

LOWER WALNUT CREEK RESTORATION PROJECT

Initial Study/Notice of Intent to Adopt a Mitigated Negative Declaration

Prepared for
Contra Costa County Flood Control and
Water Conservation District

September 2019



LOWER WALNUT CREEK RESTORATION PROJECT

Initial Study/Notice of Intent to Adopt a Mitigated Negative Declaration

Prepared for
Contra Costa County Flood Control and
Water Conservation District

September 2019

Contact info:
Paul Detjens
paul.detjens@pw.cccounty.us
(925) 313-2394

550 Kearny Street
Suite 800
San Francisco, CA 94108
415.896.5900
esassoc.com



Bend	Oakland	San Diego
Camarillo	Orlando	San Francisco
Delray Beach	Pasadena	Santa Monica
Destin	Petaluma	Sarasota
Irvine	Portland	Seattle
Los Angeles	Sacramento	Tampa

OUR COMMITMENT TO SUSTAINABILITY | ESA helps a variety of public and private sector clients plan and prepare for climate change and emerging regulations that limit GHG emissions. ESA is a registered assessor with the California Climate Action Registry, a Climate Leader, and founding reporter for the Climate Registry. ESA is also a corporate member of the U.S. Green Building Council and the Business Council on Climate Change (BC3). Internally, ESA has adopted a Sustainability Vision and Policy Statement and a plan to reduce waste and energy within our operations. This document was produced using recycled paper.

TABLE OF CONTENTS

Lower Walnut Creek Restoration Project Initial Study/Mitigated Negative Declaration

	<u>Page</u>
Chapter 1, Project Description.....	1-1
1.1 Introduction	1-1
1.1.1 Project Location	1-1
1.1.2 Project Background	1-5
1.1.3 Goals and Objectives	1-6
1.2 Project Description.....	1-6
1.2.2 South Reach.....	1-17
1.2.3 Middle Reach.....	1-26
1.2.4 North Reach	1-30
1.2.5 Pacheco Reach	1-40
1.2.6 Project Construction for All Reaches	1-40
1.2.7 Operations, Maintenance, Monitoring and Management	1-59
Chapter 2, Environmental Checklist.....	2-1
2.1 Environmental Factors Potentially Affected	2-3
2.2 Environmental Checklist	2-4
2.2.1 Aesthetics.....	2-4
2.2.2 Agriculture and Forestry Resources	2-14
2.2.3 Air Quality	2-16
2.2.4 Biological Resources	2-24
2.2.5 Cultural Resources	2-69
2.2.6 Energy	2-75
2.2.7 Geology and Soils	2-77
2.2.8 Greenhouse Gas Emissions.....	2-84
2.2.9 Hazards and Hazardous Materials	2-87
2.2.10 Hydrology and Water Quality.....	2-96
2.2.11 Land Use and Planning	2-105
2.2.12 Mineral Resources.....	2-107
2.2.13 Noise	2-108
2.2.14 Population and Housing	2-118
2.2.15 Public Services	2-119
2.2.16 Recreation	2-122
2.2.17 Transportation	2-124
2.2.18 Tribal Cultural Resources	2-130
2.2.19 Utilities and Service Systems	2-132
2.2.20 Wildfire	2-137
2.2.21 Mandatory Findings of Significance.....	2-140

	<u>Page</u>
Appendices	
A. GHG and Air Quality	A-1
B. Lower Walnut Creek Habitat Assessment.....	B-1
C. Soil Quality Assessment	C-1

List of Figures

Figure 1	Proposed Project Location.....	1-2
Figure 2	Existing Land Use, Utilities and Infrastructure (Proposed Project).....	1-3
Figure 3	Existing Habitat Types	1-9
Figure 4	Project Restoration Plan	1-10
Figure 5	Schematic Tidal Marsh Profile	1-13
Figure 6	South Reach Plan View	1-19
Figure 7	South Reach Cross Sections	1-20
Figure 8	Middle Reach Plan View	1-27
Figure 9	Middle Reach Typical Cross Sections	1-28
Figure 10	Project Plan	1-31
Figure 11	Typical Cross Sections – Proposed Project (Expanded North Reach)	1-35
Figure 12	Pacheco Marsh Public Access	1-37
Figure 13	Potential Construction Haul Routes South Reach	1-43
Figure 14	Potential Construction Haul Routes Middle Reach	1-44
Figures 15 and 16	Representative Photos of the North Reach.....	2-5
Figures 17 and 18	Representative Photos of the North Reach.....	2-6
Figures 19 and 20	Representative Photos of the Middle Reach.....	2-8
Figures 21 and 22	Representative Photos of the South Reach	2-9
Figure 23	Industry in Distance, Representative Wetlands and Uplands (likely Middle Reach)	2-10
Figure 24	Pipeline Adjacent to Waterfront Road.....	2-11
Figure 25	Contra Costa General Plan Land Use Compatibility for Community Noise Environments.....	2-112

List of Tables

Table 1	Summary of Activities by Reach	1-7
Table 2	Proposed Project – Habitat Restoration and Enhancement Area By Reach....	1-11
Table 3	Preliminary Tidal Marsh Design Elevations	1-12
Table 4	Proposed Project - Tidal Channel Dimensions by Channel Order	1-14
Table 5	Construction Overview.....	1-41
Table 6	Seasonal Work Windows for Special Status Species	1-41
Table 7	Target Weeds and Management Methods.....	1-48
Table 8	Invasive Vegetation Management Schedule.....	1-49
Table 9	Construction Equipment	1-57
Table 10	Earthwork Volumes.....	1-59
Table 11	Construction Seasons and Duration	2-18
Table 12	Average Daily Project Construction-related Pollutant Emissions (pounds/day).....	2-19
Table 13	Average Daily Operational Pollutant Emissions (pounds/day)	2-20
Table 14	Annual Operational Pollutant Emissions (tons/year).....	2-20
Table 15	Sensitive Natural Communities within the Project Area Relative to Natural Communities Identified in the Habitat Assessment.....	2-55
Table 16	Potentially Jurisdictional Wetlands and Waters of the U.S. and of the State in the Project Area	2-60

	<u>Page</u>
Table 17 Cultural Resources Recorded within ½-mile of the Proposed Project.....	2-70
Table 18 Reference Construction Equipment Noise Levels – (50 feet from source)	2-114
Table 19 Summary of Estimate Noise Levels at Sensitive Receptors During Proposed Project Construction	2-115
Table 20 Maximum Daily Construction Vehicle Trips	2-126

This page intentionally left blank

CHAPTER 1

Project Description

1.1 Introduction

The Lower Walnut Creek Restoration Project (proposed project or project), led by the Contra Costa County Flood Control and Water Conservation District (District), would restore and enhance tidal wetlands, adjacent lowland grasslands and seasonal wetlands, and uplands along the southern shore of Suisun Bay and from Suisun Bay upstream along Walnut Creek and its tributary, Pacheco Creek. By doing so, the proposed project would improve habitat quality, diversity, and connectivity along Walnut Creek and Pacheco Creek, and along the southern Suisun Bay shoreline, provide more sustainable flood protection that would avoid the need for significant dredging, and provide a public access trail corridor for future connection of the Iron Horse Regional Trail and San Francisco Bay Trail extension through the project site.

1.1.1 Project Location

The proposed project site is located in unincorporated Contra Costa County, with two small parcels within the City of Martinez boundary, along the lower 2.5 miles of Walnut Creek and 1.5 miles of Pacheco Creek (**Figure 1**). The Walnut Creek watershed is the largest watershed in Contra Costa County, and one of the largest in the Bay Area, draining approximately 150 square miles.

The proposed project is generally organized into the following reaches:

- The South Reach, located between the BNSF Railroad embankment and the confluence of Pacheco and Walnut creeks; the
- Pacheco Reach, located along Pacheco Creek from the confluence with Walnut Creek to the upstream project limits; the
- Middle Reach, located between Pacheco Creek and the Union Pacific Railroad (UPRR) embankment; and the,
- North Reach, located between Waterfront Road and Suisun Bay in the area historically called “Pacheco Marsh.”

