural details. Within the tribelet were several political and social distinctions. Each village had a chief who directed village activities. That position was the highest rank attainable and was determined by inheritance from father to son, if possible.

Hunting and fishing were done by individuals or small groups. Fish were caught by one of several types of nets, which might be attached to a single pole or to two poles that were used to guide the nets. Fish weirs were constructed across the Sacramento River, using posts and willow sticks driven into the river bottom. The line they formed was broken in several places by gates. Salmon or sturgeon were collected into pens behind the gates and caught with a net; smaller salmon, perch, chub, sucker, hardhead pike were also caught with nets. The Patwin hunted deer, tule elk, antelope, ducks, geese, quail, and other small animals.

Central to the Patwin ritual life was the Kuksu cult, common throughout much of north-central California. Young boys and occasionally high-status women were initiated into one of three secret societies. Shamanism was also important, primarily for curing and ritual healing.

The Patwin had relatively early contact with explorers and settlers from Spain and elsewhere in Europe. As early as 1800, individuals were taken from Patwin settlements to the Spanish Mission Dolores and Mission San Jose, and later to Mission Sonoma. Other contact came from explorers such as Jedediah Smith and employees of the Hudson’s Bay Company. The Sacramento Valley and lower parts of the Delta were settled by the mid-1800s; and with increasing pressure from the Euro-Americans, the remaining Patwin became partially assimilated into American culture, taking temporary jobs on ranches, or were placed on federal reservations.

The Plains Miwok and Bay Miwok are considered a part of the Eastern Miwokan subgroup of the Utian language family (the other three groups being the Northern Sierra Miwok, the Central Sierra Miwok, and the southern Sierra Miwok).

The Plains Miwok inhabited the lower reaches of the Mokelumne and Consumnes rivers and both banks of the Sacramento River from Rio Vista to Freeport. Bay Miwok territory extended from the southeastern portion of the Montezuma Hills south to Mount Diablo, and from the present-day city of Walnut Creek east as far as Plains Miwok territory near Sherman Island. The Bay Miwok distributed themselves into tribelet groups that consisted of a village or groups of villages that shared linguistic and/or kinship affinities and are described variously as ranging from 20 to 300 people. Settlements were located on permanent watercourses and intermittent streams (in drier areas) and on high ground in areas near the Delta.

The foremost political unit of the Miwok was the tribelet. Each tribelet was an independent and sovereign nation that embraced a defined and bounded territory exercising control over the natural resources therein. The Miwok were semi-nomadic, employing a hunting and gathering subsistence pattern. Acorns were their principal dietary component; however, fishing in the adjacent San Joaquin and Sacramento rivers was also important. Boats were built from tule bundles. Miwok technology included bone, stone, antler, wood, and textile tools. The Miwok constructed several types of structures, including conical thatch structures and semi-subterranean earth-covered lodges. Contact between the Bay Miwok and Europeans occurred in the second half of the 18th century, when Spanish explorers arrived in the area, leading to a period of hostilities, missionization, and population decline. During the late 19th and early 20th centuries, subsistence through hunting and gathering was increasingly augmented by seasonal wage labor on ranches and farms.

Tribal Coordination

Pursuant to Executive Order B-10-11 concerning coordination with Tribal governments in public decision making (see Appendix A), the CSLC adopted a Tribal Consultation Policy in August 2016 to provide guidance and consistency in its interactions with California Native American Tribes (CSLC 2016). The Tribal Consultation Policy, which was developed in collaboration with Tribes, other State agencies and departments, and the Governor's Tribal Advisor, recognizes that Tribes have a connection to areas that may be affected by CSLC actions and "that these Tribes and their members have unique and valuable knowledge and practices for conserving and using these resources sustainably" (CSLC 2016).

The CSLC submitted a Native American Heritage Commission (NAHC) sacred lands file search in September 2018. The response indicated no known presence of Native American Tribal cultural resources in the immediate Project area. The NAHC also provided a Native American contact list the CSLC used for outreach and coordination. One Tribe with geographical or cultural affiliation in Solano County, United Auburn Indian Community of the Auburn Rancheria, has submitted a written request to the CSLC for notification of CEQA projects pursuant to AB 52 and in October 2018 the CSLC staff contacted the Tribal Chairpersons identified for the United Auburn Indian Community of the Auburn Rancheria to ensure the Tribe had an opportunity to provide meaningful input on the potential for Tribal cultural resources to be found in the Project area, and what steps should be taken to ensure adverse impacts to Tribal cultural resources are avoided. CSLC staff also sent outreach letters in October 2018 to other Tribes identified by NAHC and include the following:

- Yocha Dehe Wintun Nation
- Cortina Rancheria - Kletsel Dehe Band of Wintun Indians

On November 19, 2018, CSLC staff received at letter from the Yocha Dehe Wintun Nation, within whose aboriginal territory the project is located. The letter recommends the inclusion of a provision requiring cultural sensitivity training prior to the start of project-related activities, which is provided in **MM CUL-1**.

3.6.2 Regulatory Setting

Federal and state laws and regulations pertaining to Tribal cultural resources and relevant to the Project are identified in Appendix A. Assembly Bill (AB) 52 made changes to CEQA regarding tribal cultural resources and consultation with California Native American Tribes who have previously requested to be notified of projects in the geographic area traditionally and culturally affiliated with that tribe. Tribal cultural resources include sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a Tribe that is eligible under the California Register of Historic Resources or local register of historical resources. A tribal cultural resource can also be a resource that a lead agency determines, in its discretion and considering the significance of the resource to a Tribe, to be significant pursuant to criteria set forth in Public Resources Code section 5024.1. Under AB 52, lead agencies must avoid damaging effects to tribal cultural resources, when feasible, regardless of whether consultation occurred or is required.

3.6.3 Impact Analysis

a) Listed or eligible for listed in the California Register of Historical Resources, or in local register of historical resources as defined in Public Resources Code section 5020.1(k)?

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

Less than Significant with Mitigation. The NAHC searched its Sacred Lands File for Native American cultural sites and found no occurrences within the Honker Bay U.S. Geological Survey (USGS) quadrangle (NAHC letter to the CSLC dated March 14, 2016). However, there is a moderate to high possibility of discovering unidentified archaeological sites in the Project area, which may include tribal cultural resources.

Although the Sacred Lands File search returned negative results for the occurrence of tribal cultural resources and no archaeological resources have been identified within the pipeline corridor, the possibility always exists that previously unknown tribal cultural resources may be encountered during Project activities. This impact would be

potentially significant. As such, and to ensure that potential impacts on tribal cultural resources are avoided or mitigated to less than significant, **MM CUL-1** and **MM CUL-2**, as described in Section 3.5, *Cultural and Paleontological Resources*, would be implemented which would provide cultural resource sensitivity training to construction personnel and temporarily halt all earth-disturbing work in the event that previously unknown cultural resources are discovered until a professional archaeologist, as determined by the NAHC, has evaluated the nature and significance of the discovery. Therefore, with the implementation of **MM CUL-1** and **MM CUL-2**, this impact would be avoided or mitigated to less than significant. In addition, **MM CUL-4** would require the NAHC be notified if any humans remains are found that are determined to be of Native American descent.

3.6.4 Mitigation Summary

Implementation of the following MM's would reduce the potential for Project-related impacts on Tribal Cultural Resources to less than significant:

- MM CUL-1: Cultural Resource Training
- MM CUL-2: Discovery of Previously Unknown Cultural Resources
- MM CUL-4: Unanticipated Discovery of Human Remains

3.7 GEOLOGY AND SOILS

GEOLOGY AND SOILS – Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to California Geological Survey Special Publication 42).	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

3.7.1 Environmental Setting

3.7.1.1 Geology and Seismicity

The Project area is located within the Great Valley geomorphic province and adjacent to the Coast Range geomorphic province (California Geological Survey [CGS] 2002). The Great Valley geomorphic province is a large alluvial plain in which sediments have been deposited almost continuously since the Jurassic period (around 160 million years ago). The Project area is dominated by Holocene Alluvium. The Great Valley contains four Alquist-Priolo faults, none of which are in the Project area (CGS 1993). The nearest known fault is the Green Valley/Concord fault, approximately 10 miles west.

The adjacent Coast Range geomorphic province is characterized by moderate to high seismicity principally associated with the San Andreas Fault and other sub-parallel faults that constitute the boundary between the North American and Pacific tectonic plates. Because the Project area is in an active geologic area, it could be subject to intense levels of earthquake-related ground shaking.

3.7.1.2 Soils

Soils in the Project area are mostly relatively soft and loose alluvial deposits of interbedded sand, clay, and silt, including Young Bay Mud/Peat, Loose Bay Sands, Dense Bay Sand, Stiff Clay, and Old Bay Clay (AECOM 2015). The area is subject to frequent ponding, saturation, and flooding, and parts of the Project area are subject to very severe erosion of disturbed soils (Solano County 2008b [Exhibits 4.7-5 and 4.7-6]).

3.7.1.3 Groundwater

The Project area is within the San Francisco Bay Drainage Province (Solano County 2008b [Exhibit 4.5-2]), and within the Suisun-Fairfield Valley (2-3) Groundwater Basin, which drains to Suisun Bay (DWR 2014). The Groundwater Basin is comprised of late Tertiary to Quaternary age volcanic rocks and continental sedimentary deposits. The water-bearing units within the basin include the Sonoma Volcanics, Pleistocene Alluvium, and Recent Alluvium. The Pleistocene Alluvium constitutes the primary aquifer. Groundwater levels during recent soil investigations were approximately 4 to 5 feet below ground surface (AECOM 2015); however, groundwater levels are likely to fluctuate with seasonal and tidal influences.

3.7.1.4 Topography

The topography of the Project area is dominated by the Suisun Marsh, which is generally flat except where levees create small, localized slopes. In general, the area gently slopes southwards towards Honker Bay. There are gentle rolling hills located north of the BLWS.

3.7.2 Regulatory Setting

Federal and state laws and regulations pertaining to geology and soils and relevant to the Project are identified in Appendix A. At the local level, the Solano County General Plan includes the following geology- and soils-related goals and policies of relevance to this Project (Solano County 2015a):

- **HS.P-14:** Identify and minimize potential hazards to life and property caused by fault displacement and its impact on facilities that attract large numbers of people, are open to the general public, or provide essential community services and that are located within identified earthquake fault zones.

- **HS.P-15:** Reduce risk of failure and reduce potential effects of failure during seismic events through standards for the construction and placement of utilities, pipelines, or other public facilities located on or crossing active fault zones.
- **HS.P-17:** Restrict the crossing of ground failure areas by new public and private transmission facilities, including power and water distribution lines, sewer lines, and gas and oil transmission lines.

3.7.3 Impact Analysis

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

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?

No Impact. No Alquist-Priolo faults are in the Project area (CGS 1993). The nearest known fault is 10 miles west of the Project area; therefore, there would be no impact from the rupture of known earthquake faults.

ii) Strong seismic ground shaking?

Less than Significant Impact. The Project area could experience ground shaking from earthquakes generated along active faults located offsite. The intensity of ground shaking would depend upon the magnitude of the earthquake, distance to the epicenter, and the geology of the area between the epicenter and the Project area. Project infrastructure and workers could be subjected to seismic ground shaking if a significant earthquake occurred in the area during Project implementation. However, construction and pipeline replacement activities would not create adverse effects to people or structures related to ground shaking.

The Project would be designed to resist seismic forces and would replace an existing aged segment of the BAPL pipeline with a new pipe segment, thereby reducing the overall vulnerability of the system to seismic hazards, including strong ground shaking. Adherence to standard engineering practices and design criteria relative to seismic and geologic hazards in accordance with the Uniform Building Code would reduce the significance of potential impacts to less than significant.

iii) Seismic-related ground failure, including liquefaction?

Less than Significant Impact. Soil liquefaction is a phenomenon whereby rapid cyclic loading, typically by an earthquake, increases the pore water pressures to the point

where the shear strength of the soil is reduced momentarily, causing failures, settlements, and displacements. Liquefaction risk is greatest where soils are loose, saturated, and consist of medium- to fine-grained sands and coarse silts. The combination of loose soil located below groundwater and strong ground shaking conditions may occur along portions of the Project alignment. The USGS Liquefaction Susceptibility map indicates that the Project area has a moderate susceptibility for liquefaction (USGS 2006); however, the Solano County General Plan indicates the Project area is within a zone of high liquefaction potential (Solano County 2015a). The Project would replace an existing aged segment of the BAPL pipeline with a new pipe segment, thereby reducing the overall vulnerability of the system to seismic hazards, including liquefaction. Therefore, the impact of seismic-related ground failure, including liquefaction, would be less than significant.

iv) Landslides?

No Impact. The Project area and vicinity are generally flat, and therefore does not have the potential to slide or experience sliding from adjacent areas. While there are minor slopes associated with the levees and with the rolling hills near BLWS, these are not expected to be at risk. Additionally, the Project would construct and underground pipeline using the HDD method, and would not destabilize any existing slopes. Therefore, there would be no impact from landslides.

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

Less than Significant with Mitigation. The installation of the BLWS would not require any vegetation clearing or grading. Construction mats would be placed on top of the ungraded ground surface as needed to create the work area. Improvements to road surfaces would consist of placement of base rock on the existing gravel and dirt road surfaces, which would reduce the potential for substantial erosion of the road surfaces.

The Project would include the construction of a permanent access road to the re-located valve station site. This would be an extension of the existing road that will be used for access to the work pad. This construction may include vegetation clearing, grading of the road surface, and placement of base rock to provide all-weather access to the valve station. As such, the Project applicant would obtain a grading permit from Solano County and follow erosion minimization procedures as outlined by said permit. Additionally, the Project would obtain coverage under the National Pollution Discharge Elimination System Statewide Construction General Permit (Order No. 2012-0006-DWQ). The Construction General Permit requires that a stormwater pollution prevention plan (SWPPP) be prepared and implemented, as outlined in **MM HYDRO-1**. The SWPPP would detail the construction-phase erosion and sediment control best management practices (BMPs) and the housekeeping measures for control of contaminants other than sediment. Erosion control BMPs would include source control

measures such as wetting of dry and dusty surfaces to prevent fugitive dust emissions, preservation of existing vegetation, and effective soil cover (e.g., geotextiles, straw much, hydroseeding) for inactive areas and finished slopes to prevent sediments from being dislodged by wind, rain, or flowing water. With implementation **MM HYDRO-1**, the Project would have a less than significant impact due to 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. The GIWS contains relatively soft and loose alluvial deposits of interbedded sand, clay, and silt to depths ranging from approximately 40 to 95 feet below ground surface. Due to the alluvial environment of the marsh, the nature of these soil deposits is highly variable. However, underlying these deposits are materials generally described as being much stiffer and denser than the overlying material (AECOM 2015). The borehole and new pipeline would be installed within this denser, deeper stratum.

Soils at the GIWS are saturated and may be unstable and potentially subject to liquefaction, but were previously stabilized during the construction of a work surface. The area was stabilized using rock fill material and interlocking geotextile mats, during the Mallard Farms construction project.

Project-induced landslides, lateral spreading, or subsidence are not anticipated due to the relatively flat topography and because no groundwater pumping would occur. For these reasons, potential impacts related to unstable soils or Project-induced landslides, lateral spreading, subsidence, liquefaction, or collapse would be less than significant.

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. Soils in the Project area are mostly relatively soft and loose alluvial deposits of interbedded sand, clay, and silt. Expansive soils may be encountered; however, construction and replacement of the new BAPL pipe segment would not increase the risk to life or property created by their presence. Therefore, there would be no impact.

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

No Impact. The Project would not use septic tanks or alternative waste water disposal systems; therefore, there would be no impact.

3.7.4 Mitigation Summary

Implementation of the following MM would reduce the potential for Project-related impacts on Geology and Soils to less than significant:

- MM HYDRO-1: Stormwater Pollution Prevention Plan

3.8 GREENHOUSE GAS EMISSIONS

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

3.8.1 Environmental Setting

GHGs are defined as any gas that absorbs infrared radiation in the atmosphere. GHGs include, but are not limited to, water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorocarbons. These GHGs lead to the trapping and buildup of heat in the atmosphere near the Earth's surface, commonly known as the Greenhouse Effect. The atmosphere and the oceans are reaching their capacity to absorb CO_2 and other GHGs without significantly changing the Earth's climate. Unlike criteria pollutants and TACs, which are pollutants of regional and local concern, GHGs and climate change are local, regional, and global issues.

As stated on California's Climate Change Portal (www.climatechange.ca.gov):

> *Climate change is expected to have significant, widespread impacts on California's economy and environment. California's unique and valuable natural treasures - hundreds of miles of coastline, high value forestry and agriculture, snow-melt fed fresh water supply, vast snow and water fueled recreational opportunities, as well as other natural wonders - are especially at risk.*

In addition, the Intergovernmental Panel on Climate Change (IPCC), in the section of its Fifth Assessment Report by Working Group II, Climate Change 2014: Impacts, Adaptation, and Vulnerability (Romero-Lankao et al. 2014) specific to North America (Chapter 26), stated in part:

> *North American ecosystems are under increasing stress from rising temperatures, CO_2 concentrations, and sea-levels, and are particularly vulnerable to climate extremes (very high confidence). Climate stresses occur alongside other anthropogenic influences on ecosystems, including land-use changes, nonnative species, and pollution, and in many cases would exacerbate these pressures (very high confidence). [26.4.1; 26.4.3]. Evidence since the Fourth Assessment Report (AR4) highlights increased ecosystem vulnerability to multiple and interacting climate*

stresses in forest ecosystems, through wildfire activity, regional drought, high temperatures, and infestations (medium confidence) [26.4.2.1; Box 26-2]; and in coastal zones due to increasing temperatures, ocean acidification, coral reef bleaching, increased sediment load in run-off, sea level rise, storms, and storm surges (high confidence) [26.4.3.1].

Climate change is having widespread impacts on California's economy and environment, and will continue to affect communities across the state in the future. Many impacts, including increased fires, floods, severe storms, and heat waves are occurring already (California Climate Change Center 2012). Documented effects of climate change in California include increased average, maximum, and minimum temperatures; decreased spring runoff to the Sacramento River; shrinking glaciers in the Sierra Nevada; a rise in sea level at the Golden Gate Bridge; warmer temperatures in Lake Tahoe, Mono Lake, and other major lakes; and changes in elevations for plant and animal species (Office of Environmental Health Hazard Assessment 2018).

According to the IPCC, the concentration of CO_2, the primary GHG, has increased from approximately 280 parts per million (ppm) in preindustrial times to well over 380 ppm. The current rate of increase in CO_2 concentrations is about 1.9 ppm/year; present CO_2 concentrations are higher than any time in at least the last 650,000 years. To meet the statewide GHG reduction target for 2020, requiring California to reduce total statewide GHG emissions to 1990 levels (Health & Saf. Code, § 38550), and the 2050 goal of 80 percent below 1990 levels (Executive Order S-3-05), projects must contribute to slowing the increase in GHG emissions and, ultimately, contribute to reducing California's output of GHGs. To reach these GHG reduction targets, per capita emissions would need to be reduced by slightly less than 5 percent per year during the 2020 to 2030 period, with continued reductions required through mid-century.

CO_2 is the most common reference gas for climate change. To account for the warming potential of different GHGs, emissions are often quantified and reported as CO_2 equivalents (CO_2e). With the warming potential of CO_2 set at a reference value of 1, CH_4 has a warming potential of 25 (i.e., 1 ton of methane has the same warming potential as 25 tons of CO_2 [IPCC 2013]), while N_2O has a warming potential of 298. There is widespread international scientific consensus that human-caused increases in GHGs have and will continue to contribute to climate change, although there is uncertainty concerning the magnitude and rate of the warming.

3.8.2 Regulatory Setting

Federal and state laws and regulations pertaining to GHG emissions and relevant to the Project are identified in Appendix A. Various entities address this issue area at the state and regional levels. For example, CARB's Climate Change Scoping Plan (2008)

establishes GHG reduction strategies and goals for California's future, focusing on large contributors to state GHG emissions (e.g., power generation and transportation).

AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. It requires that statewide GHG emissions be reduced to 1990 levels by 2020. In 2008 and 2014, ARB approved the Scoping Plan and the first update to the Scoping Plan, respectively (CARB 2008, 2014). In 2016, the California Legislature passed Senate Bill (SB) 32, which established a 2030 GHG emissions reduction target of 40 percent below 1990 levels. In response to SB 32 and the companion legislation of AB 197, ARB approved the 2017 Scoping Plan Update: The Strategy for Achieving California's 2030 GHG Target in November 2017. The 2017 Scoping Plan draws from the previous plans to present strategies to reaching California's 2030 GHG reduction target.

At the local level, Solano County (2011) adopted a climate action plan in June 2011. The plan includes GHG inventories and projections for the County, and recommended reduction measures for the five strategy sectors of agriculture, transportation and land use, energy use and efficiency, water use and efficiency, and waste reduction and recycling. At the regional level, the Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG) developed Plan Bay Area, a regional transportation plan for the nine-county Bay Area. The plan includes the San Francisco Bay Area Sustainable Communities Strategy in accordance with California Senate Bill (SB) 375 and the 2040 Regional Transportation Plan, and includes policies that focus on using the existing transportation network more efficiently (ABAG and MTC 2013).

3.8.3 Impact Analysis

Quantifying project GHG emissions is complex and relies on numerous assumptions. GHG emissions are generally classified as direct (associated with production of GHG emissions from the immediate Project area, including combustion of fuel in engines and construction vehicles used on-site) and indirect (including emissions from vehicles that deliver materials and equipment to the site). With the exception of very large projects, GHGs from individual projects are typically less than significant at the Project scale; however, GHG emissions can have a substantial cumulative impact. The revisions to the State CEQA Guidelines adopted on December 30, 2009 (§ 15064, subd. (h)(3)), encourages lead agencies to quantify GHG emissions where possible and provides the basis to assess cumulative impacts of GHG emissions. Section 15064 indicates that:

> *…a lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program (including, but not limited to, water quality control plan, air quality attainment or maintenance plan, integrated waste management plan, habitat conservation plan, natural community*

conservation plan, plans or regulations for the reduction of greenhouse gas emissions) that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located.

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

Less than Significant Impact. The BAAQMD has adopted 1,100 metric tons of CO_2e/year ($MTCO_2e$/year) as a GHG operational emissions significance criterion for development projects, but has not adopted thresholds for evaluating GHG emissions from construction activities. Construction activities are short term, and direct comparison of construction GHG emissions with long-term thresholds would not be appropriate because these emissions cease upon completion of construction. Other districts (e.g., South Coast Air Quality Management District 2008; San Luis Obispo County Air Pollution Control District 2012) recommend that GHG emissions from construction activities (and other short-term sources) be evaluated as part of the total project GHG emissions by amortizing total emissions during construction over a project's operational lifetime for comparison with long-term GHG emissions significance thresholds.

For this analysis, the amortization method was applied over the Project's projected operational lifetime (30 years). Total construction GHG emissions were calculated using methods and assumptions described in Section 3.3, *Air Quality* (see Appendix B for detailed calculations), amortized over 30 years, and compared to the BAAQMD operational threshold. Table 3.8-1 lists GHG emissions associated with construction of the Project. The Project would generate a total of 871.5 MT CO_2e over the entire construction period. Amortized over the Project's anticipated 30-year operational lifetime, construction would result in annual emissions of 29.1 MT CO_2e per year. Amortized annual construction emissions would not exceed the threshold of significance; therefore, GHG emissions would be less than significant.

Table 3.8-1. Project Construction Greenhouse Gas Emissions

Work Component	CO_2e Emissions (metric tons)
Horizontal Directional Drilling	871.5
Total Construction Emissions (metric tons)	**871.5**
GHGs Amortized Over 30 years (metric tons/year)	**29.1**
BAAQMD Project Threshold of Significance (metric tons/year)	**1,100**
Exceeds Threshold?	**No**

Notes: CO_2e = carbon dioxide equivalents

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

Less than Significant Impact. As mentioned previously, CARB has published several climate change scoping plans, such as the 2017 Scoping Plan Update: The Strategy for Achieving California's 2030 GHG Target. However, none of these statewide plans or policies constitutes a regulation to adopt or implement a regional or local plan for reduction or mitigation of GHG emissions. In addition, it is assumed that any requirements formulated under the mandate of AB 32 and SB 32 would be implemented consistent with statewide policies and laws.

As described under Checklist Item ***a)*** above, Project construction emissions would not exceed the BAAQMD thresholds of significance. GHGs from construction activities emitted either directly or indirectly would not have a significant impact on the environment or substantially contribute to global GHG emissions. Therefore, the Project would not conflict with applicable plans, policies, or regulations adopted for the purposes of reducing GHG emissions. Further, as operational emissions of the BAPL pipeline would remain similar to existing conditions, the Project would not conflict with established GHG reduction targets. Therefore, this impact would be less than significant.

3.8.4 Mitigation Summary

The Project would not generate significant GHG emissions; therefore, no mitigation is required.

3.9 HAZARDS AND HAZARDOUS MATERIALS

HAZARDS AND HAZARDOUS MATERIALS – Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 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) For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the Project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☒	☐	☐

3.9.1 Environmental Setting

The project area is within the Suisun Marsh and agricultural lands just north of Birds Landing road. The area is largely undeveloped with just a few widely spaced residences north of Birds Landing Road. Several petroleum product (including the BAPL) and natural gas pipelines traverse beneath the Suisun Marsh. The area has no industrial or

commercial developments. Searches of the State Water Resources Control Board (SWRCB) GeoTracker and Department of Toxic Substances Control (DTSC) Envirostor databases showed no potentially contaminated sites within the Project area (SWRCB 2018; DTSC 2018). The nearest sites are a cleanup site located 0.35-mile northwest of the BLWS, which was a former military station that included a small underground storage tank (UST), a former military radar station located approximately 1-mile northwest of the BLWS, and a cleanup program site located 3.8 miles southeast of the GIWS.

3.9.2 Regulatory Setting

Federal and state laws and regulations pertaining to hazards and hazardous materials and relevant to the Project are identified in Appendix A. At the local level, the Solano County General Plan contains the following hazardous materials-related policy relevant to Project activities (Solano County 2015a):

- **HS.P-26:** Minimize the risks associated with transporting, storing, and using hazardous materials through methods that include careful land use planning and coordination with appropriate Federal, State, or County agencies.

3.9.3 Impact Analysis

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. The Project would involve the routine transport, storage, use, and disposal of small quantities of hazardous materials during construction. Products used during construction such as gasoline, diesel, lubricants, and solvents are categorized as hazardous materials, and are highly regulated by federal, state, and local laws and regulations.

The storage and handling of these materials during this Project would be managed in accordance with applicable laws and regulations, which would include storing incompatible hazardous materials separately, using secondary containment for hazardous materials storage, requiring the contractor to use trained personnel for hazardous materials handling, keeping spill clean-up kits available on site, and designating specific sites with appropriate spill containment within the construction area as refueling stations for construction equipment.

Based upon the proposed materials and handling methods described above, any potential impact to the public or the environment through the routine transport, use, or disposal of hazardous materials would be less than significant.

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 with Mitigation. The Project would have a potentially significant impact to the surrounding environment(s) if construction activities release hazardous materials into the environment. Chevron has standard emergency response plans in place for response to spills or materials releases. Mitigation measures would be implemented, as outlined below, to ensure that potential impacts from hazardous material releases from certain construction activities are avoided or mitigated to less than significant. For example, to ensure that no residual product in the BAPL is accidentally released into the environment when the pipeline is cut to make the tie-in, the pipeline would be pigged[5] to clean it of residual petroleum products to less than 15 parts per million in accordance with **MM HAZ-1**.

The existing pipe segment may also contain an asbestos coating that would need to be removed to complete the tie-in. Typically, if present, 3–10 feet of the coating would need to be removed at the both ends of the pipeline. This would be a potentially significant impact and **MM HAZ-2** will be required.

MM HAZ-1: Pipeline Purging and Containment. Prior to cutting and tie-in activities, the existing pipeline shall be pigged and purged with nitrogen to create a non-flammable environment before cutting. This work would begin at a valve location in Pittsburg and continue to Chevron Terminal in Sacramento. Secondary containment shall be set up at the GIWS, BLWS, and Grouting Vent Work Site as a precaution to prevent the accidental release of any material that may still remain inside the pipeline.

MM HAZ-2: Asbestos Handling Procedures. Construction personnel shall be informed of the potential presence of asbestos-containing material (ACM) at the construction site prior to their assignment. After exposing the existing pipeline and prior to the start of cutting and tie-in activities, a certified asbestos inspector/consultant shall test whether the coating consists of ACM greater than 1 percent by weight. If testing reveals the coating contains ACM less than 1 percent by weight, the pipe segment shall be treated as normal construction waste and no additional measures are required. If testing reveals the coating contains ACM greater than 1 percent by weight, the materials shall be abated by a certified asbestos abatement contractor in accordance with the regulations and notification requirements of the Bay Area Air Quality Management District,

[5] Pigging involves pushing a device known as a “pig” through the pipe using nitrogen. The pig has a diameter similar to the inner diameter of the pipe and cleans the pipe of all petroleum products as it passes through.

and in accordance with applicable worker safety regulations. All ACM removed from the pipe segment shall be labeled, transported, and disposed of at a verified and approved ACM disposal facility.

With implementation of **MM HAZ-1** and **MM HAZ-2**, Project impacts due to hazardous materials would be minimized to a less than significant level.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?

No Impact. The Project is within the undeveloped Suisun Marsh, and there are no existing or proposed schools within 0.25 mile of the Project area. Therefore, there would be no impact to schools.

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 Hazardous Waste and Substances Sites (Cortese) List is a planning document used by the state, local agencies, and developers to comply with CEQA requirements in providing information about the location of hazardous materials release sites. Government Code section 65962.5 requires the California Environmental Protection Agency to develop an updated Cortese List at least annually.

As described in Section 3.9.1, *Environmental Setting*, searches of the SWRCB's GeoTracker and the DTSC's Envirostor databases (May 3, 2018) showed no potentially contaminated sites within the Project area. As such, the Project would have no impact.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the Project result in a safety hazard for people residing or working in the Project area?

f) For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the Project area?

No Impact. The Project is not located within an airport land use plan. The nearest airports or airfields are Travis Air Force Base to the north (9.50 miles), the Rio Vista Municipal Airport to the east (11.20 miles), and the Buchanan Field Airport to the southeast (11 miles). There are no private airstrips located in proximity to the Project area. Therefore, there would be no impact.

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

No Impact. The Project area is in a remote portion of Suisun Marsh. Birds Landing and Grizzly Island roads are public roads; nonetheless, they are sparsely used as they provide minimal public access. Additionally, Project traffic would be temporary. No public roadways that would be used as emergency response or evacuation routes would be closed as a result of the Project; thus, the Project would not interfere with emergency response or evacuation plans. Therefore, there would be no impact.

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Less than Significant with Mitigation. The Project area is potentially subject to wildland fires in dry areas (CA Dept of Forestry 2018). The existing work areas would be composed of 200-foot by 300-foot pads, at both GIWS and BLWS, providing a buffer between the workers and equipment and surrounding vegetation. The Suisun Marsh in the Project area is flat and open, providing visibility over long distances allowing workers identify a potential approaching fire. Additionally, the rolling hills near the BLWS do not interfere with visibility in a substantial manner. In case of a wildland fire, there are various locations along the Project area roads that are wide enough to be used as safe-zones.

Project construction would include the operation of heavy machinery that may lead to sparks, which may trigger wildland fires. This would be a potentially significant impact and **MM HAZ-3**, will be required.

MM HAZ-3. Wildland Fire Prevention. During project construction, the HDD work pad areas shall be cleared of any dead vegetation that could serve as potential fuels. The clearing shall include vegetation trimming within a few inches of the ground. No grading shall take place as part of the vegetation clearing. Additionally, firefighting equipment shall be kept in functioning condition on the Project sites. Such equipment shall include at a minimum hand held fire extinguishers. If work is to be performed during the dry season, workers shall be informed of wildland fire risk and measures to prevent it via brochures and worker awareness training.

With implementation of **MM HAZ-3**, project impacts would be lessened to a less than significant level.

3.9.4 Mitigation Summary

Implementation of the following MMs would reduce potential Project-related impacts related to the potential release of Hazardous Materials to less than significant:

- MM HAZ-1: Pipeline Cleaning and Containment
- MM HAZ-2: Asbestos Handling Procedures
- MM HAZ-3: Wildland Fire Prevention

3.10 HYDROLOGY AND WATER QUALITY

HYDROLOGY AND WATER QUALITY – Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off site?	☐	☒	☐	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site?	☐	☐	☐	☒
e) 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?	☐	☐	☐	☒
f) Otherwise substantially degrade water quality?	☐	☒	☐	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☒	☐
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☒	☐
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Result in inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

3.10.1 Environmental Setting

Suisun Marsh is part of the San Francisco Estuary and is the largest contiguous brackish marsh on the West Coast. Fresh water from the rivers and numerous smaller tributaries flows out through the Sacramento and San Joaquin Rivers, Suisun Bay, San Pablo Bay, the San Francisco Estuary and ultimately to the Pacific Ocean.

Freshwater inflows, tidal flows, and their interactions largely determine variations in the hydrology of the San Francisco Estuary, including Suisun Marsh. The normal tidal range within Suisun Marsh is approximately 5 feet. Tidal velocities in Suisun Marsh channels and sloughs, which depend on the size of the channel cross section and the upstream tidal volume (upstream area), are generally moderate, with maximum velocities of between 1 and 2 feet per second (U.S. Bureau of Reclamation [USBR] et al. 2013).

Most tidal channels in Suisun Marsh are bordered by levees that protect managed wetlands. These levees are often a mix of dredged sediment and artificial materials such as riprap and often have fringing vegetation. Montezuma Slough is the major tidal channel within Suisun Marsh, and is located east of the Project. Other channels in the vicinity of the Project include Roaring River Slough and Grizzly Slough.

To meet the salinity requirements stipulated by the SWRCB to support “beneficial uses” in Decision 1485, DWR (for the California State Water Project) and USBR (for the federal Central Valley Project) have constructed several facilities in Suisun Marsh to provide lower salinity water to managed wetlands. The Roaring River Distribution System facility is located near the eastern end of Montezuma Slough and provides seasonal water management needs to approximately 5,000 acres of managed wetlands on Simmons, Hammond, Van Sickle, Wheeler, and Grizzly Islands by providing lower salinity water from Montezuma Slough. It is designed to tidally pump water from Montezuma Slough through a bank of eight 60-inch culverts equipped with fish screens that are maintained and operated by DWR.

The Montezuma Slough Salinity Control Gates, which began operating in 1989, span Montezuma Slough near the Roaring River intake and are periodically operated from October to May to meet the more recently established salinity standards set by Decision 1641 to block the salty flood tide from Grizzly Bay, but allow passage of the freshwater ebb tide from the mouth of the Sacramento–San Joaquin Delta.

3.10.2 Regulatory Setting

Federal and state laws and regulations pertaining to hydrology and water quality and relevant to the Project are identified in Appendix A. The Project area is within the jurisdiction of the RWQCB, which implements the Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) (RWQCB 2017). The Basin Plan designates

beneficial uses for specific surface water and groundwater resources, establishes water quality objectives to protect those uses, and sets forth policies to guide the implementation of programs to attain the objectives. Beneficial uses for Montezuma Slough include commercial fishing, estuarine habitat, fish migration, preservation of rare and endangered species, recreational water uses (contact and noncontact), wildlife habitat uses, fish spawning, warm freshwater habitat, and navigation.

Pursuant to the Porter-Cologne Act, the RWQCB issues permits for discharges to land or surface waters. The limitations placed on the discharge are designed to ensure compliance with water quality objectives in the Basin Plan. To obtain a permit, the discharger must submit a Report of Waste Discharge and the requirements of CEQA must be met. Additionally, all dischargers must submit monitoring reports. Construction activities that disturb 1 or more acres of land surface are regulated under the Statewide National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Order No. 2012-0006-DWQ) (SWRCB 2012). This general permit also covers construction activities associated with Linear Underground/Overhead Utility Projects such as installation of underground pipelines, trenching, excavation, boring and drilling, and stockpile/borrow locations. To obtain coverage under the Construction General Permit, the legally responsible person must file a notice of intent (NOI), stormwater pollution prevention plan (SWPPP), risk assessment, site map(s), and drawings.

The SWRCB's Water Quality Order 2003-003-DWQ, Statewide General Waste Discharge Requirements for Discharges to Land with a Low Threat to Water Quality (SWRCB 2003), addresses potential discharges of low water quality-threat wastewater. Discharges that may be covered include hydrostatic test water and excavation dewatering. In accordance with this permit, all dischargers must comply with all applicable provisions in the Project area's Basin Plan, including any prohibitions and water quality objectives for surface water and groundwater. Discharges must be made to land owned or controlled by the discharger, unless the discharger has a written lease or agreement with the landowner. An NOI must be filed with the regional board (in this case the RWQCB) prior to any wastewater discharge to land that would have low water quality-threat discharges. Compliance with permit terms, including any monitoring, and filing a notice of termination upon completion of the activity are also required.

3.10.3 Impact Analysis

a) Violate any water quality standards or waste discharge requirements?

Less than Significant with Mitigation. Project implementation, including the establishment of construction work areas and staging areas, placement of rock on existing access roads, and installation of the pipeline could potentially discharge sediments or pollutants into adjacent waters.

Construction activities at the BLWS would include the creation of the work area using construction mats as needed to provide a level and stable working surface. In the absence of proper controls, these construction activities could result in erosion and sedimentation or the discharge of pollutants. Additionally, there would be a staging area located near the GIWS to support construction activities, and construction materials would be temporarily stored in these areas. Spills of diesel fuel, hydraulic oil, and lubricants could occur, potentially impacting water quality, while drilling fluids/muds could be released during drilling in the event of an inadvertent return (see Section 3.9, *Hazards and Hazardous Materials*), as such this impact would be potentially significant and **MM HYDRO 1** will be required.

As outlined in **MM HYDRO-1**, the Project would include the preparation and implementation of a stormwater pollution prevention plan (SWPPP) that would be consistent with the Statewide Construction General Permit (Order No. 2012-0006-DWQ). The SWPPP would detail the construction-phase erosion and sediment control best management practices (BMPs) and the housekeeping measures for control of contaminants other than sediment. Erosion control BMPs would include source control measures such as wetting of dry and dusty surfaces to prevent fugitive dust emissions, preservation of existing vegetation, and effective soil cover (e.g., geotextiles, straw much, hydroseeding) for inactive areas and finished slopes to prevent sediments from being dislodged by wind, rain, or flowing water. Sediment control BMPs would include measures such as installation of fiber rolls and sediment basins to capture and remove particles that have already been dislodged.