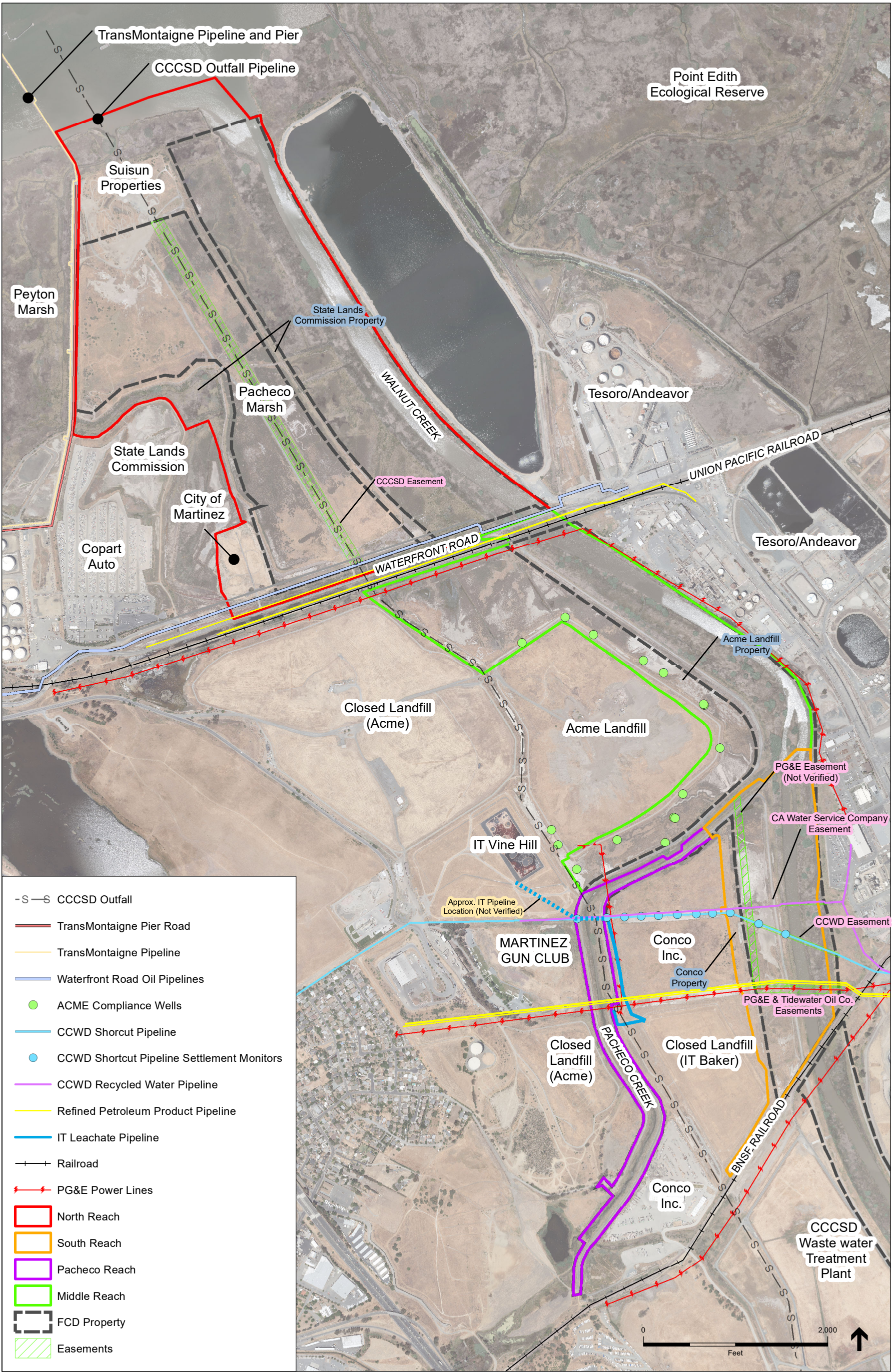
Land use within the project site is largely industrial, with areas of undeveloped land (**Figure 2**).



SOURCE: ESA, 2019; Digital Globe, 2017

Lower Walnut Creek Restoration D170378

Figure 1
Project Location



SOURCE: ESA, 2018

Lower Walnut Creek Restoration D170378

NOTES:
Locations of utilities and easements shown are approximate
Waterfront Road Oil Pipelines include buried and above ground pipelines owned by TransMontaigne, Andeavor, and Kinder Morgan.
Imagery Source: Contra Costa County, 2014

Figure 2
Existing Land Use, Utilities and Infrastructure

This page intentionally left blank

1.1.2 Project Background

In the 1960s, the lowest four miles of Walnut and Pacheco creeks became part of a U.S. Army Corps of Engineers (USACE) flood control project. Levees were constructed along the creek banks and the Walnut Creek channel was dredged to provide flood conveyance. The channel has since experienced extensive sedimentation and a wide band of tidal marsh has emerged adjacent to the open water channel. This fringing marsh provides habitat for sensitive fish and wildlife species in the previously-dredged area; however, sediment accumulation in the marsh areas also reduces the channel conveyance capacity below the level mandated by the original USACE project Operations and Maintenance Manual published in 1968. Ongoing dredging to restore creek capacity is not environmentally or economically feasible. The District was recently successful in “deauthorizing” the project area from the larger USACE-constructed project, returning management of Lower Walnut Creek to local control.

The proposed project responds to large losses of historic wetlands habitat, the recent deauthorization that has provided an opportunity to re-evaluate the District’s flood protection strategy within the project site, and the limited public access and recreational opportunities in this region of Contra Costa County.

Loss of Wetland Habitat. San Francisco Bay has lost 80% of its historic tidal wetlands, with areas immediately adjacent to Walnut Creek losing 85% of the historic tidal wetland.¹ This reduction in habitat area threatens native marsh-dependent fish and wildlife species, including special status species such as salmonids, salt marsh harvest mouse, Ridgway’s rail, and California black rail. The State-listed Mason’s lilaeopsis, Delta tule pea, and Suisun Marsh aster, are rare plant species in California that have been adversely affected by loss of tidal marsh habitat.

Sustainable Flood Protection. The USACE’s Lower Walnut Creek Flood Protection Project was designed in the 1960s to provide flood protection during a 100-year flood event. However, recent hydrologic analysis indicates that the USACE under-estimated the 100-year peak flow rate during project design.^{2,3} Consequently, the original flood control channel design is undersized relative to the 100-year flood event, and as a result, the adjacent areas to the west of Lower Walnut Creek are within the 100-year floodplain.⁴

Maintaining a 100-year level of flood protection under these conditions requires expensive and environmentally destructive large-scale dredging to protect relatively flood tolerant land uses. For the current project, the District seeks to provide *appropriate* levels of flood protection that are suited to the existing land uses and are also in line with ongoing natural geomorphic processes.

¹ San Francisco Estuary Institute, 2016. Flood Control 2.0 Project Website. <http://www.sfei.org/projects/flood-control-20>. Accessed March 2017.

² U.S. Army Corps of Engineers, 2008. Lower Walnut Creek General Reevaluation Report Hydrology Appendix. June 2008.

³ The 100-year peak flow used for the Flood Protection Project design (25,000 cfs) is significantly smaller than the 100-year peak flow calculated as part of a 2008 USACE hydrology study (31,200 cfs).

⁴ Federal Emergency Management Agency, 2015. Flood Insurance Study – Contra Costa County, California and Incorporated Areas. FIS #s: 06013CV001B, 06013CV002B, 06013CV003B, 06013CV004B, 06013CV005B. September 30, 2015.

Public Access. The Lower Walnut Creek Project area is located in a gap between several existing and planned regional trail connections. The regional Iron Horse Trail currently ends 1.5 miles south of the project site, and does not provide access to the Suisun Bay shoreline. An extension of the Iron Horse Trail along Lower Walnut Creek could connect to a trail network on Pacheco Marsh and provide shoreline access. In addition, the regional San Francisco Bay Trail passes 1.3 miles west of the project site. The proposed project presents an opportunity to link these two major regional trail networks, and would allow visitors on both trail systems to experience the natural amenities within the project site.

1.1.3 Goals and Objectives

The proposed project goal is to:

Restore and enhance wetlands and associated habitats in Lower Walnut Creek and provide sustainable flood management, while allowing opportunities for public access and recreation.

The proposed project objectives are to:

- *Restore wetlands to improve ecological function and habitat quantity, quality, and connectivity (including upland transition zones) in the Lower Walnut Creek area for native, resident plant and animal species including special status species.*
- *Maintain appropriate levels of flood protection along Lower Walnut and Pacheco creeks, as warranted by the land use.*
- *Allow for future public access, education, and recreational opportunities.*
- *Create sustainable benefits that consider future environmental changes such as sea level rise and sedimentation.*

1.2 Project Description

The proposed project would restore and enhance coastal wetlands and adjacent habitats along the southern shoreline of Suisun Bay and from the mouth of Walnut Creek at Suisun Bay upstream along Walnut Creek and Pacheco Creek, improving habitat quality, diversity, and connectivity along four miles of creek channel, over approximately 386 acres in total. Key project elements include:

- Restoration and enhancement of tidal and seasonal wetlands, lowland grasslands, and upland grasslands and scrub in all reaches through invasive plant species control, excavation and grading, and revegetation in all reaches
- Creation of new setback levees in the South and Middle reaches to provide sustainable flood protection
- Creation of new public access opportunities including trails and boardwalks, recreational water access points, and an interpretive center in the North Reach
- Opportunities for the future extension of the Iron Horse Trail in the South Reach
- Protection of existing water and wastewater infrastructure in the South and North Reaches and landfill infrastructure in the Middle Reach.