The SWPPP would establish good housekeeping measures such as construction vehicle storage and maintenance, handling procedures for hazardous materials, and waste management BMPs, which would include procedural and structural measures to prevent the release of wastes and materials used at the site. The SWPPP would also detail spill prevention and control measures to identify the proper storage and handling techniques of fuels and lubricants, and the procedures to follow in the event of a spill.

The new pipe segment would be hydrostatically tested before and after installation using potable water from the City of Fairfield or other supplier. The same water would be used for both tests. Discharge of this water to land or water could affect water quality.

Once hydrostatic testing of the new pipeline is complete, the water would be transferred to water storage tanks, tested, and discharged or disposed as follows:

- If results from testing allow, the water would either be discharged to surrounding waters in accordance with the requirements of the Statewide Construction General Permit for Stormwater Discharges Associated with Construction Activity or discharged to land in accordance with the State Water

Resources Control Board's Statewide National Pollutant Discharge Elimination System General Permit (Order 2003-0003-DWQ) for low-threat water quality discharges to land.

- If a permit cannot be obtained, or if testing indicates the water contains contaminants in excess of permitted levels, the water would be hauled off site for disposal at a permitted commercial disposal facility.

MM HYDRO-1: Stormwater Pollution Prevention Plan (SWPPP). A SWPPP consistent with the Statewide National Pollution Discharge Elimination System Construction General Permit (Order No. 2012-0006-DWQ) shall be developed and implemented. The SWPPP shall detail the construction-phase erosion and sediment control best management practices (BMPs) and the housekeeping measures for control of contaminants other than sediment. Erosion control BMPs shall include source control measures such as wetting of dry and dusty surfaces to prevent fugitive dust emissions, preservation of existing vegetation, and effective soil cover (e.g., geotextiles, straw much, hydroseeding) for inactive areas and finished slopes to prevent sediments from being dislodged by wind, rain, or flowing water. Sediment control BMPs shall include measures such as installation of fiber rolls and sediment basins to capture and remove particles that have already been dislodged. The SWPPP shall establish good housekeeping measures such as construction vehicle storage and maintenance, handling procedures for hazardous materials, and waste management BMPs, which shall include procedural and structural measures to prevent the release of wastes and materials used at the site. The SWPPP shall also detail spill prevention and control measures to identify the proper storage and handling techniques of fuels and lubricants, and the procedures to follow in the event of a spill.

With implementation of existing regulations and **MM HYDRO-1**, the Project would have a less than significant impact on water quality.

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

No Impact. The Project is a short-term construction project that would not use groundwater (potable water from the City of Fairfield or other supplier would be used for hydrostatic testing). The Project may require dewatering of the trench for the HDD entry pits in the GIWS and BLWS; however, because this would be temporary and of short duration, groundwater supplies would not be impacted. There are no elements of the Project that would interfere with groundwater recharge; therefore, there would be no 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, in a manner which would result in substantial erosion or siltation on or off site?

Less than Significant with Mitigation. The Project would not alter the drainage pattern of the Project area. Erosion and siltation of adjacent waters would be minimized by the implementation of a SWPPP, as outlined in **MM HYDRO-1**, and adherence with regulatory permit conditions; therefore, the impact would be less than significant.

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off site?

No Impact. The Project would not alter existing drainage patterns or increase the rate or amount of stormwater runoff in a manner that would result in flooding on or off site; therefore, there would be no impact.

e) 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?

No Impact. The Project area does not drain into any municipal stormwater drainage system. The Project would not create or contribute runoff water that would exceed the capacity of such systems nor would it provide substantial sources of polluted runoff. Therefore, there would be no impact.

f) Otherwise substantially degrade water quality?

Less than Significant with Mitigation. Drill fluids/muds could be released during drilling in the event of an inadvertent return (a condition where drill fluid/mud is released through fractured bedrock into the surrounding rock and sand and travels to the surface). As such, potential impacts on water quality could be potentially significant and **MM HYDRO-1** and **MM HYDRO-2** will be required. As part of the mitigation measure, an inadvertent-return contingency plan for HDD would be prepared and implemented. The plan would include contingencies for inadvertent return conditions, including stop work criteria. Engineering design methods such as use of drill casings would also minimize the potential for inadvertent returns during the drilling by isolating the drilling operation from the less consolidated surface layers, and would ensure that drill fluids/muds are captured and recirculated. Project activities with the potential to degrade water quality are discussed and addressed in Checklist Item ***a)*** above, along with **MM HYDRO-1**. With implementation of existing regulation and **MM HYDRO-1** and **MM HYDRO-2**, the Project would have a less than significant impact.

MM HYDRO-2: Inadvertent-Return Contingency Plan. At least 2 weeks before Project implementation, CPL shall submit to CSLC staff for review and approval and shall subsequently implement in the event of an inadvertent return, a final inadvertent-return contingency plan for horizontal directional drilling. The inadvertent-return contingency plan shall ensure that preventive and responsive measures can be implemented by the contractor and shall include:

- Design protocols to be implemented for the protection of sensitive cultural and biological resources; and
- Design protocols to require a geotechnical engineer or qualified geologist to make recommendations regarding the suitability of the formations to be bored to minimize the potential for inadvertent return conditions.

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?

Less than Significant Impact. The Project does not include housing. The Project includes the relocation of a valve station; however, the structure would not impede or redirect flood flow. Therefore, the Project would have a less than significant impact.

i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

No Impact. Due to the nature of the Project, people and structures would not be exposed to a significant risk of loss, injury, or death due to flooding risks associated with dam or levee failure; therefore, there would be no impact.

j) Expose people or structures to a significant risk of loss. Injury or death involving inundation by seiche, tsunami, or mudflow?

No Impact. The Project area is located in the eastern portion of Suisun Bay, which is not susceptible to tsunamis (Solano County 2012). Additionally, because of the relatively level topography of the site and surroundings, the potential for seiches or damaging mudflows are not expected to be significant hazards in the Project area. As a result, there would be no impacts from a seiche, tsunami, or mudflow.

3.10.4 Mitigation Summary

Implementation of the following MM would reduce the potential for Project-related impacts related to Hydrology and Water Quality:

- MM HYDRO-1: Stormwater Pollution Prevention Plan
- MM HYDRO-2: Inadvertent-Return Contingency Plan

3.11 LAND USE AND PLANNING

LAND USE AND PLANNING – Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☒	☐	☐
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

3.11.1 Environmental Setting

The replacement pipe would reside within existing CPL rights-of-way or easements granted by landowners, including the CSLC. Some easements would be modified to increase widths or allow temporary work access for the Project. Temporary structures related to work sites and the proposed pipe string staging would be located north of the Birds Landing and Grizzly Island Roads, and would occur on a mix of private lands, state lands, and the Grizzly Island Wildlife Area (which is under the jurisdiction of CDFW), and land managed by the Suisun Marsh Preservation Agreement. Land within areas traversed by the Project consists primarily of lands managed for wildlife, hunting, and similar uses.

Under the Solano County General Plan, the GIWS has a Marsh land use designation, while the BLWS and the pipe layout string area has an Agriculture land use designation. GIWS is zoned Marsh Protection (MP) under the Solano County Zoning; while the BLWS and the pipe string layout area are zoned as Suisun Marsh Agricultural (ASM-160 Zoning District).

The GIWS is located within the Suisun Marsh Primary Management Area, while the BLWS and the pipe string layout areas are located within the Secondary Management area. The designation permits aquatic and wildlife habitat; marsh-oriented recreational uses; agricultural activities compatible with the marsh environment and marsh habitat; educational and scientific research; educational facilities supportive of and compatible with marsh functions; and restoration of historic tidal wetlands.

The GIWS is located within the Resource Conservation Overlay, which identifies and protects areas in the County with special resource management needs. This

designation recognizes the presence of certain important natural resources in the County while maintaining the validity of underlying land use designations. The overlay protects resources by requiring study of potential effects if development is proposed in these locations and providing mitigation to support urban development in cities.

3.11.2 Regulatory Setting

Federal and state laws and regulations pertaining to land use and planning and relevant to the Project are identified in Appendix A. At the local level, Solano County land use plans and regulations applicable to the Project include: the Solano County General Plan (in particular the Suisun Marsh Policy Addendum), zoning regulations, and Suisun Marsh Local Protection Program. Specific goals, objectives, and policies from the above-mentioned plans applicable to land use are discussed below.

Infrastructure and utilities are addressed in the Public Facilities and Services chapter of the Solano County General Plan (Solano County 2008b). The General Plan's Land Use Element includes the following goals and policies of relevance to this Project:

- **LU.G-4:** Encourage land use development patterns and circulation and transportation systems that promote health and wellness and minimize adverse effects on agriculture and natural resources, energy consumption, and air quality.
- **LU.P-35:** Promote land use and design standards that create cleaner air and water and safer streets.

The Suisun Marsh Policy Addendum to the Solano County General Plan contains the Solano County component of the Suisun Marsh Local Protection Program, which was certified by BCDC on November 3, 1982, and amended on February 2, 1999 (Solano County 2008a). Solano County has initiated an update of its component of the Suisun Marsh Local Protection Program, but these have not yet been adopted. Of relevance to this Project, the Suisun Marsh Policy Addendum, Policy 2, states that underground pipelines, wires, and cables should be permitted in the Suisun Marsh if no alternative route is feasible and they are designed and constructed to meet the following standards:

a. Installation of pipes, wires, and cables (particularly local service utilities) are located within existing road rights-of way whenever possible.

b. All pipelines passing through the Marsh meet Pipeline Safety Regulations of the U.S. Department of Transportation regarding pipe thickness, pressure limiting devices, emergency shut-down valves and other safety design criteria.

c. Whenever construction occurs within the wetlands, it is confined to the dry months (generally April 15 through October 15) to minimize disturbance of wetland vegetation, wintering migratory waterfowl, other water-associated birds, and nesting resident birds.

d. Wide-track or amphibious construction equipment is used to reduce the bearing weight of the equipment unless pads are laid on the wetland area to support the heavy machinery and to prevent it from sinking into the soft marsh soil. Equipment movement to the construction site within the Marsh is limited to roads in the immediate vicinity of the pipeline, wire, or cable being installed to minimize disruption of Marsh wildlife habitat. The construction site is well defined and clearly marked so that workers do not disturb adjacent Marsh areas.

e. When a trench is cut to install a pipe, wire, or cable, excavation is only slightly wider than the utility line to be buried to minimize wetland disturbance.

f. When pipelines only are being installed across wetlands, the “trench and push” method of construction is employed. This construction method, the least damaging to the wetlands because it avoids the need for heavy equipment alongside the trench to install the pipe, involves filling the excavated trench with water and pushing or pulling the assembled pipe through the Marsh trench. Recent pipeline installations in the Suisun Marsh, conducted under a [BCDC] permit, indicate that this is a practical method in the Marsh.

g. Tidal marsh and managed wetlands disturbed during pipeline, wire, or cable construction will generally revegetate naturally within one growing season if the top layer of soil and vegetation is stockpiled when the trench is first dug and replaced on top of the backfilled trench to facilitate revegetation. If a completed trench is not revegetated within one growing season in a managed wetland, the disturbed area must be reseeded with appropriate native plant seed.

h. In water areas (bays and sloughs), dredging and pipe and cable installation is scheduled so as to avoid major fish migrations.

The GIWS is zoned Marsh Protection (MP) under the Solano County Zoning Ordinance, the purpose of which is to preserve and enhance the quality and diversity of marsh habitats, within which marsh-oriented uses will be encouraged to the exclusion of such other uses of land that may be in conflict with the long-term preservation and protection of marsh areas. Infrastructure uses of pipelines, transmission lines, or distribution lines in right-of-ways are allowable uses within the MP zone.

Temporary construction and infrastructure use of “temporary facilities for the transfer of materials from shore to barge” require a use permit. In addition, any development within Suisun Marsh, as defined by Public Resources Code section 29114, will be subject to obtaining a Marsh Development Permit pursuant to the Suisun Marsh Preservation Act of 1977.

The BLWS near Birds Landing Road is zoned as Suisun Marsh Agricultural (ASM-160 Zoning District) which purpose is to preserve lands best suited for permanent agricultural use while limiting certain intensive agricultural practices which may conflict

with adjoining sensitive lands. Another purpose is to assure the retention of upland and lowland grasslands adjacent to the Suisun Marsh in uses compatible with its protection. In regard to infrastructure uses, a pipeline, transmission or distribution lines in the right of way are allowed by right.

3.11.3 Impact Analysis

a) Physically divide an established community?

No Impact. The Project is a short-term construction project in an undeveloped area and would not involve construction of any aboveground structures which would physically divide an established community; therefore, there would be no impact.

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

Less than Significant Impact with Mitigation. The Project would replace a portion of an existing, aged underground pipeline, which, over the long term, would decrease the likelihood of future leaks and maintain the natural assets of the Project area. Project construction methods, as described in Section 2.0, *Project Description*, are consistent with Policy 2 of the Suisun Marsh Policy Addendum. Construction activities would result in short-term impacts of temporary structures related to work sites and the proposed pipe string staging would be located north of the Birds Landing and Grizzly Island Roads including placement of construction vehicles, equipment, and materials. Additionally, Project areas would be restored to pre-Project conditions at the end of construction.

The use of HDD to install a new segment of pipe under the marsh reduces the need for separate repairs using open trenching in the marsh. The Project schedule is generally based on a 7-days a week, between April and July 2019, which avoids high recreational use periods (July through February). Exceptions to this general schedule may occur as described in Section 2.4, *Construction Activities and Schedule*.

The Project would require additional permits/approvals, as listed in Section 1.7, *Approvals and Regulatory Requirements*, that would be obtained prior to the start of construction. Additionally, with implementation of mitigation measures **MM BIO-1** through **MM BIO-4,** as outlined in Section 3.4, *Biological Resources*, and compliance with any conditions required by other agencies with jurisdiction over the Project, the Project would be consistent with applicable plans, policies, and regulations. Therefore, with implementation of these measures, this impact would be less than significant.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

No Impact. No adopted habitat or natural community conservation plans are applicable to the Project area. The Solano County Water Agency (2012) released a draft Solano Multispecies Habitat Conservation Plan for public review in 2012; as drafted, the Project would not conflict with this Plan. Therefore, the Project would have no impact.

3.11.4 Mitigation Summary

Implementation of the following MMs would reduce the potential for Project-related impacts to Land Use and Planning to less than significant:

- MM BIO-1: Environmental Awareness Training
- MM BIO-2: Biological Monitoring and Surveying
- MM BIO-3: Wildlife Exclusion Fencing
- MM BIO-4: Revegetation and Monitoring Plan

3.12 MINERAL RESOURCES

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

3.12.1 Environmental Setting

As shown in Figure RS-4 of the Solano County General Plan, there are no identified mineral resources within the Project area (Solano County 2008c). In the GIWS, an existing work pad area was previously constructed using clean fill material to provide a stable and level work surface for construction equipment and materials. Approximately 31,000 tons of 6- to 8-inch rock and 12,000 tons of 3/4-inch base rock were used to create the work pad. The rock fill originated from the Dutra Materials quarry in San Rafael, Marin County.

At the BLWS, a work pad would be created by placing interlocking construction mats directly on the ground surface. Vegetation trimming may be necessary before placement of the mats, but the ground surface would not be cleared to bare ground or graded. The mats would provide a stable work surface to accommodate the drilling rig and other equipment and materials on the pad, and no rock would be necessary.

Upon Project completion, the rock used at GIWS would be removed from the site and reused or resold.

3.12.2 Regulatory Setting

Federal and state laws and regulations pertaining to mineral resources and relevant to the Project are identified in Appendix A. The Dutra Materials quarry (Mine ID No. 91-21-008) is listed in the “AB 3098 List” published by the California Department of Conservation’s Office of Mine Reclamation (2018), which means it is identified as a mine regulated under the Surface Mining and Reclamation Act that meets provisions set forth under Public Resources Code section 2717, subdivision (b). At the local level, two Solano County General Plan mineral resources policies are relevant to the Project (Solano County 2008c):

- **RS.P-33:** The County shall preserve, for future use, areas with important mineral resources by preventing residential, commercial, and industrial development that would be incompatible with mining practices to the extent feasible.
- **RS.P-34:** Ensure that mineral extraction operations are performed in a manner compatible with land uses on the site and surrounding area and do not adversely affect the environment. At the end of such operations, ensure that the site is restored to conform with Surface Mining and Reclamation Act requirements and to a use compatible with surrounding land uses.

3.12.3 Impact Analysis

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?

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 area consists of undeveloped marshes and disturbed farmland, and no known mineral resources are located within or near the Project area; therefore, there would be no impact.

3.12.4 Mitigation Summary

The Project would have no impacts on Mineral Resources; therefore, no mitigation is required.

3.13 NOISE

NOISE – Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Result in exposure of persons to or generation of excessive ground-borne vibration or ground- borne noise levels?	☐	☐	☒	☐
c) Result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?	☐	☐	☐	☒
d) Result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the Project expose people residing or working in the Project area to excessive noise levels?	☐	☐	☐	☒

3.13.1 Environmental Setting

This section discusses impacts of Project-generated noise on humans. Noise impacts on biological resources are analyzed in Section 3.4, *Biological Resources*.

Basics of Environmental Acoustics and Vibration

Sound, Noise, and Acoustics

Sound is the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air). Noise is defined as sound that is unwanted (i.e., loud, unexpected, or annoying). Acoustics is the physics of sound. The amplitude of pressure waves generated by a sound source determines the perceived loudness of that source. A logarithmic scale is used to describe the SPL in terms of dB. The threshold of human hearing (near-total silence) is approximately 0 dB. A doubling of sound energy corresponds to an increase of 3 dB. In other words, when two sources at

a given location each produce sound of the same loudness, the resulting sound level at a given distance from that location is approximately 3 dB higher than the sound level produced by only one of the sources. For example, if one automobile produces a sound pressure level of 70 dB when it passes an observer, two cars passing simultaneously do not produce 140 dB; rather, they combine to produce 73 dB.

The perception of loudness can be approximated by filtering frequencies using the standardized A-weighting network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. All noise levels reported in this section are in terms of A-weighting.

As discussed above, doubling sound energy results in a 3-dB increase in sound. In typical noisy environments, noise-level changes of 1 to 2 dB are generally not perceptible by the healthy human ear; however, people can begin to detect 3-dB increases in noise levels. An increase of 5 dB is generally perceived as distinctly noticeable, and a 10-dB increase is generally perceived as a doubling of loudness. Four sound level descriptors are commonly used in environmental noise analysis:

- **Equivalent sound level (L_{eq}):** An average of the sound energy occurring over a specified time period. In effect, the L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound that actually occurs during the same period. The 1-hour, A-weighted equivalent sound level (L_{eq}[h]) is the energy average of A-weighted sound levels occurring during a 1-hour period.
- **Maximum sound level (L_{max}):** The highest instantaneous sound level measured during a specified period.
- **Day-night average level (L_{dn}):** The energy average of A-weighted sound levels occurring over a 24-hour period, with a 10-dB penalty applied to A-weighted sound levels occurring during nighttime hours (10 p.m. to 7 a.m.).
- **Community noise equivalent level (CNEL):** Similar to L_{dn}, CNEL is the energy-average of the A-weighted sound levels occurring over a 24-hour period, with a 10 dB penalty applied to A-weighted sound levels occurring during the nighttime hours (10 p.m. to 7 a.m.) and a 5 dB penalty applied to the A-weighted sound levels occurring during evening hours (7 p.m. to 10 p.m.). The CNEL is usually within 1 dB of the L_{dn}. As it is easier to compute and of more common use, the L_{dn} is used as the long-term noise measure in this study.

Sound from a localized source (i.e., point source) propagates uniformly outward in a spherical pattern, and the sound level attenuates (decreases) at a rate of 6 dB for each doubling of distance from a point/stationary source. Roadways and highways and, to some extent, moving trains consist of several localized noise sources on a defined path;

these are treated as “line” sources, which approximate the effect of several point sources. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source. Therefore, noise from a line source attenuates less with distance than noise from a point source with increased distance.

Ground-borne Vibration

Ground-borne vibration is energy transmitted in waves through the ground. Vibration attenuates at a rate of approximately 50 percent for each doubling of distance from the source. This approach considers only the attenuation from geometric spreading and tends to provide for a conservative assessment of vibration level at the receiver. Vibration is an oscillatory motion that can be described in terms of the displacement, velocity, or acceleration. Vibration is typically described by its peak and root-mean-square (RMS) amplitudes. The RMS value can be considered an average value over a given time interval. The peak vibration velocity is the same as the “peak particle velocity” (PPV), generally presented in units of inches per second. PPV is the maximum instantaneous positive or negative peak of the vibration signal and is generally used to assess the potential for damage to buildings and structures. The RMS amplitude is typically used to assess human annoyance to vibration.

3.13.1.1 Existing Noise Conditions

The Project area is located in an undeveloped area, with the closest community located approximately 5.60 miles from GIWS. There are two residences located in the vicinity of the Project area. One is located approximately 0.5 mile east of the BLWS, while the other one is located 0.5 mile west of the BLWS.

Ambient noise levels were measured near existing noise-sensitive uses. A short-term (15-minute) measurement of ambient noise level was conducted at a site located approximately 9,000 feet southeast of GIWS on March 10, 2014. The existing noise environment was dominated by local and distant traffic and natural sources (e.g., wind, birds) and was measured at 50 dBA L_{eq} or less. Given the rural/agricultural nature of the land in the Project vicinity, ambient noise levels are expected to be quite low—at or below 50 dBA L_{eq}, 45 dBA L_{eq}, and 40 dBA L_{eq} during the daytime, evening, and nighttime hours, respectively.

3.13.2 Regulatory Setting

Federal and state laws and regulations pertaining to noise and relevant to the Project are identified in Appendix A. Various entities address this issue area at the state and local level, as discussed below.

3.13.2.1 Caltrans

Caltrans has developed guidelines to assess the significance of vibration produced by transportation and construction sources (Table 3.13-1). These thresholds address the subjective reactions of people to both short-term vibration (e.g., from temporary construction activities) and long-term/permanent vibration (e.g., from transit operations).

Table 3.13-1. Caltrans Guidelines for Vibration Annoyance

Human Response	Impact Levels, VdB re 1 µin/sec (PPV, in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely Perceptible	80 (0.040)	68 (0.010)
Distinctly Perceptible	96 (0.250)	80 (0.040)
Strongly Perceptible	107 (0.900)	88 (0.100)
Severe	114 (2.000)	100 (0.400)

Source: Caltrans 2013.
Acronyms: µin/sec = microinches per second; Caltrans = California Department of Transportation; in/sec = inches per second; PPV = peak particle velocity; re: = referenced to; VdB = vibration decibels.
Notes: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

3.13.2.2 Solano County

At the local level, the Solano County General Plan's Public Health and Safety chapter contains goals and policies to support the achievement of those goals (Solano County 2015a). Relevant policies include:

- **Policy HS.G-3:** Protect people living, working, and visiting Solano County from the harmful impacts of excessive noise; and
- **Policy HS.G-4:** Protect important agricultural, commercial, and industrial uses in Solano County from encroachment by land uses sensitive to noise (impacts).

Table HS-3 in the County General Plan (see Table 3.13-2) shows acceptable noise levels for various land use categories and is used to determine project noise impacts.

The General Plan provides several types of noise standards in tables. For clarity of reference, this analysis uses the table numbers used in this section rather than the table numbers from the General Plan. County Municipal Code, Chapter 28.1 contains the Solano County Noise Ordinance. According to Table 28.1-40: Noise Level Permissible by Receiving Land Use, the exterior noise level permissible by receiving land use are shown in Table 3.13-3.

Table 3.13-2. Land Use Noise Compatibility Guidelines

Land Use Category	Community Noise Exposure (L_{dn} or CNEL, dBA)			
	Acceptable		Unacceptable	
	Normally[1]	Conditionally[2]	Normally[3]	Clearly[4]
Residential—Low-Density Single Family, Duplex, Mobile Home	<60	55–70	70–75	75+
Residential—Multifamily	<65	60–70	70–75	75+
Transient Lodging—Motel, Hotel	<65	60–70	70–80	80+
Schools, Libraries, Churches, Hospitals, Nursing Homes	<70	60–70	70–80	80+
Auditoriums, Concert Halls, Amphitheaters	–	<70	65+	–
Sports Arena, Outdoor Spectator Sports	–	<75	70+	–
Playgrounds, Neighborhood Parks	<70	–	67.5–75	72.5+
Golf Courses, Riding Stables, Water Recreation, Cemeteries	<75	–	70–80	80+
Office Building, Business Commercial, and Professional	<70	67.5–77.5	75+	–
Industrial, Manufacturing, Utilities, Agriculture	<75	70–80	75+	–

Source: Solano County General Plan, Public Health and Safety Chapter, 2015a.

Acronyms: CNEL = community noise equivalent level; dBA = A-weighted decibel; L_{dn} = day-night average noise level.

Notes:

[1] Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

[2] New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.

[3] New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design. Outdoor areas must be shielded.

[4] New construction or development should generally not be undertaken.

[5] These standards are not applicable for development within the airport compatibility review area. Development in the airport compatibility review area is subject to standards in the applicable airport land use plan.

Table 3.13-3. Noise Level Permissible by Receiving Land Use

Zone	Noise Level (dBA)	
	7 a.m. – 7 p.m.	7 p.m. – 7 a.m.
Agricultural	55	50
Residential	55	50

Noise regulations as they pertain to construction are outlined in Section 28.1-50 as follows:

"(a) Construction or Demolition

(1) Construction and demolition activities within a residential district or within a radius of 500 feet are allowed only during the times specified in Table 28.1-50.

(2) Except as set forth in subsection (5) of this section, the noise created by construction activity shall not cause: a. The noise level to exceed the noise standards specified in Table 28.1-40 of this chapter, for the land use where the measurement is taken, plus 20 dBA, for a period of more than 2 minutes; or b. A maximum noise at the receiving property line of more than 90 dBA at any time.

(3) Any construction that exceeds noise levels established in Sections 28.1-30 or 28.1-40 shall occur between the hours of 9 a.m. and 4 p.m., Monday through Friday.

(4) Construction or demolition activity during the times otherwise prohibited by this section may be allowed as described in this subsection if it is found to be in the public interest.

a. A request for such allowance shall be in writing and shall set forth in detail facts showing that the public interest will be served by the grant of such allowance.

b. If the allowance is being requested in connection with construction or demolition activities to be undertaken in connection with a land division, use permit, or other discretionary entitlement, the request shall be submitted as part of the application for such entitlement and shall be acted upon by the official or decision-making body taking action on such application, after considering the recommendation of the noise control officer.

c. If the allowance is being requested in connection with a building permit, demolition permit, or grading permit and is not in connection with a discretionary entitlement, the request shall be considered and acted on by the

noise control officer before the construction or demolition permit has been issued."

3.13.3 Impact Analysis

a) Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less than Significant Impact. As described in Section 2.0, *Project Description*, construction would include diesel-powered drilling rigs, control units, fluid/mud-cleaner systems, desilters, generators, forklifts, backhoes, a pipe trailer, cranes, de-watering tanks and pumps, and a track excavator. Table 3.13-4 summarizes typical noise levels produced by construction equipment for the Project.

Table 3.13-4. Typical Construction Noise Emission Levels

Equipment		Typical Noise Level (L_{max})/L_{eq}[1]	Acoustical Use Factor
On Land	Dozer	85/81	40
	Backhoe	80/76	50
	Dump Truck	84/80	50
	Crane	81/77	50

Source: Federal Highway Administration 2006.
Notes: L_{eq} = equivalent noise level; L_{max} = maximum instantaneous noise level during a specific period of time
[1] dBA, A-weighted decibel level, measured at 50 feet.

L_{max} sound levels at 50 feet are shown along with the typical acoustic use factor. The acoustic use factor is the percentage of time each piece of construction equipment is assumed to be operating at full power (i.e., its loudest condition) during construction and is used to estimate L_{eq} values from L_{max} values. For example, the L_{eq} value for a piece of equipment that operates at full power 50 percent of the time (acoustical use factor of 50) is 3 dB less than the L_{max} value.

Construction activities at the BLWS and GIWS would occur 7 days a week. Certain activities, such as drilling, reaming, pullback, hydrostatic testing, and pipe tie-ins, would proceed as continuous activities and would require night work. There are two residences located near BLWS, one 0.5 mile east and one 0.5 mile west, both along Birds Landing Road. The residence located 0.5 mile west of the Project site is shielded from the Project site by several low hills, which would provide additional sound barriers. The Solano County Noise Ordinance allows for construction noise to occur between 7 a.m. and 6 p.m. on weekdays and between 8 a.m. and 5 p.m. on Saturdays with construction activities not allowed on Sundays/federal holidays (Solano County Noise Ordinance 2018b). As described above, project construction would take place outside of

the hours allowed by the Solano County Noise Ordinance. The Project applicant would apply for waiver as outlined in Solano County Noise Ordinance Section 28.1-10.

Noise from equipment operations on land was estimated based on the three loudest pieces of equipment likely to operate at the same time. The total noise level for a dozer, backhoe, and dump truck is 87 dBA L_{eq} at 50 feet. Based on a 6dBA reduction for each 50 feet, the sound would be barely perceptible at a distance of 2,640 feet (0.50 mile), which is the distance of the closest residence. Installation of the pipe in the drilled hole (called the “pullback”) would occur during the night. For this activity, the new pipe string would be lifted by crane, which would be the noisiest equipment for the nighttime construction activities. The noise level for a crane is 78 dBA L_{eq} at 50 feet. This corresponds to a sound level of 43.5 dBA L_{eq} at a distance of 2,640 feet, which is the distance to the closest residences.

Therefore, the construction noise would be below applicable daytime and nighttime noise thresholds for residences as outlined in Solano County Noise Ordinance Tables 28.1-30 and 28.1-40.

Construction traffic would utilize the existing roads in the Project area, the staging area locations would be accessible using existing paved, graveled, and dirt roads.

In a worst-case scenario construction traffic would produce traffic noise levels of approximately 51 dB L_{eq} at 50 feet from the centerline of the roadways that would be used by Project-related construction traffic. There are no residences within 50 feet of Grizzly Island Road in the Project area, and only one residence within 50 feet of Birds Landing Road. However, traffic noise exposure at the closest noise-sensitive receivers (residences) to the roadways used by the Project-related construction traffic is not anticipated to increase beyond the applicable County land use compatibility threshold of 60 dB L_{dn} as a result of the construction traffic. Therefore, the impact of construction vehicle movements would be less than significant.

With respect to interior noise impacts, typical residential construction (i.e., wood siding or two-coat stucco, STC 30-31 windows, door weather-stripping and thresholds, exterior wall insulation, composition plywood roof) would be expected to provide an exterior-to-interior noise level reduction of no less than 25 dB with exterior doors and windows closed (USEPA 1974). Therefore, construction noise levels of 70 dB L_{eq} or less at residential building facades would not exceed the interior noise level standard of 45 dB (70 dB - 25 dB = 45 dB). As noted above the construction noise levels from the two work areas would be well below 70 dB L_{eq} at residential building facades (Table 3.13-2). Therefore, this impact would be less than significant.

b) Result in exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels?

Less than Significant Impact. The Transit Noise and Vibration Impact Assessment (Federal Transit Administration [FTA] 2006) and Transportation- and Construction-Induced Vibration Guidance Manual (Caltrans 2013) are two seminal works on the analysis of ground-borne noise and vibration relating to transportation- and construction-induced vibration. The Project is not subject to FTA or Caltrans regulations; however, these documents serve as useful tools for evaluating vibration impacts. For this reason, they are used to assess the vibration impacts of the Project. Caltrans guidelines recommend that a standard of 0.2 inch per second PPV not be exceeded for the protection of normal residential buildings (Caltrans 2013). With respect to human response within residential uses (i.e., annoyance, sleep disruption), the FTA (2006) recommends a maximum acceptable vibration standard of 80 vibration decibels (VdB).

No permanent increase in ground-borne vibration would result from the Project. Project construction may result in varying degrees of temporary ground vibration, depending on the specific equipment used and operations involved. Ground-borne vibration levels caused by various types of equipment are summarized in Table 3.13-5.

Table 3.13-5. Typical Construction Equipment Vibration Levels

Equipment	PPV at 25 feet (in/sec)	Approximate L_V at 25 feet
Haul Trucks	0.076	86
Large Bulldozer	0.089	87
Caisson Drilling	0.089	87
Jackhammer	0.035	79
Small Bulldozer	0.003	58
Pile Driver (Impact; typical)[1]	0.644	104

Source: Federal Transit Administration (FTA) 2006.
Acronyms: in/sec = inches per second; L_V = velocity level in decibels (VdB) referenced to 1 microinch per second and based on the root mean square velocity amplitude; PPV = peak particle velocity.
Note:
[1] No available information for pneumatic pipe ram. Worst case scenario of impact pile driving was conservatively assumed in this analysis.

Project construction-related vibration would result from the use of a pneumatic pipe ram and the use of heavy equipment for drilling and excavation. These activities would produce a maximum vibration level of approximately 112 VdB (1.518 inch per second PPV) at a distance of 25 feet (which is the reference vibration level for the operation of an impact pile driver [upper range] [FTA 2006; Caltrans 2013]). The distance between proposed construction activities and the closest acoustically vibration-sensitive use would be approximately 2,560 feet (the distance to the nearest residence at BLWS). Assuming a standard reduction of 9 VdB per doubling of distance (FTA 2006), the

Project-related construction vibration level at the sensitive receivers would be approximately 0.024 inch per second PPV or 76 VdB. This is below the recommended threshold of significance of 80 VdB noted above (Table 3.13-1). Therefore, this impact would be less than significant.

c) Result in a substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the project?

No Impact. The Project involves short-term construction activities and would not introduce any permanent sources of noise or alter the local environment, such as by increasing the noise production/exposure associated with existing, permanent sources of noise in the Project area. Therefore, there would be no impact.

d) Result in a substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the project?

Less than Significant Impact. As discussed above, the existing noise environment in the Project area is dominated by local and distant traffic and natural sources (e.g., wind, birds). The measured ambient noise level in the Project area was 50 dBA L_{eq} or less. Given the existing rural and agricultural land uses in the area, ambient noise levels at the existing rural residential properties in the vicinity of the Project area are expected to be approximately 50 dBA L_{eq}, 45 dBA L_{eq}, and 40 dBA L_{eq}, respectively, during the daytime (7 a.m. to 7 p.m.), evening (7 p.m. to 10 p.m.), and nighttime (10 p.m. to 7 a.m.) hours. However, no noise-sensitive uses are within the Project area. The nearest residential location is along Birds Landing Road at approximately 0.5-mile (2,640 feet) east of BLWS. The ambient noise levels at this residential area along Birds Landing Road is expected to be above 50 dBA L_{eq}, 45 dBA L_{eq}, and 40 dBA L_{eq}, respectively, during the daytime (7 a.m. to 7 p.m.), evening (7 p.m. to 10 p.m.), and nighttime (10 p.m. to 7 a.m.) hours.

As stated above, Project-related construction noise levels at 2,640 feet (the distance to the closest residences from BLWS), would be up to 43.5 dBA L_{eq}. These levels of noise are well below the conservatively assumed ambient noise levels of 55 dBA L_{eq}, 50 dBA L_{eq}, and 45 dBA L_{eq}, during the daytime (7 a.m. to 7 p.m.), evening (7 p.m. to 10 p.m.), and nighttime (10 p.m. to 7 a.m.) hours, respectively. Therefore, this impact would be less than significant.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. The Project site is not located within 2 miles or in the vicinity of a public airport or private airstrip. Also, the Project would not involve any aircraft uses for construction or operations, affect any airport or airstrip operations, or expose people on or off site to excessive aircraft noise levels. Therefore, there would be no impact.

3.13.4 Mitigation Summary

The Project would not result in significant Noise impacts; therefore, no mitigation is required.

3.14 POPULATION AND HOUSING

POPULATION AND HOUSING – Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	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?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

3.14.1 Environmental Setting

According to the US Census Bureau, Solano County had a population of 445,458 people in 2017 with an average household size of 2.88 (US Census Bureau 2018). There are two residences located near the Project area along Birds Landing Road, approximately 0.5 mile east and 0.5 mile west of the BLWS in Solano County. The Solano County cities of Benicia, Suisun City, Fairfield, and Rio Vista generally surround the Project area, the closest of which (Rio Vista) lies approximately 11.25 miles southeast of the Project area.

3.14.2 Regulatory Setting

No federal or state laws relevant to this issue area are applicable to the Project. At the local level, the Solano County General Plan Housing Element (Solano County 2015b) addresses housing needs in the unincorporated areas of the County surrounding the Project site; however, because the Project is a short-term pipeline replacement project, there are no relevant goals, objectives, or policies applicable to Project activities.

3.14.3 Impact Analysis

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?

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

No Impact. The Project includes the installation of an underground pipeline in an undeveloped area. The Project is short-term and would not provide new housing or long-term employment. There is no housing located in the Project area and the Project would not include the construction of any housing. Short-term construction employment opportunities would be available, many of which would be for persons with specialized skills (e.g., equipment operators) that are expected to come from the Project region. Because the Project is a short-term pipeline replacement project that would take place within Suisun Marsh, it would not displace existing housing or people, necessitating the construction of replacement housing elsewhere. Therefore, the Project would have no impact.

3.14.4 Mitigation Summary

The Project would have no impacts on Population and Housing; therefore, no mitigation is required.

3.15 PUBLIC SERVICES

PUBLIC SERVICES	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☐	☒
Police Protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

3.15.1 Environmental Setting

Project area service providers are listed below in Table 3.15-1.