Public access amenities and trails are expected to be completed by other entities such as the John Muir Land Trust (JMLT) and East Bay Regional Park District (EBRPD). Construction of the project is expected to occur in three phases. It is anticipated that the District would construct levees and berms that provide width and opportunity for trails and would conduct the initial grading for public amenities during the first and second phases of the project. The other entities would complete trail surfacing, construct the bridges, and interpretive center, etc. during the third phase of the project. The temporary construction and long-term operational impacts of the restoration of the South, Pacheco, Middle, and North Reaches in phases 1 and 2, and the creation of public access in the North Reach, are disclosed and analyzed herein. Impacts related to creation of public access in the South Reach are not included in this document.

The following subsections describe in detail the anticipated habitat restoration, flood protection, future public access, and other elements that comprise the project. The overall habitat restoration is presented first, followed by reach-specific descriptions by element. It is important to note that natural processes involved in restoration will likely lead to some variation in the acreages of various habitat types. **Table 1** below includes a summary of the activities for each of the reaches in the project.

TABLE 1
SUMMARY OF ACTIVITIES BY REACH

Reach	Habitat Restoration and Enhancement*	Flood Protection	Public Access	Implementation	
				Phase	Lead
South	47 acres	Restored floodplain and 3,200 feet of new setback levee	Potential future extension of the Iron Horse Trail along new levee alignment	1 - Habitat Restoration and Flood Protection	Contra Costa County Flood Control District
				Future - Public Access	East Bay Regional Park District
Middle	80 acres	Restored floodplain and 4,800 feet of new setback levee	Not Applicable	2 - Habitat Restoration and Flood Protection	Contra Costa County Flood Control District
North	232 acres	Restored floodplain	4 miles of trails, new water access points, and an interpretive/ education center	1 - Habitat Restoration and Flood Protection	Contra Costa County Flood Control District
				3 - Public Access	John Muir Land Trust
Pacheco	27 acres	Not Applicable	Not Applicable	1 - Habitat Restoration	Contra Costa County Flood Control District

NOTE: See Table 2 - Proposed Project - Habitat Restoration and Enhancement Area by Reach

Habitat Restoration

Habitat restoration elements would consist of creating and enhancing tidal wetlands and waters, adjacent non-tidal wetlands and waters, and transitional ecotones and upland habitat to support a diversity of plant communities and wildlife species. Existing habitats in the project area are shown in **Figure 3** and the proposed project would restore and enhance approximately 130 acres

of tidal wetland, 20 acres of non-tidal wetlands, 14 acres of tidal waters, 4 acres of non-tidal waters, and 118 acres of transitional and upland areas. In addition, the project would also benefit and enhance approximately 100 acres of tidal wetlands adjacent to the project site by increasing tidal and habitat connectivity.

Each proposed habitat element is described below and illustrated in **Figure 4. Table 2** includes a summary of restoration and enhancement areas by project reach for the proposed project.

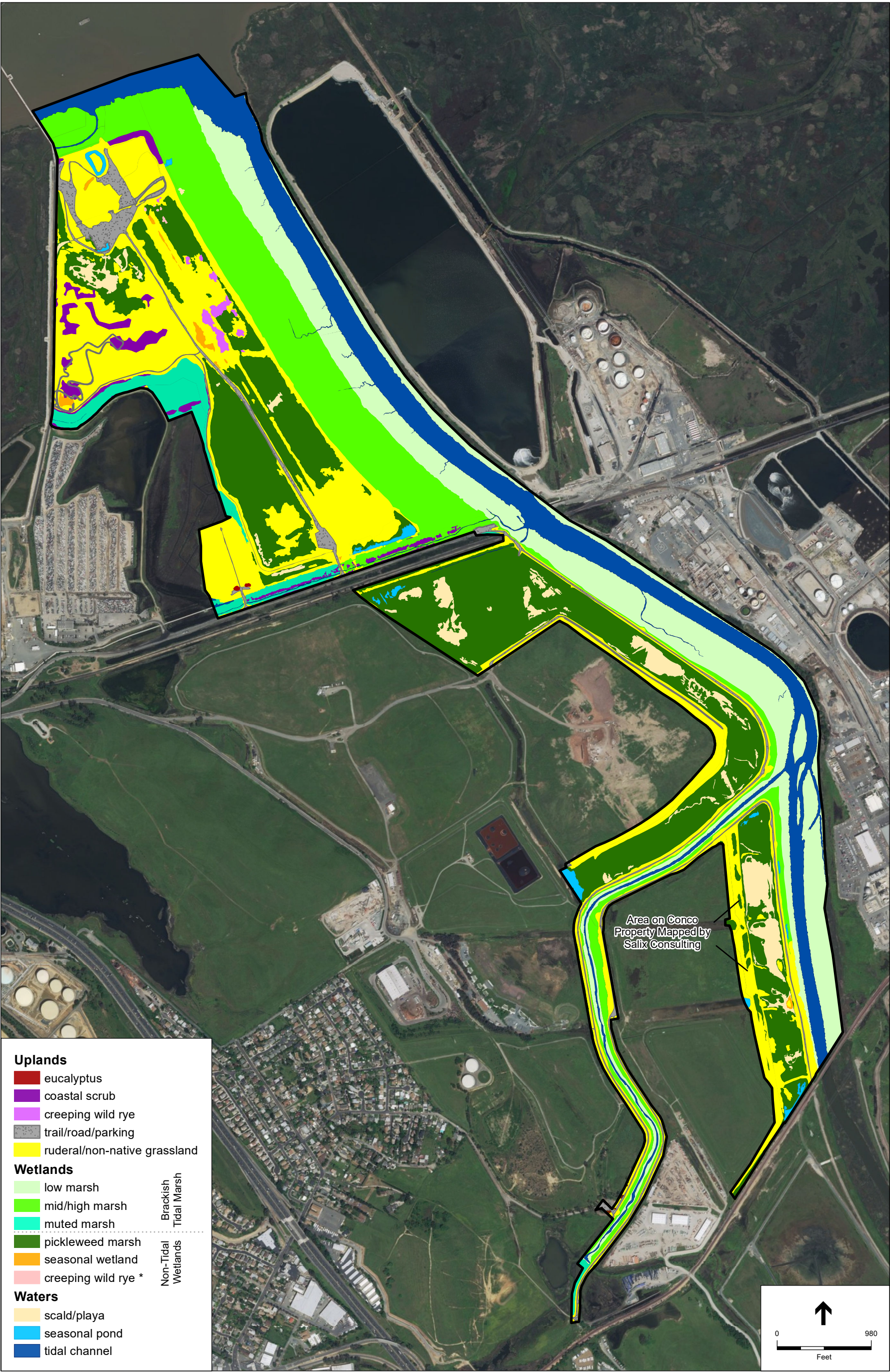
Tidal Wetlands Restoration (Tidal Marsh)

Tidal marsh restoration elements planned for the site include vegetated brackish tidal marsh, tidal channel networks, and shallow brackish marsh ponds. These elements would be achieved through grading channels that would re-connect Walnut Creek to its adjacent habitats and through general grading to provide topographic variety. Complex restored tidal marshes would support a diversity of native wildlife species. Fish could forage in the marsh plain during spring high tides and forage in channels during most levels of the tide. Small mammals, such as the salt marsh harvest mouse, would have access to some high marsh areas where cover and available flood refuge habitat would be created. Birds such as California black rail, Suisun song sparrow, salt marsh common yellowthroat, and Ridgway's rail may forage or nest in the low and high marsh. Special status plants such as Mason's lilaeopsis, Delta tule pea, and Suisun marsh aster currently occur in the existing marsh plain of Lower Walnut Creek, especially along channel edges. They are expected to colonize areas in analogous subhabitats of the restored tidal marshes.

Tidal channels and marsh ponds would provide habitat diversity within the brackish tidal marsh. Channels through the marsh would provide estuarine fish habitat and wildlife corridor connections between the marsh and adjacent terrestrial ecotones. Ponds would provide habitat for native brackish submerged aquatic vegetation, small prey fish, and many waterbirds, including dabbling ducks that would also use adjacent lowland grassland habitats.