Table 3.15-1. Summary of Public Service Providers

Service	Provider(s)
Fire Protection	Suisun Fire Protection District (FPD), Montezuma FPD, and Cordelia FPD
Police Protection	Solano County Sheriff's Department
Schools	Fairfield-Suisun Unified School District
Parks	Solano County Parks
Other: Maritime Law Enforcement	Solano County Sheriff's Marine Patrol Program

3.15.1.1 Fire Protection

The California Department of Forestry and Fire Protection (CAL FIRE) provides fire protection to several unincorporated communities in Solano County. The Project area is primarily within the jurisdiction of Suisun Fire Protection District (FPD). The eastern and western portions of Suisun Marsh are serviced by the Montezuma FPD and Cordelia FPD, respectively. The Montezuma FPD also services the town of Birds Landing. The Suisun FPD has two fire stations located in Fairfield. Montezuma FPD has four stations, one in Rio Vista and three in the County. Cordelia FPD has two stations, one in Suisun Valley and one in Old Town Cordelia. In the event of a fire emergency, the Suisun,

Montezuma, and Cordelia fire departments would coordinate with one another to determine the location of the fire and the appropriate FPD to respond, based on jurisdiction.

3.15.1.2 Police Protection

The Solano County Sheriff's Department is responsible for law enforcement in unincorporated areas of Solano County and on waterways in the Sacramento–San Joaquin Delta, including Suisun Marsh. Emergency response uses vehicles or boats, depending on the location's accessibility, predicted response time, and availability of resources. The main Sheriff's office is located in Fairfield. Police protection services are also provided by California Highway Patrol (CHP) from their Solano Office in Fairfield. The Solano CHP has jurisdiction from the west end of the City of Davis to the Benicia Bridge and Carquinez Bridge. Per the Penal Code, the County Sheriff's Department is responsible for criminal offenses in unincorporated Solano County (e.g., robberies, rapes, and murders), while the Solano CHP is responsible for traffic-related offenses (e.g., traffic accidents).

3.15.1.3 Schools

The Fairfield-Suisun Unified School District provides elementary, middle, and high school education in the vicinity of the Project area. The district consists of 30 schools, including 17 elementary schools, four middle schools, three high schools, and several alternative schools. There are no schools adjacent to the Project area. The closest school to the Project area within the Fairfield-Suisun Unified School District is the Crescent Elementary School, located 9.50 miles north of the Project's GIWS (Fairfield-Suisun Unified School District 2018).

3.15.1.4 Parks

Impacts to parks are discussed in Section 3.16, *Recreation*.

3.15.1.5 Maritime Law Enforcement

The Solano County Sheriff's Marine Patrol Program provides public safety resources to recreational boaters and commercial vessels operating on the navigable waterways in the County. The Marine Patrol Program is staffed with four full-time deputies. The program is operational 10 hours each day, 7 days each week, year-round, and provides professional public safety services to the community.

3.15.2 Regulatory Setting

Federal and state laws and regulations pertaining to public services and relevant to the Project are identified in Appendix A. At the local level, the Solano County General

Plan's Public Facilities and Services and Public Health and Safety Elements provide goals, policies, and actions with regard to public services (Solano County 2008b, Solano County 2015a). Such goals include providing adequate public services and facilities to accommodate the level of development planned by the County, providing effective and responsive fire and police protection, and minimizing the potential loss of life and property resulting from natural or human-caused hazards.

3.15.3 Impact Analysis

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?**

No Impact. The Project is a short-term pipeline replacement project that does not involve the construction of any residences, buildings, or infrastructure. The Project would not require any additional services outside of those mentioned above and currently available. Therefore, there would be no impacts.

3.15.4 Mitigation Summary

The Project would have no impacts on Public Services; therefore, no mitigation is required.

3.16 RECREATION

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

3.16.1 Environmental Setting

The southern portion of the Project area (those portions north of Roaring River, including the GIWS) is within the Grizzly Island Wildlife Area, which includes recreational uses. Grizzly Island Wildlife Area has active hunting seasons, during which access to the Grizzly Island Wildlife Area is heavily restricted by CDFW. Elk hunting season begins in late July and continues through late September, and waterfowl hunting season begins in October and continues through the end of February.

3.16.2 Regulatory Setting

No federal or state laws relevant to this issue area are applicable to the Project. At the local level, the Solano County General Plan's Park and Recreation Element addresses goals, policies, and objectives relating to park and recreation facilities, the following of which are of relevance to the Project (Solano County 2008d):

- **3C:** The County shall work to protect identified recreational sites and natural resource areas.
- **5A:** The County shall make the optimum use of public lands by developing or promoting development of facilities that are compatible with the primary resources of the site.
- **5B:** The County shall support passive and active recreational uses that are compatible with the primary resources of the land.

The Resources Element also contains goals and policies relating to recreation, the following of which is of relevance to the Project (Solano County 2008c):

- RS.P-48: Maintain and expand public access and recreational activities within the Suisun Marsh consistent with applicable marsh policies and the protection of wildlife resources.

3.16.3 Impact Analysis

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

No Impact. As a result of construction activities in the area, it is possible that construction workers may utilize nearby park and recreation facilities in the short term; however, due to the limited number of workers and the short-term nature of the Project, the Project would not increase the use of existing parks or recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. Therefore, there would be no impact.

The CDFW heavily restricts access to the Grizzly Island Wildlife Area during the hunting seasons. Because of these access restrictions the only periods available with open and safe access to the GIWS are during the spring and early summer months. Project construction is anticipated to begin in April 2019 and finish in July 2019 and would avoid impacts on recreational uses of the area.

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

No Impact. The Project does not include recreational facilities or require construction or expansion of recreational facilities which might have an adverse physical effect on the environment; therefore, there would be no impact.

3.16.4 Mitigation Summary

The Project would have no impacts on Recreation; therefore, no mitigation is required.

3.17 TRANSPORTATION/TRAFFIC

TRANSPORTATION/TRAFFIC – Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

3.17.1 Environmental Setting

As described below, the Project area has limited road access. Access to the project area is primarily via State Route (SR) 12 to Grizzly Island Road to the GIWS and SR 12 Shiloh Road and Birds Landing Road to the BLWS. A barge would be used as needed in a limited capacity to transport certain materials, such as water, and equipment to or from the GIWS.

3.17.1.1 Birds Landing Work Site (BLWS)

Construction materials and equipment for use at the BLWS would be mobilized to the site using public roads including Birds Landing Road and Shiloh Road, and short access

roads to the site (see Figure 1-2). An access road onto the private property would be built directly adjacent to Birds Landing Road. This road would initially be used to access the BLWS drill pad and be kept in place after the Project to access the relocated valve site. The access road would likely be graded and lightly covered with rock. Regional access to the Project area would be via highways I-80 and SR 12 (described above), SR 113 may also be used for project access.

The annual average daily traffic (AADT) volume on SR 12 between the junction with SR 113 North is between 16,900 and 12,400 vehicles (Caltrans 2016).

3.17.1.2 Grizzly Island Work Site (GIWS)

All equipment and work crews transported to the GIWS would use public highways and local roads; highways include I-80 and SR 12 through Fairfield and Suisun City. In the Project area, equipment would be transported along Grizzly Island Road (from SR 12). Workers assigned to the GIWS may park at the hunting control station approximately 4 miles west of the GIWS. If used, they would then travel by multi-passenger vans to the GIWS. As mentioned above, the Project would utilize water transport for equipment and materials as needed.

The annual average daily traffic (AADT) volume on SR 12 between the junction with I-80 and Grizzly Island Road is between 35,000 and 41,500 vehicles (Caltrans 2016).

3.17.2 Regulatory Setting

Federal and state laws and regulations pertaining to transportation and traffic and relevant to the Project are identified in Appendix A. Various entities address this issue area at the local level, as discussed below.

3.17.2.1 Metropolitan Transportation Commission (MTC)

The MTC adopted the current regional transportation plan, Plan Bay Area, which charts a course for transportation investment and land-use priorities for the next 25 years. Adopted in 2013, and updated in 2017, Plan Bay Area guides transportation and land use policies in the Bay Area.

3.17.2.2 Solano Transportation Authority (STA)

The 2005 Comprehensive Transportation Plan (CTP) 2030 for Solano County (STA 2005) envisions, directs, and prioritizes the County's transportation needs, with a goal to develop a balanced transportation system that reduces congestion and improves access and travel choices through the enhancement of roads. The CTP incorporates various STA studies and plans into a 25-year planning document that describes existing

and future needs for the major arterials, highways, and freeways in the County. The CTP is currently being updated and is expected to be adopted by the STA board in 2018.

3.17.2.3 Solano County

The Transportation and Circulation chapter of the Solano County General Plan addresses circulation concerns (Solano County 2008e). Because the Project is an underground pipeline, with short term construction, there are no policies that directly apply to the Project.

3.17.3 Impact Analysis

a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Less than Significant Impact. Regional access to the GIWS and BLWS would be via SR 12. During initial equipment mobilization, the Project would generate approximately 20 truck trips over a 7-day period (about three trucks per day) to the sites. During construction, there would be approximately 15 workers per day at the GIWS and 35 workers per day to BLWS. As such the Project would generate approximately up to 50 round trips per day via SR 12 and other regional roads. Hauling of materials and water to the site would generate about 12-17 truck trips per day at each site.

The Project would create a minimal increase in vehicles on local roads, which would be temporary (approximately 3 months) and extremely small (approximately .07 percent on average) in comparison to the average daily traffic volume. The amount of traffic potentially conflicting with an applicable congestion management program for designated roads or highways would be less than significant.

Additionally, the Project would not conflict with any applicable plans or policies as they relate to mass transit or other nonmotorized vehicles, as the projected traffic would mostly take place on regional roads and or local roads that are not utilized by public transit or other nonmotorized travel.

Barge traffic would be intermittent as this would not be the primary method of transporting equipment or materials to the GIWS. Vessel traffic is controlled by the US Coast Guard's Vessel Traffic Center, San Francisco. This center is responsible for the safety of vessel movements along approximately 133 miles of waterway from offshore to the ports of Stockton and Sacramento, including through the project area. Vessel operators would adhere to federal regulations establishing regulated navigation areas within the San Francisco Bay Region.

Because of the small number of vehicle and barge traffic created by the project and adherence to regulations regarding barge navigation, this impact would be less than significant.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

No Impact. The Project is an underground pipeline replacement project located in a remote location of Solano County and would have no effect on air traffic; therefore, there would be no impact.

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

Less than Significant Impact. The Project is an underground pipeline replacement project located in a remote part of Solano County. For the BLWS, an access road onto the private property would be built directly adjacent to Birds Landing Road. This road would initially be used to access the BLWS drill pad and would be kept in place after the Project to access the relocated valve site. The access road would likely be graded and lightly covered with rock. This new access road would not create any hazards due to design features and would be compatible with the existing use.

Additionally, Grizzly Island Road, which is accessible to recreational users, would be used to transport equipment to and from the GIWS, but no new roads would be constructed for the GIWS. Speeds on the existing road are low, particularly on unpaved portions and the transport of the equipment is not expected to create a significant road hazard. Therefore, the impact would be less than significant.

e) Result in inadequate emergency access?

No Impact. As discussed above, the Project would generate minimal additional traffic and would not require any road closures, including closures that would result in inadequate emergency access; therefore, there would be no impact.

f) 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. The Project location is in a remote area mostly on private lands where public transit, bicycle, and pedestrian facilities do not exist and are not planned; therefore, there would be no impact.

3.17.4 Mitigation Summary

The Project would not result in significant impacts related to Transportation/Traffic; therefore, no mitigation is required.

3.18 UTILITIES AND SERVICE SYSTEMS

UTILITIES AND SERVICE SYSTEMS – Would the Project:	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) 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?	☐	☐	☒	☐
f) Be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

3.18.1 Environmental Setting

The Project is a short-term pipeline replacement project that would not result in the construction of new utility or service systems, nor create a new demand for permanent utilities or service systems.

Solano County contracts solid waste management services with various contractors serving unincorporated communities. The closest landfill to the Project site is the Potrero Hills Landfill located in Suisun City, which is estimated to reach capacity in February 2048 (California Department of Resources Recycling and Recovery [CalRecycle] 2018a). Another landfill close to the Project area is Keller Canyon Landfill in Pittsburg, which has projected capacity until 2030 (CalRecycle 2018b). In addition, Altamont Landfill in Livermore has capacity through 2025 (CalRecycle 2018c).

Disposal of wastewater used for the hydrostatic testing portion of the Project may require transit to a local wastewater treatment facility. The closest wastewater treatment facility is the Rio Vista Northwest Wastewater Treatment Facility in Rio Vista. Other nearby facilities include: Fairfield-Suisun Sewer District, Benicia Wastewater Treatment, and Central Contra Costa Sanitary Treatment Plant. Drilling fluid/mud waste and soil cuttings would also require disposal.

3.18.2 Regulatory Setting

No federal, state, or local laws relevant to this issue area are applicable to the Project.

3.18.3 Impact Analysis

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Less than Significant Impact. The only wastewater generated by the Project that would potentially require treatment would be approximately 34,000 gallons of hydrostatic testing water. Hydrostatic testing could introduce conventional construction contaminants into the water such as oil and greases. Once the hydrostatic testing is complete, the water would be transferred to water storage tanks and tested. If the hydrostatic test water is not suitable to discharge to surrounding waters (in accordance with the Statewide General Construction Permit for Stormwater Discharges Associated with Construction Activity) or to land (in accordance with the SWRCB's Statewide Construction General Permit for low-threat water quality discharges to land), the water would be hauled off site for disposal at a permitted commercial disposal facility, such as a wastewater treatment plant. Residual construction contaminants such as oil and greases would be removed at the wastewater treatment plant through conventional secondary treatment processes. No new contaminants would be introduced into the bay nor would the Project exceed any RWQCB wastewater treatment requirements. Therefore, the impact would be less than significant.

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

No Impact. The only wastewater generated by the Project that would potentially require treatment would be the hydrostatic testing water. If the wastewater is sent to a wastewater treatment facility, the closest facility is the Rio Vista Northwest Wastewater Treatment Facility. This facility has a design daily average flow capacity of 1 million gallons per day (RWQCB 2010). The minor amount of wastewater generated by the Project would not exceed the capacity of this treatment facility. No new wastewater treatment facilities are proposed or expected based on the volume of wastewater to be generated by this Project. Therefore, there would be no impact.

c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

No Impact. The Project area does not drain into any municipal stormwater drainage system, would not create or contribute stormwater exceeding the capacity of existing or planned stormwater drainage systems, and would not provide substantial additional sources of stormwater to such systems. No new stormwater facilities are proposed or expected to be required for this Project. Therefore, there would be no impact.

d) Have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed?

No Impact. Water for the Project would be obtained from the City of Fairfield or other supplier for Project construction needs. The Project would use approximately 12,000 cubic yards total. No new or expanded water entitlements would be needed. Therefore, there would be no impact.

e) 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?

Less than Significant Impact. The only wastewater generated by the Project that could require treatment would be hydrostatic testing water (approximately 34,000 gallons). If the wastewater is sent to a wastewater treatment facility the closest facility is the Rio Vista Northwest Wastewater Treatment Facility. This facility has a design daily average flow capacity of 1 million gallons per day. The minor amount of wastewater generated by the Project would not exceed the capacity of this treatment facility. Therefore, this impact would be less than significant.

f) Be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs?

Less than Significant Impact. Much of the construction materials used for the Project (e.g., rock, interlocking mats) would be recycled/reused by the contractor. Project-generated solid waste that would require disposal could be disposed of at the Potrero Hills Landfill or the Keller Canyon Landfill, both of which have sufficient capacity to accept the Project's small volume of solid waste including drilling fluid/mud requiring disposal. Therefore, this impact would be less than significant.

g) Comply with federal, state, and local statutes and regulations related to solid waste?

No Impact. All solid waste generated by the Project would be disposed of in accordance with all federal, state, and local statutes and regulations related to solid waste. Therefore, there would be no impact.

3.18.4 Mitigation Summary

The Project would not result in significant impacts on Utilities and Service Systems; therefore, no mitigation is required.

3.19 MANDATORY FINDINGS OF SIGNIFICANCE

The lead agency shall find that a project may have a significant effect on the environment and thereby require an EIR to be prepared for the project where there is substantial evidence, in light of the whole record, that any of the following conditions may occur.

Where prior to commencement of the environmental analysis a project proponent agrees to MMs or project modifications that would avoid any significant effect on the environment or would mitigate the significant environmental effect, a lead agency need not prepare an EIR solely because without mitigation the environmental effects would have been significant (per State CEQA Guidelines, § 15065).

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

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

Less than Significant with Mitigation. As described in Section 3.4, *Biological Resources*, the Project would not significantly adversely affect fish or wildlife habitat, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, or reduce the number or restrict the range of an endangered, rare, or threatened species. With the implementation of **MM BIO-1** through **MM BIO-4** and construction BMPs, the minor, brief, and localized impacts on special-status species and their habitats would be less than significant.

The Project's potential effects on historic and archaeological resources are described in Section 3.5, *Cultural and Paleontological Resources*; no resources are known to be present within the Project footprint. This finding was based upon a cultural resources records review of the Project area. Implementation of **MM CUL-1** through **MM CUL-4** would reduce the potential for Project-related impacts on cultural and paleontological resources to less than significant.

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

Less than Significant with Mitigation. Past, current, and reasonably foreseeable projects within the vicinity of the proposed Project are:

- The Mallard Farms Pipeline Replacement Project

As provided in this MND, the Project has the potential to significantly impact the following environmental disciplines: Aesthetics, Biological Resources, Cultural and Paleontological Resources, Tribal Cultural Resources, Hazards and Hazardous Materials, Hydrology and Water Quality, and Land Use. However, measures have been identified that would reduce these impacts to a level of less than significant. For any impacts to act cumulatively on any past, present, or reasonably foreseeable projects, these projects would have to have individual impacts in the same resource areas, some at the same time, or occur within an overlapping area as the proposed Project. Because the potential impacts of the proposed Project could be exacerbated by other projects, the potential for cumulative impacts are described below for the resource.

<u>Aesthetics</u>. The cumulative impacts study area for aesthetics includes the Project area and nearby vicinity. Although the proposed Project would be located within the same publicly accessible viewshed as Mallard Farms Pipeline Replacement Project, the projects would be temporary and would not overlap in time with the proposed Project. Therefore, the contribution of the proposed Project to potential cumulative aesthetic impacts in the study area would be less than significant.

Agriculture and Forestry Resources. The cumulative impacts study area for agriculture and forest resources includes the Project area and nearby vicinity. The Project area does not contain any agriculture or forested lands and would not convert any lands from their existing land uses. Because the proposed Project would not impact agricultural and forestry resources in the Project area, the proposed Project would not contribute to a potential cumulative agricultural and forestry services impact in the study area.

Air Quality. The cumulative impacts study area for air quality includes the SFBAAB, which is identical to the boundaries of the BAAQMD. As described in Section 3.3, *Air Quality*, the proposed Project's emissions would not exceed the BAAQMD CEQA significance thresholds. Therefore, pursuant to the BAAQMD CEQA Guidelines, the Project would not be cumulatively considerable, and would result in a less than significant cumulative impact.

Biological Resources. The cumulative impacts study area for biological resources includes the Project area and nearby vicinity, which include similar biological resources. Because the proposed Project overlaps geographically with the project described above, there could be significant cumulative impacts on biological resources, including special-status species, migratory birds, and wetlands. However, the implementation of **MM BIO-1** through **MM BIO-4** would reduce the Project's impacts on biological resources to less than significant and would further mitigate the Project's contribution to cumulative impacts on these resources. The Mallard Farms Pipeline Replacement Project contains MMs to reduce project impacts on biological resources to less than significant. As a result, a significant cumulative impact to biological resources is unlikely to occur. Therefore, with the implementation of the above-mentioned MMs, the Project's contribution to potential cumulative impacts on biological resources would be less than significant.

Cultural and Paleontological Resources. The cumulative impacts study area for cultural and paleontological resources includes the Project area and nearby vicinity, which may contain cultural and paleontological resources. Because the proposed Project overlaps geographically with the project described above, there could be significant cumulative impacts on cultural and paleontological resources. However, the implementation of **MM CUL-1** through **MM CUL-4** would reduce the Project's impacts on cultural and paleontological resources to less than significant and further mitigate the Project's contribution to cumulative impacts on these resources. Therefore, the Project's contribution to potential cumulative impacts on cultural and paleontological resources would be less than significant.

Cultural Resources - Tribal. The cumulative impacts study area for Tribal cultural resources includes the Project area and nearby vicinity, which may contain Tribal cultural resources. Because the proposed Project overlaps geographically with the project described above, there could be significant cumulative impacts on Tribal cultural

resources. However, the implementation of **MM CUL-1**, **MM CUL-2**, and **MM CUL-3** would reduce the Project's impacts on Tribal cultural resources to less than significant and further mitigate the Project's contribution to cumulative impacts on these resources. Therefore, the Project's contribution to potential cumulative impacts on Tribal cultural resources would be less than significant.

Geology and Soils. The cumulative impacts study area for geology and soils is limited to the Project area as the potential for hazards related to seismically induced ground failure, erosion or loss of topsoil, soil subsidence, collapsible soils, and expansive soils are based on local site-specific and geologic conditions. Any project would comply with all applicable laws and regulations that would reduce project-level impacts to less than significant, the proposed Project's contribution to potential cumulative impacts associated with geology and soils would be less than significant.

Greenhouse Gas Emissions. The cumulative impacts study area for GHG emissions includes the SFBAAB, which is identical to the boundaries of the BAAQMD. Because temporary construction emissions would not exceed the threshold of significance, GHGs from construction activities, emitted either directly or indirectly by the Project, would not have a significant impact on the environment and would not substantially contribute to global GHG emissions. Therefore, the potential cumulative GHG impacts in the study area would be less than significant.

Hazards and Hazardous Materials. The cumulative impacts study area for hazards and hazardous materials is primarily restricted to the Project area and immediate vicinity. The Project would involve the routine transport, storage, use, and disposal of hazardous materials such as construction equipment fuels and lubricants, hydraulic fluid, and solvents used during temporary construction activities. The storage and handling of these materials during this Project would be managed in accordance with applicable laws and regulations. Additionally, the implementation of **MM HAZ-1** through **MM HAZ-3** would reduce the Project's impacts associated with hazards and hazardous materials to less than significant and further mitigate the Project's contribution to cumulative impacts on these resources. Therefore, the Project's contribution to potential cumulative impacts associated with hazards and hazardous materials would be less than significant.

Hydrology and Water Quality. The cumulative impacts study area includes the Project area and immediate vicinity. The proposed Project, along with other projects occurring in the area, would be required to comply with applicable federal, state, and local water quality regulations. However, the proposed Project's contribution to cumulative hydrology and water quality impacts would not be cumulatively considerable with the implementation of the Project specific SWPPP required pursuant to the Statewide Construction General Permit, as outlined in **MM HYDRO-1**. As such, the proposed Project would not: violate water quality standards or waste discharge requirements; substantially alter existing drainage patterns; and contribute runoff that would exceed

drainage capacities. Further, Project construction would be of short duration, and comply with construction water quality BMPs required under the Construction General Permit. As a result, neither the proposed Project nor the project described above would contribute to a cumulative hydrology or water quality impact. For these reasons, the Project's contribution to any cumulative impact on hydrology and water quality would not be cumulatively considerable.

Land Use and Planning. The cumulative impacts study area for land use and planning includes the Project area and immediate vicinity, which generally includes undeveloped marsh lands and the waters of Honker Bay. The proposed Project includes the replacement of the existing aged pipeline with a new pipe segment via HDD that would decrease the likelihood of future leaks and eliminate the need for several separate repairs using open trenching in the marsh, which would result in greater impacts on the marsh. However, with the implementation of **MM BIO-1** through **MM BIO-4** and compliance with any conditions required by other agencies with jurisdiction over the proposed Project, potential impacts on land use and planning would be reduced to less than significant. However, the proposed Project's contribution to cumulative land use and planning impacts would not be cumulatively considerable as the proposed Project is consistent with applicable land use designations and policies. Further, the Applicant would have to obtain additional required permits/approvals, as listed in Section 1.7, *Approvals and Regulatory Requirements*, prior to the start of construction. As a result, neither the proposed Project nor the projects described above would contribute to a cumulative land use and planning impact associated with a change in the character of the existing project vicinity nor would they change existing uses in the area. For these reasons, the Project's contribution to any cumulative impact on land use and planning would not be cumulatively considerable.

Mineral Resources. The cumulative impacts study area for mineral resources includes the Project area and immediate vicinity. The Project area consists of undeveloped marshes, and no known mineral resources are located within or near the Project area. Because the Project would not impact mineral resources within the study area, the Project would not contribute to a potential cumulative mineral resources impact in the study area.

Noise. The cumulative impacts study area for noise includes the Project area, its immediate vicinity, and areas next to proposed haul routes. Although the proposed Project overlaps geographically with the Mallard Farms Pipeline Replacement Project, this project would be temporary and would not overlap in time with the proposed Project. Therefore, the contribution of the proposed Project to potential cumulative noise impacts in the study area would be less than significant.

Population and Housing. The cumulative impacts study area for population and housing includes the Project area and nearby vicinity. The proposed Project is short-term and

would not induce population growth nor displace housing or people. Additionally, the short-term employment opportunities created by the proposed Project would be for persons with specialized skills that are expected to come from the Project region. Because the Project would not impact population and housing within the study area, the Project would not contribute to a potential cumulative population and housing impact in the study area.

Public Services. The cumulative impacts study area for public services includes the Project area and nearby vicinity. The proposed Project would maintain the existing site use and character and would not induce population growth or activity such that additional public services would be needed. Because the proposed Project would not impact public services within the study area, the proposed Project would not contribute to a potential cumulative public services impact in the study area.

Recreation. The cumulative impacts study area for recreation includes the Project area and nearby vicinity. The Project would not increase the use of existing parks and recreational facilities and does not include or require recreational facilities. Because the proposed Project would not impact recreational facilities within the study area, the proposed Project would not contribute to a potential cumulative recreation impact in the study area.

Transportation/Traffic. The cumulative impacts study area for transportation and traffic includes the local and regional roadways that would be used for construction-related vehicles to access the Project area. These roadways include SR 12 through Fairfield and Suisun City and Grizzly Island Road. Although the proposed Project overlaps geographically with the Mallard Farms Pipeline Replacement Project, this project would be temporary and would not overlap in time with the proposed Project. Therefore, the contribution of the proposed Project to potential cumulative transportation and traffic impacts in the study area would be less than significant.

Utilities and Service Systems. The cumulative impacts study area for utilities and service systems includes the Project area, nearby vicinity, and the service areas of regional service/utility providers. The proposed Project and the projects described above would not result in any new utilities demands and would not need utilities or service systems except for a small amount of construction solid waste disposal and a minor amount of wastewater. The landfills and wastewater treatment provider in the vicinity have ample capacity to meet the proposed Project needs as well as the need of the Mallard Farms Pipeline Replacement Project. Therefore, the contribution of the proposed Project to potential cumulative utilities and service systems impacts in the study area would be less than significant.

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

Less than Significant with Mitigation. The Project's potential to impact human beings is addressed in various sections of this document, including those that affect resources used or enjoyed by the public, residents, and others in the Project area (such as aesthetics, public services, and recreation); those that are protective of public safety and well-being (such as air quality, geology and soils, GHG emissions, hydrology and water quality, and noise); and those that address community character and essential infrastructure (such as land use and planning, population and housing, transportation, and utilities). None of these analyses identified a potential adverse effect on human beings that could not be avoided or minimized through the MMs described or compliance with standard regulatory requirements. As such, with mitigation in place, project impacts on human beings would be less than significant.

4.0 MITIGATION MONITORING PROGRAM

The California State Lands Commission (CSLC) is the lead agency under the California Environmental Quality Act (CEQA) for the Chevron Horizontal Directional Drill 3 (HDD3) Project. In conjunction with approval of this Project, the CSLC adopts this Mitigation Monitoring Program (MMP) for implementation of mitigation measures (MMs) for the Project to comply with Public Resources Code section 21081.6, subdivision (a), and State CEQA Guidelines sections 15091, subdivision (d), and 15097.

The Project authorizes Chevron Pipe Line Company (Applicant) to replace an approximately 2.5-mile segment of the 8-inch Pittsburg-to-Sacramento lateral on the Bay Area Products Line (BAPL) pipeline that runs through the Grizzly Island Wildlife and Birds Landing Areas in Solano County by using horizontal directional drilling.

4.1 PURPOSE

It is important that significant impacts from the Project are mitigated to the maximum extent feasible. The purpose of an MMP is to ensure compliance and implementation of MMs; this MMP shall be used as a working guide for implementation, monitoring, and reporting for the Project's MMs.

4.2 ENFORCEMENT AND COMPLIANCE

The CSLC is responsible for enforcing this MMP. The Project Applicant is responsible for the successful implementation of and compliance with the MMs identified in this MMP. This includes all field personnel and contractors working for the Applicant.

4.3 MONITORING

The CSLC staff may delegate duties and responsibilities for monitoring to other environmental monitors or consultants as necessary. Some monitoring responsibilities may be assumed by other agencies, such as affected jurisdictions, cities, and/or the California Department of Fish and Wildlife. The CSLC and/or its designee shall ensure that qualified environmental monitors are assigned to the Project.

Environmental Monitors. To ensure implementation and success of the MMs, an environmental monitor must be on-site during all Project activities that have the potential to create significant environmental impacts or impacts for which mitigation is required. Along with the CSLC staff, the environmental monitor(s) are responsible for:

- Ensuring that the Applicant has obtained all applicable agency reviews and approvals;

- Coordinating with the Applicant to integrate the mitigation monitoring procedures during Project implementation; and
- Ensuring that the MMP is followed.

The environmental monitor shall immediately report any deviation from the procedures identified in this MMP to the CSLC staff or its designee. The CSLC staff or its designee shall approve any deviation and its correction.

Workforce Personnel. Implementation of the MMP requires the full cooperation of Project personnel and supervisors. Many of the MMs require action from site supervisors and their crews. The following actions shall be taken to ensure successful implementation.

- Relevant mitigation procedures shall be written into contracts between the Applicant and any contractors.

General Reporting Procedures. A monitoring record form shall be submitted to the Applicant, and once the Project is complete, a compilation of all the logs shall be submitted to the CSLC staff. The CSLC staff or its designated environmental monitor shall develop a checklist to track all procedures required for each MM and shall ensure that the timing specified for the procedures is followed. The environmental monitor shall note any issues that may occur and take appropriate action to resolve them.

Public Access to Records. Records and reports are open to the public and would be provided upon request.

4.4 MITIGATION MONITORING TABLE

This section presents the mitigation monitoring table (Table 4-1) for the following environmental disciplines: Aesthetics, Biological Resources, Cultural Resources, Hazards and Hazardous Materials, and Land Use and Planning. All other environmental disciplines were found to have less than significant or no impacts and are, therefore, not included below. The table lists the following information by column:

- Potential Impact;
- Mitigation Measure (full text of the measure);
- Location (where impact occurs and MM should be applied);
- Monitoring/Reporting Action (action to be taken by monitor or lead agency);
- Timing (before, during, or after construction; during operation, etc.);
- Responsible Party; and
- Effectiveness Criteria (how the agency can know if the measure is effective).

Table 4-1. Mitigation Monitoring Program

Potential Impact	Mitigation Measure (MM)	Location	Monitoring/ Reporting Action	Timing	Responsible Party	Effectiveness Criteria
Aesthetics						
Create a new source of substantial light or glare	**MM AES-1: Night-Lighting Spillage Minimization.** Night-lighting required during nighttime activities shall be shielded and directed downward toward the work area to minimize light trespass to adjacent areas.	BLWS and GIWS	Observe nighttime lighting positioning for compliance	Throughout construction	Applicant and CSLC	Off-site light spillage minimized
Biological Resources						
Special-status species and habitat	**MM BIO-1: Environmental Awareness Training.** CPL shall ensure that all construction personnel receive mandatory environmental awareness training. The training shall be provided by a qualified biologist, prior to the start of construction activities, and as new personnel are added to the Project. The environmental awareness training shall familiarize workers with the special-status species and their habitats, explain the regulatory requirements to protect special-status species, and describe measures that must be implemented to avoid and minimize impacts. The training materials shall be developed and submitted to CSLC staff for approval at least 2 weeks prior to the start of Project activities. CPL shall identify a representative as the person for any employee or contractor to contact if a special-status species is observed in the defined project area, and shall provide the contact information for both this representative and the qualified biologist to U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, and CSLC staffs before construction commences. The qualified biologist shall maintain a list of contractors who have received training and shall submit a summary of the awareness training to CSLC staff within 30 days after construction begins and after construction is completed.	Entire project area	Document training	Prior to construction	Applicant and CSLC	Educate workers on the potential for special-status species and their habitats, explain the regulatory requirements to protect special-status species, and describe measures that must be implemented to avoid and minimize impacts

Table 4-1. Mitigation Monitoring Program

Potential Impact	Mitigation Measure (MM)	Location	Monitoring/ Reporting Action	Timing	Responsible Party	Effectiveness Criteria
	MM BIO-2: Biological Monitoring and Surveying. CPL shall ensure that the following surveys and/or monitoring activities are conducted. Surveys shall be conducted by a qualified biologist, approved by CSLC staff in consultation with California Department of Fish and Wildlife (CDFW), or U.S. Fish and Wildlife Service (USFWS) staff. • Preconstruction Surveys: A preconstruction survey shall be conducted within 15 days prior to the start of construction at each work site and staging area. If sensitive species are identified during the survey, the area where the species is present will be avoided, and CPL will coordinate with USFWS and/or CDFW. • Biological Monitoring during Construction: An approved qualified biologist shall be on-site during initial ground-disturbance activities at the BLWS and air vent location. The biologist shall have the authority to stop activities in the event that a special-status species is observed. In the event that a special-status species is encountered in the defined Project area during Project activities that could result in take of the species, associated work activities at the location shall be halted immediately and CPL shall, if necessary, contact the appropriate agency (i.e., CDFW, USFWS) and CSLC staff to discuss ways to proceed with the Project. • Migratory Bird Monitoring and Protection Measures: For work conducted within the migratory bird breeding season (February 15 and August 31), the approved qualified biologist shall survey periodically to determine	BLWS and GIWS	Obtain monitoring results summarized in monthly reports provided to CSLC staff during construction	Pre-construction and throughout construction	Applicant and CSLC	Sensitive species avoided and/or protected throughout construction

Table 4-1. Mitigation Monitoring Program

Potential Impact	Mitigation Measure (MM)	Location	Monitoring/ Reporting Action	Timing	Responsible Party	Effectiveness Criteria
	if migratory birds protected under the Migratory Bird Treaty Act (MBTA) are actively nesting within the Project work areas. Active nests will be avoided or relocated in consultation with USFWS. • Bird deterrents may also be used to reduce bird nesting at the work sites. Deterrents, if used, shall be installed by or under the supervision of the biological monitor and replaced as needed during construction at the work sites. Deterrents shall be regularly inspected and modified as necessary.					
	MM BIO-3: Wildlife Exclusion Fencing. The contractor shall inspect the installed salt marsh harvest mouse exclusion fencing around the GIWS under the supervision of the biological monitor, prior to commencing construction. The biological monitor shall check the fence at regular intervals to monitor proper installation and report maintenance needs and check for the presence of wildlife. Fence inspection intervals shall be based on the planned construction activities, recent and forecasted weather events, and the results of preconstruction surveys and previous fence checks.	GIWS	Retain biological monitors' records and documentation of any subsequent maintenance activities	At initiation of construction and throughout construction	Applicant and CSLC	Wildlife excluded from Project area
	MM BIO-4: Revegetation and Monitoring Plan. Following completion of Project construction, CPL shall restore managed wetland areas within the Suisun Marsh to pre-Project conditions in accordance with a revegetation and monitoring plan. At least 2 weeks prior to conclusion of construction, CPL shall submit the plan to CSLC staff for approval. The plan shall include details for site preparation and revegetation methods, monitoring, performance criteria, and reporting. These elements are subject to modification through	GIWS and Grouting Vent Location	Implement approved plan	Throughout construction	Applicant and CSLC	Impacts to vegetation at the GIWS are minimized

Table 4-1. Mitigation Monitoring Program

Potential Impact	Mitigation Measure (MM)	Location	Monitoring/ Reporting Action	Timing	Responsible Party	Effectiveness Criteria
	consultation with natural resource agencies. • **Site Preparation and Revegetation:** All equipment, geotextile mats, rock fill, and filter fabric shall be removed. Excavations shall be backfilled with the stockpiled material originally excavated from the pit. Subsoil shall be replaced in the excavation and compacted with machinery. After proper backfilling of the subsoil, the upper 6 inches of topsoil shall be replaced and spread evenly over the pit. Topsoil shall not be mixed with subsoil or used to fill the pit. The contractor shall also apply appropriate erosion control treatment as needed to any disturbed ground prior to the end of the construction season. • **Monitoring:** After construction, a qualified biologist shall monitor the hydrologic conditions and the vegetation cover and composition. Monitoring shall occur annually for the first 3 to 5 years following revegetation (expected to be 2020 to 2025) with a provision that cessation of monitoring may be requested by CPL if performance criteria for year 5 is met earlier. Restored areas shall be monitored to achieve end-points as agreed upon with the agencies. • **Performance Criteria:** Revegetation of wetlands shall be deemed successful if total plant cover is greater than 70 percent of adjacent undisturbed areas, at least one to three dominant species are presented, and there is no increasing trend in invasive, nonnative species relative to the adjacent undisturbed areas. Performance criteria may be revised at the request and in consultation					

Table 4-1. Mitigation Monitoring Program

Potential Impact	Mitigation Measure (MM)	Location	Monitoring/ Reporting Action	Timing	Responsible Party	Effectiveness Criteria
	with natural resource agencies. • **Reporting:** Annual reports and a final monitoring report shall be submitted to the CSLC staff by December 31 of each monitoring year (until CSLC monitoring obligations are complete) or as determined in coordination with natural resources agencies. At their request, copies shall also be provided to San Francisco Bay Conservation and Development Commission, California Department of Fish and Wildlife, Regional Water Quality Control Board, U.S. Army Corps of Engineers, and U.S. Fish and Wildlife Service staffs.					
Night-lighting	Implement **MM AES-1: Night-lighting Spillage Minimization** (see above)					
Riparian habitat/other sensitive natural communities	Implement the following measures (see above and below): **MM BIO-4: Revegetation and Monitoring Plan**					
Federally protected wetlands	Implement the following measures (see above and below): **MM BIO-4: Revegetation and Monitoring Plan** **MM HYDRO-1: Implement Stormwater Pollution Prevention plan**					
Conflict with local policies or plans protecting biological resources	Implement the following measures (see above): **MM BIO-1: Environmental Awareness Training** **MM BIO-2: Biological Monitoring and Surveying** **MM BIO-3: Wildlife Exclusion Fencing** **MM BIO-4: Revegetation and Monitoring Plan**					
Conflict with an adopted or approved conservation plan	Implement the following measures (see above): **MM BIO-1: Environmental Awareness Training** **MM BIO-2: Biological Monitoring and Surveying** **MM BIO-3: Wildlife Exclusion Fencing** **MM BIO-4: Revegetation and Monitoring Plan**					