Tidal Marsh Plain

Most of the restored tidal marsh habitat would be created by reintroducing tidal circulation to appropriate existing grades and substrates in the project site through breaching and lowering levees and revegetation. Select areas in all reaches, including the existing levees to be lowered (re-graded) and some areas where artificial fill has been placed, would be excavated to current mid- and high-marsh elevations to create tidal marsh. Graded marsh plain slopes would range from approximately one to five percent. Tidal marsh plain (and channels) would be graded into areas of restored lowland terrestrial habitats to enhance ecological values and function in the short term, but primarily to provide long-term high marsh habitat during sea level rise over decades. The revegetation approach relies on a combination of passive (natural filling in of vegetation) and active (planted) revegetation.

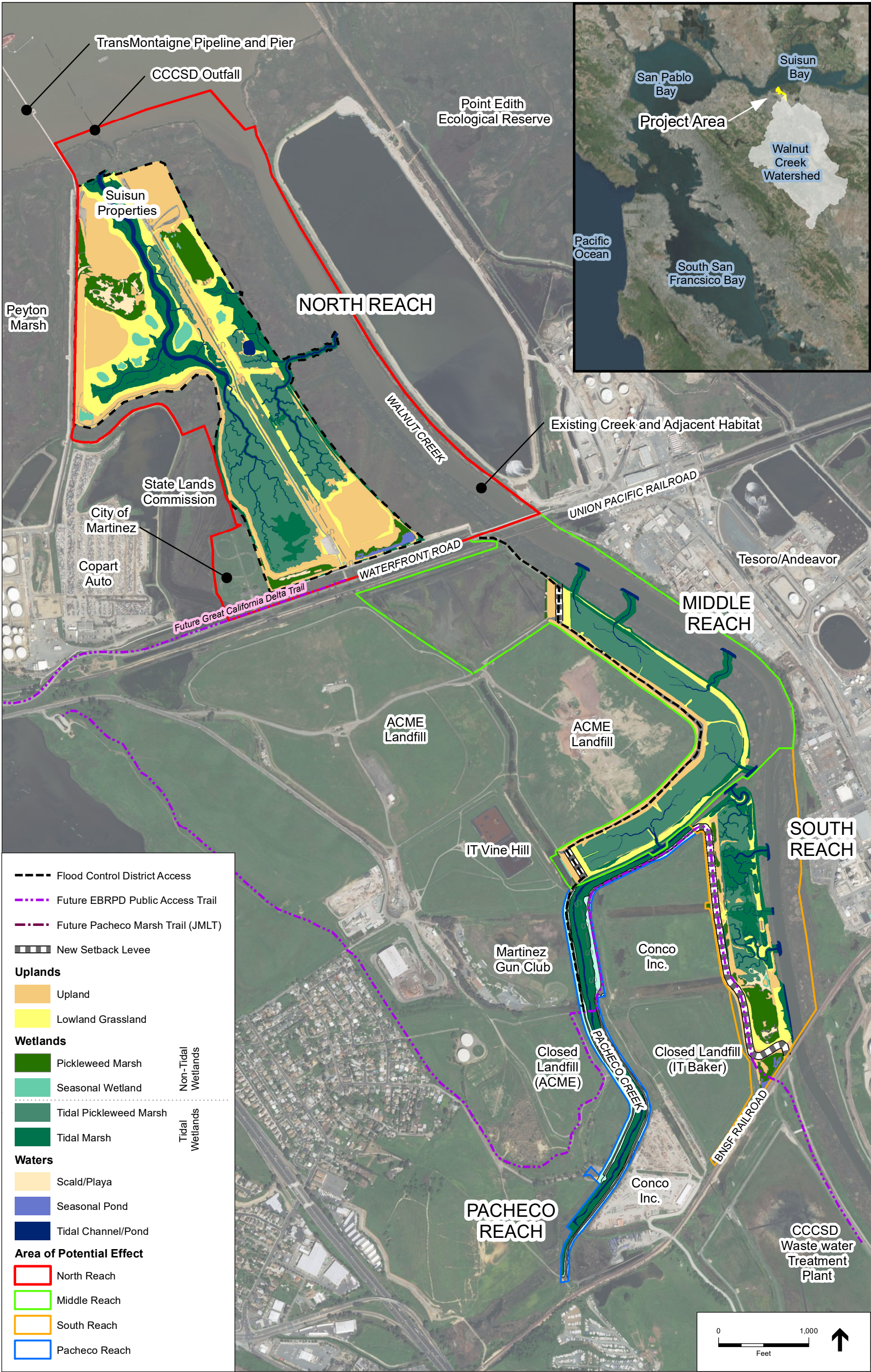


SOURCE: ESA 2017, 2018; LSA 2012; Salix, 2016; NAIP 2016

Lower Walnut Creek Restoration D170378

* Wetland creeping wild rye occurs in small areas along the north edge of Pacheco Marsh.

Figure 3
Existing Habitats



SOURCE: ESA, 2018

Lower Walnut Creek Restoration D170378

Figure 4
Project Restoration Plan

TABLE 2
PROPOSED PROJECT – HABITAT RESTORATION AND ENHANCEMENT AREA BY REACH

Habitat Type	North Reach (Expanded) (acres)		Middle Reach (acres)		South Reach (acres)		Pacheco Creek Reach (acres)		Total (acres)	
	Restoration	Enhancement	Restoration	Enhancement	Restoration	Enhancement	Restoration	Enhancement	Restoration	Enhancement
Upland										
Upland	42.82	0.02	9.17	0.02	8.75	0.00	7.85	0.00	68.59	0.04
Lowland Grassland	25.51	0.00	6.42	0.00	4.44	0.00	0.00	0.00	36.36	0.00
Developed (trail/road/parking)	4.18	0.00	3.49	0.00	1.56	0.00	3.87	0.00	13.10	0.00
Non-Tidal Wetlands										
Pickleweed Marsh	10.88	0.00	0.28	0.00	5.41	0.00	0.72	0.00	17.29	0.00
Seasonal Wetland	2.96	0.00	0.08	0.00	0.10	0.00	0.13	0.00	3.26	0.00
Tidal Wetlands										
Brackish Tidal Marsh	27.98	72.73	7.55	21.83	11.32	4.91	12.34	0.00	59.19	99.47
Pickleweed Marsh (Tidal)	33.97	0.00	29.51	0.00	6.88	0.00	0.00	0.00	70.36	0.00
Non-Tidal Waters										
Scald/Playa	2.03	0.04	0.03	0.00	0.76	0.00	0.00	0.00	2.82	0.04
Seasonal Pond	0.71	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.96	0.00
Tidal Waters										
Tidal Channels	7.60	0.48	1.92	0.20	2.20	0.15	2.45	0.00	14.18	0.82
Subtotal	158.64	73.26	58.44	22.05	41.67	5.06	27.37	0.00	286.11	100.37
Total	231.90		80.49		46.73		27.37		386.48	

Elevation and vegetation transect surveys completed by ESA within the project site were used to establish preliminary design tidal marsh plain elevations, shown in **Table 3** and illustrated on **Figure 5**. The elevations in the table provide a guide; however, habitat types blend into each other based on elevation and would be comprised of a mix of their component species, as dictated by soils, micro-topography and hydrologic conditions.

TABLE 3
PRELIMINARY TIDAL MARSH DESIGN ELEVATIONS

Marsh Type	Elevations ^a (feet NAVD88)	Target Plant Community
High Marsh	6.2 – 7.2	pickleweed (<i>Salicornia pacifica</i>), saltgrass (<i>Distichlis spicata</i>), marsh jaumea (<i>Jaumea carnosa</i>), alkali heath (<i>Frankenia salina</i>), marsh gumplant (<i>Grindelia stricta</i> var. <i>angustifolia</i>), Pacific silverweed (<i>Potentilla anserina</i>), western goldenrod (<i>Euthamia occidentalis</i>), salt marsh baccharis (<i>Baccharis glutinosa</i>), salt marsh fleabane (<i>Pluchea odorata</i>) and Baltic rush (<i>Juncus balticus</i>).
Mid Marsh	5.5 – 6.2	Chairmaker's bulrush (<i>Schoenoplectus americanus</i>), alkali bulrush (<i>Bolboschoenus maritimus</i>).
Low Marsh	2.1 – 5.5	hardstem bulrush (<i>Schoenoplectus acutus</i>), California bulrush (<i>Schoenoplectus californicus</i>), and cattail (<i>Typha latifolia</i> , <i>Typha domingensis</i>).