Table 4-1. Mitigation Monitoring Program

Potential Impact	Mitigation Measure (MM)	Location	Monitoring/ Reporting Action	Timing	Responsible Party	Effectiveness Criteria
Cultural and Paleontological Resources						
Disturbance of cultural resources	**MM CUL-1: Cultural Resource Training.** A preconstruction meeting shall be jointly organized by a professional archaeologist and a Yocha Dehe Tribal Monitor to educate onsite construction personnel as to the sensitivity of archaeological and Tribal cultural resources in the area. The Applicant's personnel shall instruct all construction and Project personnel to avoid removing cultural materials from the Project site if discovered. Evidence of compliance with this mitigation measure shall be documented, and provided to California State Lands Commission staff, prior to construction**.**	BLWS, GIWS, and grouting vent location	Train Project contractors of the sensitivity of archaeological resources Document training to CSLC staff	Throughout construction	Applicant and CSLC	Construction personnel are trained to the sensitivity of unanticipated cultural resource finds
Disturbance of cultural and archaeo-logical resources	**MM CUL-2: Discovery of Previously Unknown Cultural Resources**. In the event that potentially significant archaeological or tribal cultural resources are discovered any time during construction, all earth-disturbing work within 100 feet of the discovery shall be temporarily suspended or redirected until a professional archaeologist or a culturally affiliated tribal monitor, have evaluated the nature and significance of the discovery. In the event that a potentially significant archaeological or tribal cultural resource is discovered, CPL, the CSLC, and any local, state, or federal agency with approval or permitting authority over the Project that has requested/required such notification shall be notified within 48 hours. Impacts to previously unknown significant archaeological or tribal cultural resources shall be avoided through preservation in place if feasible. Damaging effects to tribal cultural resources shall be avoided or minimized following the measures identified in Public Resources Code	BLWS, GIWS, and grouting vent location	Inform Train Inform Project contractors of archaeological resource notification procedure Document any reported finds including retention of any associated archaeological reports	Throughout construction	Applicant and CSLC	Any unanticipated cultural resource finds are avoided until evaluated and mitigated

Table 4-1. Mitigation Monitoring Program

Potential Impact	Mitigation Measure (MM)	Location	Monitoring/ Reporting Action	Timing	Responsible Party	Effectiveness Criteria
	section 21084.3, subdivision (b), if feasible, unless other measures are mutually agreed to by the lead archaeologist and culturally affiliated tribal monitor that would be as or more effective. A treatment plan developed by the archaeologist and, for tribal cultural resources, the culturally affiliated tribal monitor, shall be submitted to CSLC staff for review and approval. If the lead archaeologist and the culturally affiliated tribal monitor believe that damaging effects to tribal cultural resources will be avoided or minimized, then work in the area may resume.					
Disturbance of paleonto-logical resources	**MM CUL-3: Discovery of Previously Unknown Paleontological Resources.** In the event that potentially significant paleontological resources are discovered during Project construction: (1) CPL shall immediately redirect or temporarily suspend all earth-disturbing work within 100 feet of the discovery until a professional paleontologist, approved by CSLC staff, has evaluated the nature and significance of the discovery; and (2) CPL shall immediately notify (within 48 hours) CSLC staff and any local, state, or federal agency with approval or permitting authority over the Project that has requested/required such notification. A treatment plan developed by the paleontologist shall be submitted to CSLC staff for review and approval. If the lead paleontologist believes that damaging effects to paleontological resources will be avoided or minimized, then work in the area may resume.	BLWS, GIWS, and grouting vent location	Retain paleontologist and resulting report	Throughout construction	Applicant and CSLC	Paleontologic al resources are avoided or appropriately mitigated (e.g., collected and curated)

Table 4-1. Mitigation Monitoring Program

Potential Impact	Mitigation Measure (MM)	Location	Monitoring/ Reporting Action	Timing	Responsible Party	Effectiveness Criteria
Disturbance of Human Remains	**MM CUL-4: Unanticipated Discovery of Human Remains.** If human remains are encountered, all work in the vicinity of the remains shall halt, and the Solano County Coroner must be contacted pursuant to Public Resources Code sections 5097.94, 5097.98, and 5097.99. If unknown human remains are discovered no further disturbance would occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code section 5097.98. If the remains are determined to be of Native American descent, the coroner has 24 hours to notify the Native American Heritage Commission. CPL and CSLC staff would also be notified immediately within 24 hours of the discovery.	BLWS, GIWS, and grouting vent location	Inform Project contractors of archaeological resource notification procedure	Throughout construction	Applicant and CSLC	Any human remains encountered on the Project site are properly reported and managed
Cultural Resources - Tribal						
Disturbance to Tribal cultural resources	Implement the following measures (see above): **MM CUL-1: Cultural Resource Training** **MM CUL-2: Discovery of Previously Unknown Cultural Resources** **MM CUL-4: Unanticipated Discovery of Human Remains**					
Hazards and Hazardous Materials						
Release of hazardous materials into the environment	**MM HAZ-1: Pipeline Purging and Containment.** Prior to cutting and tie-in activities, the existing pipeline shall be pigged and purged with nitrogen to create a non-flammable environment before cutting. This work would begin at a valve location in Pittsburg and continue to Chevron Terminal in Sacramento. Secondary containment shall be set up at the GIWS, BLWS, and Grouting Vent Work Site as a precaution to prevent the accidental release of any material that may still remain inside the pipeline.	BLWS and GIWS	On-site monitor to verify	Prior to tie-in activities	Applicant and CSLC	An accidental release of hazardous material is avoided or responded to appropriately

Table 4-1. Mitigation Monitoring Program

Potential Impact	Mitigation Measure (MM)	Location	Monitoring/ Reporting Action	Timing	Responsible Party	Effectiveness Criteria
	MM HAZ-2: Asbestos Handling Procedures. Construction personnel shall be informed of the potential presence of asbestos-containing material (ACM) at the construction site prior to their assignment. After exposing the existing pipeline and prior to the start of cutting and tie-in activities, a certified asbestos inspector/consultant shall test whether the coating consists of ACM greater than 1 percent by weight. If testing reveals the coating contains ACM less than 1 percent by weight, the pipe segment shall be treated as normal construction waste and no additional measures are required. If testing reveals the coating contains ACM greater than 1 percent by weight, the materials shall be abated by a certified asbestos abatement contractor in accordance with the regulations and notification requirements of the Bay Area Air Quality Management District, and in accordance with applicable worker safety regulations. All ACM removed from the pipe segment shall be labeled, transported, and disposed of at a verified and approved ACM disposal facility.	BLWS and GIWS	Confirm certified asbestos contractor Conduct site inspections to ensure certified personnel are conducting work	During tie-in activities	Applicant and CSLC	Asbestos-containing material appropriately handled to avoid health impacts
Significant risk of loss, injury, or death involving wildland fires	**MM HAZ-3: Wildland Fire Prevention.** During project construction, the HDD work pad areas shall be cleared of any dead vegetation that could serve as potential fuels. The clearing shall include vegetation trimming within a few inches of the ground. No grading shall take place as part of the vegetation clearing. Additionally, firefighting equipment shall be kept in functioning condition on the Project sites. Such equipment shall include at a minimum hand held fire extinguishers. If work is to be performed during the dry season, workers shall be informed of wildland fire risk and measures to	BLWS and GIWS	Inspect firefighting equipment on site Observe site conditions during dry weather conditions	During construction	Applicant	Vegetation trimming to minimize fire hazards

Table 4-1. Mitigation Monitoring Program

Potential Impact	Mitigation Measure (MM)	Location	Monitoring/ Reporting Action	Timing	Responsible Party	Effectiveness Criteria
	prevent it via brochures and worker awareness training.					
Hydrology and Water Quality						
Violate any water quality standards	**MM HYDRO-1: Stormwater Pollution Prevention Plan (SWPPP).** A SWPPP consistent with the Statewide National Pollution Discharge Elimination System Construction General Permit (Order No. 2012-0006-DWQ) shall be developed and implemented. The SWPPP shall detail the construction-phase erosion and sediment control best management practices (BMPs) and the housekeeping measures for control of contaminants other than sediment. Erosion control BMPs shall include source control measures such as wetting of dry and dusty surfaces to prevent fugitive dust emissions, preservation of existing vegetation, and effective soil cover (e.g., geotextiles, straw much, hydroseeding) for inactive areas and finished slopes to prevent sediments from being dislodged by wind, rain, or flowing water. Sediment control BMPs shall include measures such as installation of fiber rolls and sediment basins to capture and remove particles that have already been dislodged. The SWPPP shall establish good housekeeping measures such as construction vehicle storage and maintenance, handling procedures for hazardous materials, and waste management BMPs, which shall include procedural and structural measures to prevent the release of wastes and materials used at the site. The SWPPP shall also detail spill prevention and control measures to identify the proper storage and handling techniques of fuels and lubricants, and the procedures to follow in the event of a spill.	BLWS and GIWS	SWPPP permit	Prior to initiating construction	Applicant and CSLC	Approval of SWPPP, implementation of prevention measures to reduce water quality impacts.

Table 4-1. Mitigation Monitoring Program

Potential Impact	Mitigation Measure (MM)	Location	Monitoring/ Reporting Action	Timing	Responsible Party	Effectiveness Criteria
Otherwise substantially degrade water quality	**MM HYDRO-2: Inadvertent-Return Contingency Plan.** At least 30 days before Project implementation, CPL shall submit to CSLC staff for review and approval and shall subsequently implement in the event of an inadvertent return, a final inadvertent-return contingency plan for horizontal directional drilling. The inadvertent-return contingency plan shall ensure that preventive and responsive measures can be implemented by the contractor and shall include: • Design protocols to be implemented for the protection of sensitive cultural and biological resources; • Design protocols to require a geotechnical engineer or qualified geologist to make recommendations regarding the suitability of the formations to be bored to minimize the potential for inadvertent return conditions.	BLWS and GIWS	Retain geotechnical engineer and/or qualified geologist documentation of design and drilling recommendation	At least 30 days prior to Project implementa-tion and throughout horizontal directional drilling	Applicant and CSLC	Inadvertent returns prevented or responded to appropriately

PAGE INTENTIONALLY LEFT BLANK

5.0 OTHER COMMISSION CONSIDERATIONS

In addition to the environmental review required pursuant to the California Environmental Quality Act (CEQA), a public agency may consider other information and policies in its decision-making process. This section presents information relevant to the California State Lands Commission's (Commission or CSLC) consideration of the Chevron Horizontal Directional Drill 3 (HDD3) Pipeline Replacement Project (Project). The Project would authorize Chevron Pipe Line Company (CPL or Applicant) to replace, in kind, part of CPL's Bay Area Products Line (BAPL) system, specifically a segment of the 8-inch Pittsburg-to-Sacramento lateral pipeline that traverses an area located in Solano County. The considerations included below address:

- Climate Change and Sea-Level Rise
- Environmental Justice
- State Tide and Submerged Lands Possessing Significant Environmental Values

Other considerations may be addressed in the staff report presented at the time of the CSLC's consideration of the Project.

5.1 CLIMATE CHANGE AND SEA-LEVEL RISE

Given the replaced pipeline will be as much as 120 feet below tidal areas of Suisun Marsh and Montezuma Slough, sea-level rise as a function of the global climate change process is not expected to have any effect on the Project. However, because climate change and sea-level rise accelerate and exacerbate natural coastal processes, such as intensity and frequency of storms, erosion and sediment transport, currents, wave action, and ocean chemistry, a brief discussion of climate change and sea-level rise is provided here.

Sea-level rise is driven by the melting of polar ice caps and land ice, as well as thermal expansion of sea water. Accelerating rates of sea-level rise are attributed to increasing global temperatures due to climate change. The California Ocean Protection Council updated the State of California Sea-Level Rise Guidance in 2018 to provide a synthesis of the best available science on sea-level rise projections and rates. Commission staff evaluated the "high emissions," "medium-high risk aversion" scenario to apply a conservative approach based on both current emission trajectories and the Project location. The San Francisco tide gauge was used for the projected sea-level rise scenario and the Project area could see up to 0.8 feet of sea-level rise by year 2030,

1.3 feet by 2040, 1.9 feet by 2050, and 6.9 feet by 2100[6]. The range in potential sea-level rise indicates the complexity and uncertainty of projecting these future changes, particularly in the second half of the century, which depend on the rate and extent of ice melt.

Along with higher sea levels, higher intensity and more frequent winter storms due to climate change will further impact coastal areas. The combination of these conditions will likely result in increased wave run up, storm surge, and flooding in coastal and near coastal areas. In rivers and tidally-influenced waterways, more frequent and powerful storms can result in increased flooding conditions and damage from storm created debris. Climate change and sea-level rise will also affect coastal and riverine areas by changing erosion and sedimentation rates. Beaches, coastal landscapes, and near-coastal riverine areas exposed to increased wave force, run up, and total water levels could potentially erode more quickly than before. However, rivers and creeks are also predicted to experience flashier sedimentation pulse events from strong winter storms, punctuated by periods of drought. Therefore, depending on precipitation patterns, sediment deposition and accretion may accelerate along some shorelines and coasts.

Pursuant to Executive Order B-30-15 (see Appendix A), all state agencies must take climate change into account in their planning and investment decisions and to give priority to actions that build climate preparedness. The preceding discussion of climate change and sea-level rise is intended to provide the local/regional overview and context that the CSLC staff considered pursuant to this Executive Order.

5.2 ENVIRONMENTAL JUSTICE

Environmental justice is defined by California law as “the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies” (Senate Bill 115 [Stats. 1999, ch. 690]). This definition is consistent with the Public Trust Doctrine principle that the management of trust lands is for the benefit of all people. In keeping with its commitment to environmental sustainability and access to all, California was one of the first states to codify the concept of environmental justice in statute. Beyond the fair treatment principles described in statute, environmental justice leaders work to include in the decision-making process those individuals disproportionately impacted by project effects.

The CSLC updated its 2002 Environmental Justice Policy on December 3, 2018 to ensure that environmental justice becomes an essential consideration in the agency’s processes, decisions, and programs. Through its policy, CSLC reaffirms its commitment

[6] Source: Table 13, State of California Sea-Level Rise Guidance: 2018 Update. Projections are with respect to a 1991 to 2009 baseline.

to an informed and open process in which all people are treated equitably and with dignity, and in which its decisions are tempered by environmental justice considerations.

The newly minted Environmental Justice Policy includes overarching goals to steer the CSLC towards a more equitable process. The policy was adopted with an "Implementation Blueprint" attached as an appendix which also includes goals and strategies, which are meant to guide the Commission's implementation of its Environmental Justice Policy and can be adapted to ensure the intent is achieved and meaningfully considered in all areas of the Commission's work. The goals and strategies created are meant to represent potential ways the Commission may advance its Environmental Justice Policy goals and benefit all peoples of California and the Public Trust.

In 2016, legislation was enacted to require local governments with disadvantaged communities, as defined in statute, to incorporate environmental justice into their general plans when two or more general plan elements (sections) are updated. The Governor's Office of Planning and Research, the lead state agency on planning issues, is working with state agencies, local governments, and many partners to update the General Plan Guidelines in 2019 with guidance for communities on environmental justice.

The U.S. Council of Environmental Quality's (CEQ 1997) Environmental Justice Guidance defines "minorities" as individuals who are members of the following population groups: American Indian or Alaskan Native, Asian or Pacific Islander, Black not of Hispanic origin, or Hispanic (CEQ 1997). Total minority population is calculated by subtracting the white alone, not Hispanic or Latino population, from the total population. According to the CEQ Environmental Justice Guidelines, minority populations should be identified if:

- A minority population percentage exceeds 50 percent of the population of the affected area, or

- The minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (for example, a governing body's jurisdiction, neighborhood census tract, or other similar unit).

The Guidelines explain that a minority population would also exist if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons (total minority population), meets one of the above-stated thresholds (CEQ 1997).

In addition, the CEQ Environmental Justice Guidance defines "low-income populations" as populations with mean annual incomes below the annual statistical poverty level

(CEQ 1997). The CEQ does not provide a discrete threshold for determining when a low-income population should be identified for environmental justice; however, for this analysis, an environmental justice population is identified if the low-income percentage of a local study area is equal to or greater than those of its respective county (Solano).

Table 5-1 presents income, employment, and race data of the regional and local study areas in the Project vicinity, based on the most recently available information from U.S. Census 2012-2016 American Community Survey (ACS) data. The local study areas are in the rural, unincorporated communities of Birds Landing and Collinsville and were not provided discrete census survey data. Solano County is used instead as a representative data set.

From a regional standpoint, the Project study area contains average to above-average income levels compared to the State. Solano County is supported primarily by educational services, and health care and social assistance; professional, scientific, and management, and administrative and waste management services; retail trade; and Arts, entertainment, and recreation, and accommodation and food services; and manufacturing (U.S. Census Bureau 2018).

By race, persons who identified as white are one of the largest racial groups in the State and regional study areas reviewed (see Table 5-1). Hispanic/Latino minority groups comprise the largest minority population overall, followed by Asian and Black minorities (the Census Bureau classifies Hispanic as an origin, not a race). Those who identify as Hispanic can be categorized under any of the U.S. Census Bureau classification groups, including “other,” in addition to Hispanic. While Solano County did not contain greater than 50 percent of any one minority population, the aggregated percentage of the total minority population was approximately 60 percent. Solano County thus contains an identified minority population.

For poverty, Solano County did not contain a greater percentage of low-income population than that within the State as a whole (see Table 5-1). The percentage of the population living below the poverty level within the County was similar or lower, and is not considered to contain a low-income population of concern with respect to environmental justice.

Since the percentage of low-income populations in the nearest communities is not disproportionately higher than in the surrounding area, impacts from Project activities would not have a disproportionate impact. Solano County has an identified (aggregated) minority population, but the distance from the Project site to residential communities, the nature of the Project activities, and small scale and short-term Project duration ensure that environmental justice impacts to any of the minority communities located within Collinsville and Bird’s Landing and all other nearby residential communities would be minor, regardless of socioeconomic determination.

Table 5-1. Environmental Justice Statistics

Subject		California	Solano County
Income and Population			
Total Population		38,654,206	429,596
Median household income		$63,783	$69,227
Percent below the Poverty level		15.8	12.7
Employment by Industry (percentage)			
Agriculture, forestry, fishing and hunting, and mining		**2.4**	1.6
Construction		**6.0**	7.5
Manufacturing		**9.7**	8.9
Wholesale trade		**3.0**	2.7
Retail trade		**11.0**	11.8
Transportation and warehousing, and utilities		4.8	5.8
Information		2.9	1.9
Finance and insurance, and real estate and rental and leasing		6.2	5.6
Professional, scientific, and management, and administrative and waste management services		13.1	9.9
Educational services, and health care and social assistance		20.9	22.5
Arts, entertainment, and recreation, and accommodation and food services		10.3	9.9
Other services, except public administration		5.3	4.6
Public administration		4.4	7.4
Race			
Not Hispanic or Latino	White	38.4	39.4
	Black	5.6	13.6
	American Indian	0.4	0.2
	Asian	13.7	14.8
	Other/mix	3.3	6.6
Hispanic or Latino		38.6	25.4

Source: U.S. Census Bureau 2018 (https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml#)

5.3 STATE TIDE AND SUBMERGED LANDS POSSESSING SIGNIFICANT ENVIRONMENTAL VALUES

The Project involves lands identified as possessing significant environmental values within the CSLC's Significant Lands Inventory, pursuant to Public Resources Code section 6370 et seq. The Project area is in the Significant Lands Inventory as parcel number 48-128-000, which includes the tidelands of Montezuma Slough. The subject lands are classified in use category Class B, which authorizes limited use. Environmental values identified for these lands are mostly biological, including endangered species, fish spawning, fishery and wildlife support, and critical ecosystem, but also having recreational values.

Based upon CSLC staff's review of the Significant Lands Inventory, consultation with California Department of Fish and Wildlife, and through the CEQA analysis provided in this MND, the project, as proposed, will not significantly affect those lands and is consistent with the use classification.

6.0 MND PREPARATION SOURCES AND REFERENCES

This Mitigated Negative Declaration (MND) was prepared by California State Lands Commission's Division of Environmental Planning and Management (DEPM) staff, with the assistance of the professional consulting firm of AECOM. The analysis in the MND is based on information identified, acquired, reviewed, and synthesized based on DEPM guidance and recommendations.

6.1 CALIFORNIA STATE LANDS COMMISSION STAFF

Christopher Huitt, Project Manager, Senior Environmental Scientist

Eric Gillies, Assistant Chief, DEPM

6.2 PROFESSIONAL CONSULTANT AUTHORS

Name and Title	MND Section(s)
AECOM	
Bill Martin, Project Manager	All
Florentina Craciun, Environmental Planner	All
Bridget Freitas, Environmental Planner	All
Eric Carson, Air Quality Engineer	Air Quality and Greenhouse Gas Emissions
Laura Duffy, Biologist	Biological Resources
Annamarie Guerrero, Archaeologist	Cultural Resources
Issa Mahmoodi	Noise

6.3 REFERENCES CITED

AECOM. 2015. Initial Geotechnical Investigation Report. Honker Bay HDD Project. Solano County, California. November 10, 2015.

Anthropological Studies Center (ASC). 1998a. An Archaeological Resources Study for the Solano County Portion of the Chevron Bay Area Pipeline Project, California. Anthropological Studies Center, Sonoma State University, Rohnert Park, CA.

———. 1998b. A Supplemental Archaeological Resources Study for the Solano County Portion of the Chevron Bay Area Pipeline Project, California. Anthropological Studies Center, Sonoma State University, Rohnert Park, CA.

Association of Bay Area Governments and Metropolitan Transportation Commission (ABAG and MTC). 2013. Plan Bay Area. Regional Transportation Plan and Sustainable Communities Strategy for the San Francisco Bay Area 2013-2040. Association of Bay Area Governments and Metropolitan Transportation Commission. Adopted July 18, 2013.

Bay Area Air Quality Management District (BAAQMD). 2009. California Environmental Quality Act Air Quality Guidelines Update, Proposed Thresholds of Significance. December 7, 2009.

———. 2017a. Bay Area 2017 Clean Air Plan. April 19, 2017.

———. 2017b. California Environmental Quality Act Air Quality Guidelines. May 2017. Available at: http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en. Accessed June 2018.

———. 2017c. Air Quality Standards and Attainment Status. May 26, 2015. Available at: www.baaqmd.gov/researchanddata/Airqualitystandardsandattainmentstatus. Accessed June 2018.

Bay Area Census (US Census Bureau). 2018. Solano County. Available at: www.bayareacensus.ca.gov/counties/SolanoCounty.htm. Accessed May 2018.

BioMaAS. 2017. California Ridgway's Rail and California Black Rail Protocol Survey Results - Chevron Mallard Farms Pipeline Replacement Project, Solano County, California. Prepared for Padre Associates, Inc. April 27th, 2017.

Brookshear, C. 2013a. California Department of Parks and Recreation 523 forms for P-48-990 Initial Facilities. JRP Historical Consulting, LLC, Davis, CA. On file Northwest Information Center, Rohnert Park, CA.

———. 2013b. California Department of Parks and Recreation 523 Forms for P-48-981, Grizzly Island Road. JRP Historical Consulting, LLC, Davis, CA. On file Northwest Information Center, Rohnert Park, CA.

———. 2013c. California Department of Parks and Recreation 523 Forms for P-48-985, Suisun Marsh Salinity Control Gate. JRP Historical Consulting, LLC, Davis, CA. On file Northwest Information Center, Rohnert Park, CA.

———.2013d. California Department of Parks and Recreation 523 Forms for P-48-000986, Suisun Marsh Pumps. JRP Historical Consulting, LLC, Davis, CA. On file Northwest Information Center, Rohnert Park, CA.

California Air Resources Board (CARB). 2008, 2014. Climate Change Scoping Plan.

———. 2018. iADAM Air Quality Data Statistics – Top 4 Summary. Available at: www.arb.ca.gov/adam/topfour/topfour1.php. Accessed June 2018.

California Climate Change Center. 2012. Our Changing Climate 2012 Vulnerability & Adaptation to the Increasing Risks from Climate Change in California, A Summary Report on the Third Assessment from the California Climate Change Center.

California Department of Conservation, Solano County Important Farmland, 2016. Available at: ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2016/sol16.pdf. Accessed May 2018.

———. 2014. Solano County Williamson Act FY 2013/2014. 2013. ftp://ftp.consrv.ca.gov/pub/dlrp/wa/Solano_13_14_WA.pdf. Accessed May 2018.

———. Office of Mine Reclamation. 2018. AB 3098 List, Current Listing as of May 3, 2018. Available at: ftp://ftp.consrv.ca.gov/pub/omr/AB3098%20List/AB3908List.pdf. Accessed May 2018.

California Department of Fish and Wildlife (CDFW). 2018a. Grizzly Island Wildlife Area Description, Closures. Wildlife Branch – Lands Program. Available at: www.wildlife.ca.gov/Lands/Places-to-Visit/Grizzly-Island-WA#11955195-closures. Accessed May 2018.

———. 2018b. California Natural Diversity Database (CNDDB). Biogeographic Data Branch, Department of Fish and Game.

———. 2010. A Status Review of California Tiger Salamander (Ambystoma californiense). Report to the Fish and Game Commission. January 11, 2010. Available online: http://www.elkhornsloughctp.org/uploads/files/1304721618CTS-StatusEvaluation.pdf. Accessed May 2018.

California Department of Forestry and Fire Protection, Forest and Range Assessment Project, 2010. Available at: http://frap.fire.ca.gov/data/assessment2010/pdfs/california_forest_assessment_nov22.pdf. Accessed May 2018.

———. 2018.California Fire Hazard Severity Zone Map. Available at: http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_statewide Accessed May 2018.

California Department of Resources Recycling and Recovery (CalRecycle). 2018a. Facility/Site Summary Details: Potrero Hills Landfill (48-AA-0075). Available at: http://www.calrecycle.ca.gov/SWFacilities/Directory/48-aa-0075/Detail/. Accessed May 2018.

———. 2018b. Facility/Site Summary Details: Keller Canyon Landfill (07-AA-0032). Available at: http://www.calrecycle.ca.gov/SWFacilities/Directory/07-AA-0032/Detail/. Accessed May 2018.

———. 2018c. Facility/Site Summary Details: Altamont Landfill (01-AA-0009). Available at: http://www.calrecycle.ca.gov/SWFacilities/Directory/01-aa-0009/Detail/. Accessed May 2018.

California Department of Transportation (Caltrans). 2013. Transportation and Construction Vibration Manual. Sacramento, CA. Available at:

http://www.dot.ca.gov/hq/env/noise/pub/tcvgm_sep13_verb.pdf. Accessed May 2018.

———. 2011. Scenic Highway Systems Lists. Available at: www.dot.ca.gov/design/lap/livability/scenic-highways/. Accessed May 2018.

———. 2016. 2016 Traffic Volumes on California State Highways. Available at: http://dot.ca.gov/trafficops/census/docs/2016_aadt_volumes.pdf. Accessed May 2018.

California Department of Water Resources (DWR). 2014. California's Groundwater Bulletin 118. San Francisco Bay Hydrologic Region Suisun-Fairfield Valley Groundwater Basin. Updated June 30, 2014.

_____. 2001. Suisun Ecological Workgroup: Final Report to the State Water Resources Control Board. November 2001. http://wdl.water.ca.gov/suisun/dataReports/docs/SEWFinalReport.pdf. Accessed May 2018.

California Geological Survey (CGS). 1993. State of California Special Studies Zones. Vine Hill Quadrangle. Revised Official Map, July 1, 1993.

———. 2002. California Geomorphic Provinces. Note 36. Based on the Geomorphic Map of California prepared by Olaf P. Jennings, 1938. Revisions of the text by D.L. Wagner, 2002.

Council on Environmental Quality (CEQ). 1997. Environmental Justice Guidance Under the National Environmental Policy Act. December 1997. Available at: https://www.epa.gov/sites/production/files/2015-02/documents/ej_guidance_nepa_ceq1297.pdf. Accessed December 2018.

Department of Toxics Substances Control (DTSC). 2018. Envirostor. Available at: www.envirostor.dtsc.ca.gov/public/. Accessed May 2018.

Fairfield-Suisun Unified School District. 2016. Fairfield-Suisun Unified School District 2016-2017 School Locator and Boundary Map. Available at: http://www.schoolworksgis.com/FSUSD/schoollocator2016.html. Accessed May 2018.

Federal Highway Administration (FHWA). 2006. FHWA Roadway Construction Noise Model User's Guide. U.S. Department of Transportation. Washington, DC and Cambridge, MA. January. Available at: www.fhwa.dot.gov/environment/noise/construction_noise/rcnm/rcnm.pdf. Accessed June 2018.

Federal Transit Administration (FTA). 2006. Transit Noise and Vibration Impact Assessment. FTA-VA-90-1003-06. Washington, DC: Office of Planning and Environment. Available at: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Noise_and_Vibration_Manual.pdf. Accessed May 2018.

Graham, P. 2016. Personal communication from Patrick Graham, Environmental Scientist Grizzly Island Wildlife Area, to Justin Whitfield, AECOM, on June 21, 2016.

Greger, Stephen G. 2011. National Register of Historic Places Registration form for P-48-000984 Sacramento Northern Railway Historic District. On file Northwest Information Center, Rohnert Park, CA.

Hill, S.R. 2009. Notes on California Malvaceae including nomenclatural changes and additions to the flora. Madroño 56(2): 104-111.

Hill, S.R. 2018. Personal Communication. Email to D. Slakey and B. Baldwin on the identity of *Sidalcea keckii* in Solano County.

ICF International. 2013. Suisun Marsh Habitat Management, Preservation, and Restoration Plan. Prepared for the Suisun Principal Agencies (U.S. Department of the Interior Bureau of Reclamation, US Fish and Wildlife Service, California Department of Fish and Game), May 2013. Available online: http://www.usbr.gov/mp/nepa/documentShow.cfm?Doc_ID=17283. Accessed April 2018.

Intergovernmental Panel on Climate Change (IPCC). 2013. Fifth Assessment Report by Working Group I, "Climate Change 2013: The Physical Science Basis." Chapter 8, Appendix 8.A. Available at: https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_Chapter08_FINAL.pdf. Accessed June 2018.

Meyer, J., Costello, J., Mikkelsen, P., Johnson, M., and N. Scher. 2013. Suisun Marsh Habitat Management, Preservation, and Restoration Plan Cultural Resources Contextual Report. Volume I – Archaeological Resources. Far Western Anthropological Research Group, Inc. Davis, CA.

National Research Council. 2012. Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future. Report by the Committee on Sea Level Rise in California, Oregon, and Washington. National Academies Press, Washington, DC. 250 pp. Available at: http://www.nap.edu/read/13389/chapter/1. Accessed May 2018.

Nelson, N.C. 1909. Shellmounds of the San Francisco Bay Region. University of California Publications in American Archaeology and Ethnology. Pages 309-356.

Office of Environmental Health Hazard Assessment. 2018. Indicators of Climate Change in California. May 2018. Available at: https://oehha.ca.gov/climate-change/report/2018-report-indicators-climate-change-california. Accessed June 2018.

Johnson, Patti J. 1978. Patwin. In Handbook of North American Indians, Volume 8, California, ed. R. F. Heizer, pp. 350–359. Smithsonian Institution, Washington, DC.

Levy, R. 1978. Costanoan. In Handbook of North American Indians, Volume 8, California, ed. R. F. Heizer, pp. 485–499. Smithsonian Institution, Washington, DC.

Peeler, C. and Maniery, G. 1980. Archaeological Site Survey Record for P-48-133. On file Northwest Information Center, Rohnert Park, CA.

Romero-Lankao, P., Smith, J.B., Davidson, D.J., Diffenbaugh, N.S., Kinney, P.L., Kirshen, P., Kovacs, P., and L. Villers Ruiz. 2014. North America. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Barros, V.R., C.B. Field, D.J. Dokken, M.D. Mastrandrea, K.J. Mach, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1439-1498. Available at: www.ipcc.ch/pdf/assessment-report/ar5/wg2/WGIIAR5-Chap26_FINAL.pdf. Accessed May 2018.

San Francisco Bay Regional Water Quality Control Board (RWQCB). 2010. Waste Discharge Requirements for the City of Rio Vista, Northwest Wastewater Treatment Facility, Solano County.

———. 2017. Water Quality Control Plan (Basin Plan) for the San Francisco Bay Region. December 31. Available at: www.waterboards.ca.gov/sanfranciscobay/basin_planning.shtml. Accessed May 2018.

San Luis Obispo County Air Pollution Control District. 2012. Greenhouse Gas Thresholds and Supporting Evidence. March 28, 2012.

Sawyer, J. O., Keeler-Wolf, T., and J. M. Evens. 2009. A manual of California vegetation, 2nd edition. California Native Plant Society, Sacramento, CA.

Solano County. 2008a. General Plan, Appendix C: Suisun Marsh Policy Addendum. Available at: www.co.solano.ca.us/depts/rm/planning/general_plan.asp. Accessed April 2018.

———.2008b. General Plan, Public Facilities and Services Chapter. Available at: https://www.solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=6498. Accessed May 2018.

———.2008c. General Plan, Resources Chapter (Figures RS-3 and RS-4). Available at: http://www.solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=6494. Accessed May 2018.

———. 2008d.General Plan, Park and Recreation Element Chapter. Available at: https://www.solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=6500. Accessed May 2018.

———. 2008e.General Plan, Transportation and Circulation Chapter. Available at: http://www.solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=6497. Accessed May 2018.

———. 2011. Climate Action Plan. June 2011.

———. 2012. Emergency Operations Plan, Flood and Tsunami Annex. Accessed May 2018.

———. 2015a. General Plan, Public Health and Safety Chapter. Available at: www.solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=21582. Accessed April 2018.

———. 2015b. General Plan, Housing Element Update. Available at: http://www.solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=21583. Accessed May 2018.

———. 2018a. Zoning Code. Available at: https://www.solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=17741. Accessed May 2018.

———. 2018b. Noise Ordinance. Available at: http://www.solanocounty.com/civicax/filebank/blobdload.aspx?blobid=26267. Accessed May 2018.

Solano County Water Agency. 2012. Solano Multispecies Habitat Conservation Plan (Final Administrative Draft). Available at: www.scwa2.com/watersupply/habitat/solanomultispecieshabitatconservationplan. Accessed May 2018.

Solano Transportation Authority (STA). 2005. Comprehensive Transportation Plan (CTP) 2030.

South Coast Air Quality Management District. 2008. Interim CEQA GHG Significance Threshold for Stationary Sources, Rules, and Plans. December 5, 2008.

State Water Resources Control Board (SWRCB). 2003. Statewide General Waste Discharge Requirements for Discharges to Land with a Low Threat to Water Quality. Water Quality Order 2003-0003-DWQ.

———. 2012. NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities. Order No. 2012-0006-DWQ, NPDES NO. CAS000002. July 17, 2012.

———. 2018. GeoTracker Database. Available at: http://geotracker.waterboards.ca.gov/ Accessed May 2018.

Thompson, L. 2016. Personal communication from Laureen Thompson, CDFW Bay Delta Environmental Scientist, to Justin Whitfield, AECOM, on June 23, 2016.

U.S. Bureau of Reclamation (USBR), U.S. Fish and Wildlife (USFWS), and California Department of Fish and Game (now CDFW). 2013. Suisun Marsh Habitat Management, Preservation, and Restoration Plan Final Environmental Impact Statement/ Environmental Impact Report. November 2013.

U.S. Census Bureau. 2018. American Fact Finder. 2018. https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml#. Accessed November 2018.

U.S. Environmental Protection Agency (USEPA). 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. Washington, DC. March. Available at: http://nepis.epa.gov/Exe/ZyPDF.cgi/2000L3LN.PDF?Dockey=2000L3LN.PDF. Accessed June 2018.

———. 2018. Outdoor Air Quality Data Monitor Values Report. Available at: https://www.epa.gov/outdoor-air-quality-data/monitor-values-report. Accessed June 2018.

U.S. Fish and Wildlife Service (USFWS). 2015. Habitat Conservation Plans Website: Regional HCPS Under Development. Last updated: October 20, 2015. Available at: www.fws.gov/sacramento/es/Habitat-Conservation-Plans/es_hcp.htm. Accessed April 2018.

U.S. Geological Survey (USGS). 2006. Maps of Quaternary Deposits and Liquefaction Susceptibility In the Central San Francisco Bay Region, California. Liquefaction Susceptibility. Open-File Report 06-1037, Sheet 2.

USGS and Association for American State Geologists. 2016. http://ngmdb.usgs.gov/maps/mapview/. Accessed April 2018.

Western Regional Air Partnership (WRAP). 2006. WRAP Fugitive Dust Handbook. Prepared for Western Governors' Association. September 7, 2006. Available at: www.wrapair.org/forums/dejf/fdh/content/FDHandbook_Rev_06.pdf. Accessed July 2015.

Wills, Carrie D. 1992. CA-ISO-20. William Self Associates, Orinda, California. On file Northwest Information Center, Rohnert Park, CA.

Witter, R. C., Knudsen, K.L., Sowers, J.M., Wentworth, C.M., Koehler, R.D., and Randolph, C.E. 2006 Maps of Quaternary Deposits and Liquefaction Susceptibility in the Central San Francisco Bay Region, California, Part 3: Description of Mapping and Liquefaction Interpretation, in cooperation with the California Geological Survey, USGS Open File Report.

Zhu, Y., Hinds, W. C., Kim, S., and S. Shen. 2002. Study of Ultrafine Particles near a Major Highway with Heavy-duty Diesel Traffic. Atmospheric Environment 36:4323–4335.

PAGE INTENTIONAL LEFT BLANK