NOTE:

^a Unit of measurement in feet using the North American Vertical Datum of 1988 (NAVD88)

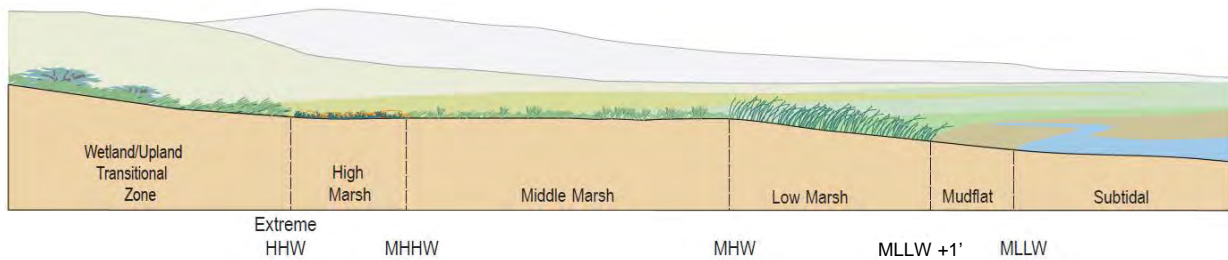
Existing tidal marsh within Lower Walnut Creek, outside of the constructed project area, would be improved and enhanced through the introduction of tidal flow to the restoration area and by the increased connectivity with the restored adjacent habitats.

Tidal Channels

Networks of tidal channels would be excavated in restored tidal marsh areas. These networks would be connected to Lower Walnut Creek and Pacheco Creek via existing tidal channels in the fringing marsh or new channels excavated through the existing fringing marshes through poorly drained areas. Additional small tidal channels (more than the minimum required to connect the breached areas) may be excavated in the existing poorly-drained high fringing marsh in the North Reach, where they constrain marsh habitat quality. Small tidal channels would not be located near existing channels that support tidally well-drained marsh and have high habitat value. Implementation of these additional channels would depend on constructability and other considerations.

The tidal channel layout (e.g., channel length per marsh area, branching patterns, and sinuosity) and sizing (cross-section dimensions) would be similar to channels in relatively undisturbed historic brackish tidal marshes of Suisun Bay (e.g., existing historic marshes, U.S. Coast Survey topographic surveys). Preliminary channel sizing is shown by channel order⁵ in **Table 4**.

⁵ Channel order is a system for identifying and classifying types of channels based on their number of tributaries.



SOURCE: ESA PWA 2012; USBOR, 2013

Lower Walnut Creek Restoration D170378

Figure 5
Schematic Tidal Marsh Profile

TABLE 4
PROPOSED PROJECT – TIDAL CHANNEL DIMENSIONS BY CHANNEL ORDER

Channel Order	Tributary Marsh Area (acres)	Top width at Mean High Water (MHHW) (feet)	Cross Section Area (feet ²)	Side slope (H:V)	Invert elevation (feet NAVD88)	Depth (feet below MHHW)
3	10	25	76	1:1	0	6
2	5	17	45	1:1	1	5
1	2	10	22	1:1	2	4

NOTE: Design channel geometry is based on Coates et al., Williams et al., and ESA (unpublished) work in the Suisun Marsh

SOURCES:

Coates, R, P.B. Williams, C.K. Cuffe, J. Zedler, and D. Reed. 1995. Design Guidelines for Tidal Channels in Coastal Wetlands. Prepared for the US Army Corps of Engineers Waterways Experiment Station. January. PWA report #934.

Williams, P.B., Orr, M.K. and Garrity, N.J., 2002. Hydraulic Geometry: A Geomorphic Design Tool for Tidal Marsh Channel Evolution in Wetland Restoration Projects. Restoration Ecology, vol. 10, pp. 577–590.

Material excavated from the channels would be sidecast (cast to the landside) and spread adjacent to the channels to create subtle, low-relief high marsh berms (analogues of natural creek bank levee micro-topography), where appropriate. The berms would alternate sides of the channel, include gaps, and otherwise be aligned to avoid obstruction of marsh drainage into the channels. These berms would provide topographic diversity to support a greater variety of marsh vegetation and support higher vegetation canopies, and areas for marsh dwelling animals. Areas that are already at (or near) high marsh elevations and areas in highly sensitive habitats (such as areas with existing pickleweed vegetation) may not be appropriate for sidecast deposition of sediment for marsh berms. In these cases, material would be transported for disposal in upland areas.

Marsh Ponds

Marsh ponds provide habitat for native brackish submerged aquatic vegetation, small prey fish, and many waterbirds (especially dabbling ducks and wading birds), including mallards that would also use adjacent lowland grassland habitats. Marsh ponds are proposed in the North Reach in select high marsh areas and in poorly-drained areas between channels. Ponds would be at least 0.5 acre in size (open water), large enough so that wind-waves would inhibit mosquito larvae production and may contain islets for habitat structural diversity and bird use. Ponds would be constructed by excavating one to two feet below the adjacent high marsh plain. Ponds would have steep banks and an irregular, complex edge. Ponds would be revegetated with native brackish submerged aquatic vegetation: wigeongrass (*Ruppia maritima*) and sago pondweed (*Stuckenia pectinata*).

Transitional Lowland Habitat (Terrestrial lowland and Non-tidal Wetlands and Waters)

The proposed project would take advantage of supratidal (above-tide) areas and existing degraded landscape features to reconstruct a matrix of lowland terrestrial and non-tidal aquatic habitats that are analogues (or surrogates) of historical, natural equivalent features destroyed by agriculture and

industrial development near the original bayland edges.⁶ These long-lost components of tidal marsh ecotones⁷ of Walnut Creek include lowland grassland (upland ecotone habitat described below), seasonal wetlands, and sandy alkali playa. Non-tidal wetland habitat would include these seasonal wetland and sandy alkali playa habitat types as well as existing non-tidal pickleweed marsh that would be enhanced.

The spatial arrangement of transitional lowland habitats relative to adjacent tidal marsh is an important component of ecological function. The proposed project restoration design intergrades adjacent transitional lowland habitat with tidal marsh to increase ecological connectivity between the tidal and supratidal habitats, as in natural estuarine-terrestrial transition zones. The approach includes excavation of tidal marsh channel networks and intertidal marsh benches within the transition lowland matrix, increasing ecotone edge extent and complexity. The matrix of lowland habitats would be gradually sloped, from high marsh to upland elevations for a wide ecotone (transition zone). The adjacent transitional lowlands are designed to be successional habitats, gradually converting to tidal marsh with sea level rise. The tidal marsh-terrestrial ecotone would persist, moving upslope over time.

Seasonal Wetlands

Seasonal wetlands would be located in poorly-drained depressional areas and would contain target vegetation similar to the lowland grasslands (creeping wildrye, sedges, rushes, and forbs). Seasonal wetland types may vary depending on the microtopography, substrate (soil texture and chemistry), hydrology and other factors. Similar to lowland grassland, seasonal wetlands would be restored at existing grade where there is an existing gradual slope, or fill areas. Prior to construction they would be managed for weed-control (see the vegetation management discussion below) and revegetated with native plants post-construction.

Sandy Alkali Playa Wetlands (Scald/Playa)

Restoration would include two types of sandy alkaline wetlands: playa flats and playa ecotones (sand splays). These features will occur in the North Reach only.

Sandy alkali playa

Restoration of alkali playa flats would take advantage of the (accidental) historical formation of sandy alkali playa-like flats in the northwest quadrant of the North Reach, from historical discharges originating at the former sand offloading site at Suisun Properties. The playa-like sandy flats on the project site occur south of the Suisun Properties sand stockpiles. The sand veneer over clayey bay muds established playa-like soils and hydrology, but currently supports few native plant species and many weeds. These existing flats would be enhanced to support native plant species assemblages of alkali vernal pools, alkali flats, and their ecotones, similar to some natural historical ecotones of Suisun tidal marsh. Restoration of this habitat type would incorporate regionally rare terrestrial ecotone diversity with tidal marsh.

⁶ San Francisco Estuary Institute, 2016. Resilient Landscape Vision for Lower Walnut Creek: Baseline Information & Management Strategies. A SFEI-ASC Resilient Landscape Program report developed in cooperation with the Flood Control 2.0 Regional Science Advisors and Contra Costa County Flood Control and Water Conservation District, Publication #782. November 2017.

⁷ Ecotone: A region of transition between two biological communities.

The sandy alkali playa flats would be enhanced in place, using minimal grading combined with revegetation with native plant species. The surface of the flats would be scraped to remove weeds and their seed bank, and to create micro-topography. Tidal marsh and lowland grasslands would be intergraded into the flats in select locations to increase habitat complexity. Where this intergrading occurs, a subtle drainage divide (sill) would be graded at the edge of the flat, to avoid draining the flat into the adjacent habitat. Wide areas of these playa flats (over 200 feet) would be left in place with no sinuous tidal channels. The playas may be finished by washing over the graded surface with high-volume, high velocity jets of bay water (firehose and portable pumps) to re-establish stratified, sorted sediment structure that supports the distinctive vegetation. The sandy alkali playa flats would be vegetated with native plants suitable to the habitat. While some revegetation would occur to support native alkali vernal pool flora and a diversity of other native annual and perennial species, these areas would be expected to remain relatively bare or sparsely vegetated, as typical of such naturally occurring habitats. The sandy alkali playa flats are expected to develop a highly dynamic, variable vegetation pattern and species composition including increased diversity of native species in the higher topography areas

Sandy alkali playa ecotones (Sand Splays)

Constructed sand splays are very shallow slopes or cones of sand at the tidal marsh-terrestrial lowland interface and adjacent lowlands, similar to sandy alluvial fans deposited over clayey soils. Sand splays replicate many features of some natural alluvial fans that spread over tidal marshes, which support plant assemblages intermediate between high tidal marsh and alkali playa or grassland. Sand splays formed accidentally in the North Reach by past sand processing at the Suisun Properties parcel are similar to some natural historical ecotones of Suisun tidal marsh. Sand splays provide regionally-rare transitional ecotone diversity in tidal marsh restoration and may become suitable habitat for rare native plant populations, provide high tide shorebird roost habitat, and rare insect habitat.

Sand splays may be hydraulically slurried into place or placed and graded with earth moving equipment. Target sand thickness is approximately 0.5 feet. over clayey tidal marsh. Final grade should include micro-topographic heterogeneity, such as small-scale ridges, flats, and pools. The sand splay would be actively revegetated with one or more of the following: smooth goldfields (*Lasthenia glabrata* subsp. *glabrata*), sea spurrey (*Spergularia salina*), and salt marsh owl's-clover (*Castilleja ambigua* subsp. *ambigua*).

Extreme high tides and wave events are expected to result in marginal re-working and movement of the sands, with wind-wave transport building a micro-topographic berm along the edge, impeding drainage and creating conditions favorable for select target plant species.

Non-tidal Pickleweed Marsh

Existing non-tidal pickleweed marsh that is located outside of the grading area and above tidal influence would be kept in place. Vegetation management activities such as native plant installation and invasive removal may be implemented at these locations. These areas are anticipated to remain as non-tidal pickleweed marsh in the near term and transition to tidal marsh with five feet of sea level rise naturally in the future.

Uplands

Upland habitats to be restored by the project include upland grassland and coastal scrub and transitional lowland grassland.

Upland grassland and scrub

Upland grassland and scrub habitats would be created in fill placement areas and on levees to remain, and would consist mostly of coastal scrub plant assemblages that occur on estuarine coastal bluffs bordering Suisun Marsh and the western Delta. Species composition would include coyote brush (*Baccharis pilularis*), toyon (*Heteromeles arbutifolia*), California sagebrush (*Artemisia californica*), lupines (*Lupinus albifrons*, *L. bicolor.*), golden yarrow (*Eriophyllum confertiflorum*), golden-aster (*Heterotheca sessiflora*), California buckwheat (*Eriogonum fasciculatum*), tarweeds and spikeweeds (*Hemizonia*, *Centromadia* spp.), and native bunch grasses (*Stipa pulchra*, *Elymus glaucus*, *Bromus carinatus*).

Lowland grassland

Lowland grasslands interspersed with seasonal wetlands (described above) are proposed in supratidal areas adjacent to tidal marsh. Lowland grassland and seasonal wetlands would be restored to form a mosaic on the landscape, with grasslands established in the better drained areas. In some locations, this habitat would be enhanced at existing grades (vegetation management and revegetation only) and in other locations this habitat would be planted on newly-graded areas. Lowland terrestrial grasslands would be planted in mixed patches of creeping wild rye, field sedge (*Carex praegracilis*), saltgrass (*Distichlis spicata*), alkali-heath (*Frankenia salina*), western ragweed (*Ambrosia psilostachya*), alkali-weed (*Cressa truxillensis*), California rose (*Rosa californica*), western goldenrod (*Euthamia occidentalis*) and common aster (*Symphyotrichum chilense*).

1.2.1 South Reach

The South Reach would be restored by breaching and lowering the existing flood protection levees along Walnut and Pacheco Creeks to restore tidal inundation to the existing non-tidal wetlands. New tidal channels would be excavated within the restored wetlands and adjacent existing fringe marsh, to connect the restored wetlands to the creeks. The existing levees would be lowered to create predominantly high and mid marsh habitat, but would also include areas of terrestrial lowland grasslands and uplands. Flood protection would be provided by a new setback levee along the western edge of the project site. The project site would be designed to facilitate the implementation of future public access improvements, including the extension of the Iron Horse Trail along the new setback levee, construction of a pedestrian crossing over the BNSF railroad, and construction of a pedestrian bridge over Pacheco Creek. Details of these project elements are provided below and conceptual grading plans and cross-sections can be seen in **Figure 6** and **Figure 7**.

Habitat Restoration

Tidal Marsh

The existing diked marsh in the South Reach varies in elevation from low to high tidal marsh elevations in the north to supratidal elevations in the south. Removing the existing levee in the

South Reach would restore these areas to tidal marsh. Tidal marsh would also be created by excavating portions of the existing levee to high and mid marsh elevations. Excavated marshplain along the lowered levees would have slopes ranging from 50 H:1V to 150 H:1V.⁸

Three new channel networks connecting to Walnut Creek and one new channel network connecting to Pacheco Creek would be excavated within the South Reach. Some of the material excavated from the channels within the diked basin would be sidecast and spread adjacent to the channels to create high marsh berms. Channels and breaches would be located to avoid conflicts with existing buried utilities within the South Reach.

Adjacent Transitional Lowland and Upland Habitat

Lowland and upland grassland habitat would be created along portions of the existing levees in the southeast area of the reach where adjacent existing grades are supratidal, and along portions of the new setback levees. Lowland grassland areas would have slopes ranging from 10 H:1V to 40 H:1V. Most of the existing levees along the South Reach would be lowered to high and mid marshplain elevations as described above. The remaining levees would be graded to support lowland grassland and upland habitat.

Non-tidal pickleweed marsh and seasonal wetlands habitat exist at the southern end of the South Reach project area at supratidal elevations. These areas would be preserved and enhanced through invasive species management. No grading is proposed in these areas except as needed to construct the setback levee.

Transitional and upland habitats would be created on the side-slopes of the toe berms of the new setback levee. Graded upland areas would be revegetated with native plants to restore lowland grassland (transitional) and upland grassland and coastal scrub habitats and to minimize soil erosion.

Flood Protection

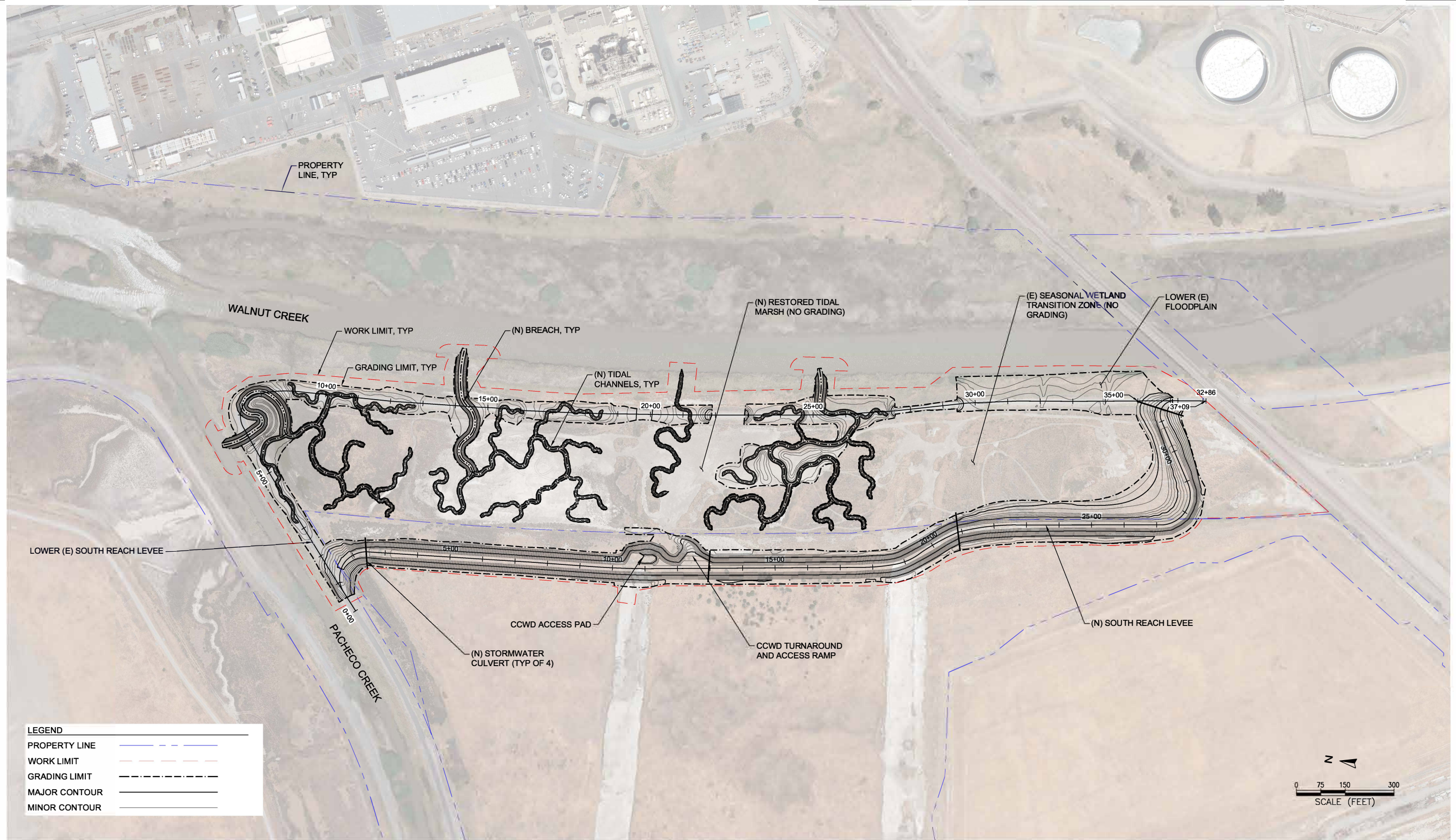
A new setback levee, approximately 3,200 feet long, would be constructed along the western boundary of the South Reach. The new setback levee would connect with the existing levee along Pacheco Creek at the north (downstream) end and to the existing levee just north of the BNSF railroad embankment at the south (upstream) end.

Setback Levee Configuration

The northern 2,150 feet of the setback levee would be constructed on Conco's property and would be incorporated into the planned improvements to Conco's contractor yard. The southern 1,050 feet of the new setback levee (adjacent to the closed IT Baker landfill) would be constructed on both Conco and District property and would also be incorporated into the planned improvements to Conco's contractor yard.

⁸ H:V is used to represent slope ratio, where H = horizontal distance and V = vertical distance. For example, 50 H:1V indicates that for every 50 feet in horizontal distance the vertical distance changes by 1 foot.

DWG: \\sfo-dl01\PROJECTS\SFO\170378.00 - Lower Walnut Creek Restoration Project\110 CAD\Drawings_CEQA_Figures\Fig 6 Project Plan South Reach.dwg USER: Eddie Divita PLOT DATE: 5/20/2019 2:21:23 PM



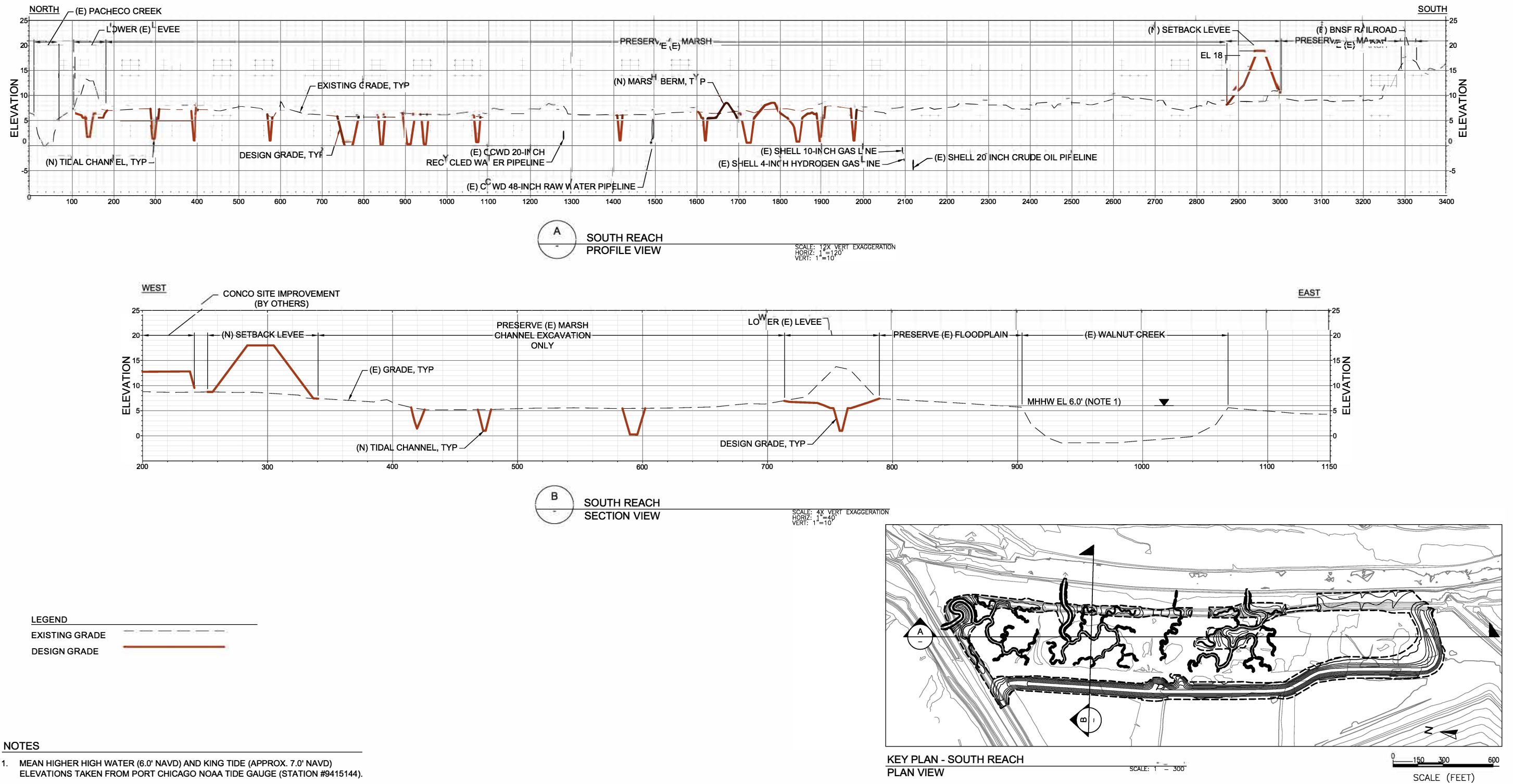
SOURCE: ESA, 2018

Lower Walnut Creek Restoration D170378



Figure 6
Project Plan South Reach

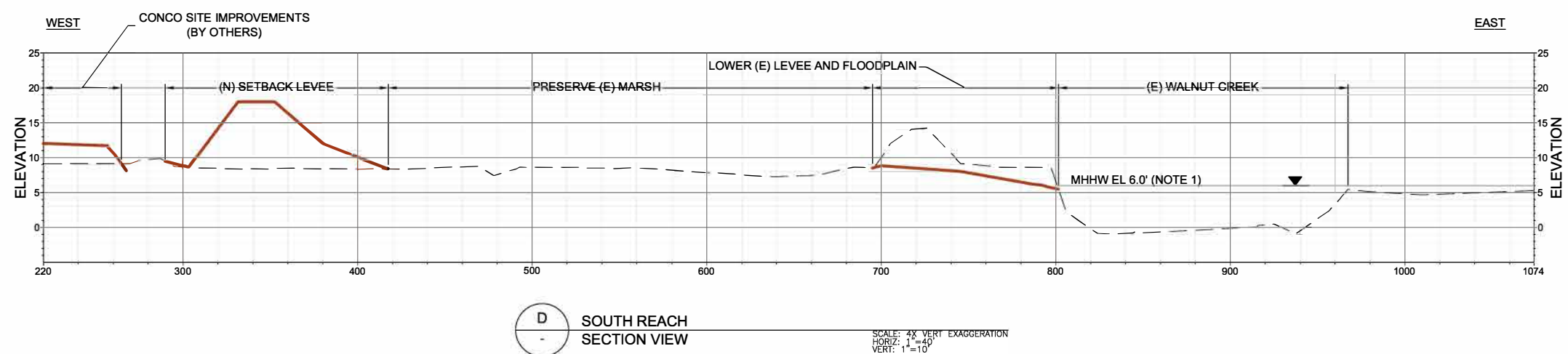
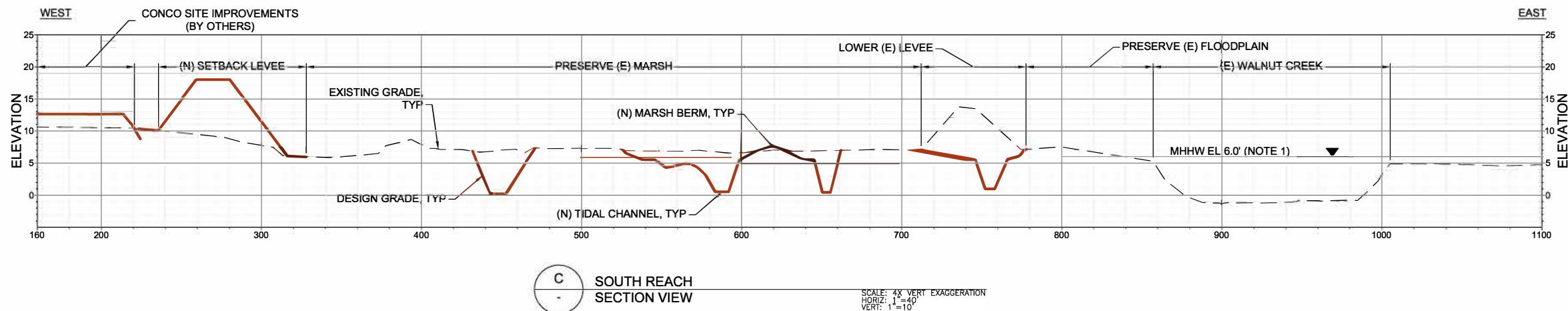
DWG: \\sf01\PROJECTS\SF017\xxxx\170378.00 - Lower Walnut Creek Restoration Project\10 CAD\Drawings\CEQA_Figures\Fig 7 Cross Sections South Reach.dwg USER: Eddie Divita PLOT DATE: 5/20/2019 3:11:12 PM



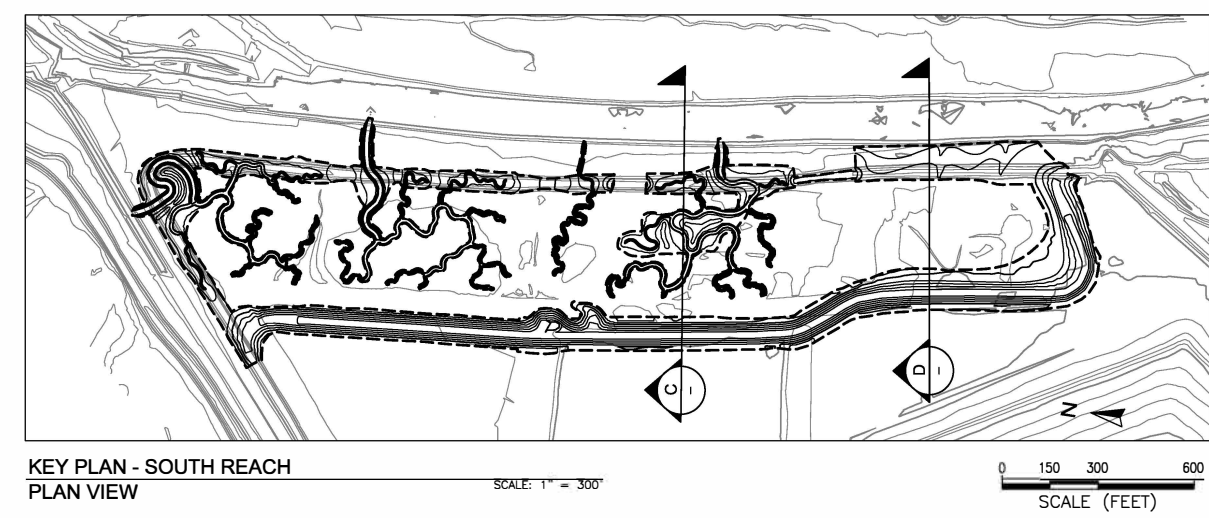
SOURCE: ESA, 2018

Lower Walnut Creek Restoration D170378

DWG: \\fs01\PROJECTS\SF017\000\170378.00 - Lower Walnut Creek Restoration Project\10 CAD\Drawings\CEQA_Figures\Fig 7 Cross Sections South Reach.dwg USER: Eddie Divita PLOT DATE: 5/20/2019 3:12:54 PM



- NOTES
1. MEAN HIGHER HIGH WATER (6.0' NAVD) AND KING TIDE (APPROX. 7.0' NAVD) ELEVATIONS TAKEN FROM PORT CHICAGO NOAA TIDE GAUGE (STATION #9415144).



SOURCE: ESA, 2018

Lower Walnut Creek Restoration D170378

Figure 7 Continued
South Reach Typical Cross Sections Continued



This page intentionally left blank

The setback levee crest elevation along the South Reach would range between 18 feet elevation North American Vertical Datum (NAVD)⁹ and 13 feet elevation NAVD. Along the northern segment of the South Reach levee to be constructed on Conco's property, the proposed levee design consists of a 21-foot crown width with 3H:1V slopes on both the inboard (dry) and outboard (creek) sides of the levee. On the inboard side, the levee slope would grade into Conco's proposed corporation yard improvements, where fill would be placed by Conco, as part of their corporation yard improvement project, to raise the ground surface up to 10 feet elevation NAVD. On the outboard side, the levee slopes would extend to the existing grade. Use of a 3 H:1V slope on the outboard side is proposed to avoid placement of fill in existing jurisdictional wetlands on Conco property. Along the southern segment of the South Reach, the new setback levee would be constructed on both Conco and District property. The proposed levee design along this segment would have slopes varying from 3H:1V to 30 H:1V on the outboard side to support upland and lowland grassland habitat. Drainage pipes with tide gates would be installed along the length of levee to allow drainage from Conco to Lower Walnut Creek. Construction of the levee would be coordinated with the scheduling of construction of Conco's corporation yard improvements. The design sections for the setback levee are shown in Figure 7.

The setback levees would support an access road for District inspections and maintenance and that would allow for the potential for future public access as part of the extension for the Iron Horse Trail (see Section 1.2.2 – Future Public Access for more details). The access roads would be 14 feet wide and surfaced with 6 inches of class II aggregate base. The access road would also support Contra Costa County Water District (CCWD) and the U.S. Bureau of Reclamation (USBR) access to their respective water pipeline facilities for the operation, maintenance, and repair thereof.

Levee Settlement

Bay muds along the setback levee alignment have moderate to high settlement potential. Placement of fill to construct the setback levees would result in post-construction settlement of approximately 2.7 feet over 50 years.¹⁰ To account for this settlement and to maintain the same level of flood protection in the future as currently, the levees would be constructed higher than the existing levee elevation to ensure appropriate levels of flood protection as subsurface materials consolidate and settle.

Settlement of the setback levee has the potential to affect buried utilities within the setback levee footprint, including the Shortcut Pipeline (described below), owned by the Bureau of Reclamation and operated and maintained by the Contra Costa Water District (CCWD), and Recycled Water Pipeline owned by CCWD, and petroleum product pipelines owned/operated by Calpine and Shell Chemical Company. The District is working with the owners/operators of underground utility infrastructure within the project site to identify potential impacts on underground infrastructure and to incorporate design measures as-needed to avoid such impacts as analyzed in the Chapter 2, Environmental Checklist in this document.

⁹ North American Vertical Datum (NAVD) is a vertical datum standard to which heights are referenced for elevations.

¹⁰ Hultgren – Tillis Engineers. 2019. Draft Geotechnical Investigation Lower Walnut Creek Project. Letter memorandum to ESA. March 2019.

Future Public Access

Extension of Iron Horse Trail

The EBRPD is evaluating the potential for extension of the Iron Horse Trail through the project site. The proposed alignment of the trail extension runs along the proposed setback levee in the South Reach, across Pacheco Creek to the south of the Martinez Gun Club, then west and north to Waterbird Regional Preserve (Figure 4). The greatest challenge facing potential EBRPD trail alignments is cost-effective ways to cross the BNSF railroad. The BNSF railroad crossing would likely be via an elevated pedestrian walkway. This structure would likely require an enlarged “landing” area in the South Reach where the new setback levee meets the BNSF embankment. The location and size of the landing area would be refined in coordination with EBRPD during the design phase. The proposed setback levee at the South Reach would be compatible with future improvements to support a public access trail. The proposed 21-foot wide levee crown would be adequate to support a two-way Caltrans Class I bikeway (11.6 feet minimum width required) and the levee profile and crest cross slopes would be within ADA tolerances. The District and/or Conco would construct fencing along the new levee as a security measure to prevent trespass from the levee onto the Conco property. The District would continue to work with the EBRPD to refine plans for future public access through the project site.

Utilities

Existing utilities in the South Reach include the USBR Shortcut Pipeline, the Contra Costa Water District (CCWD) Recycled Water Pipeline, overhead Pacific Gas & Electric (PG&E) transmission lines and support towers, and buried petroleum products pipelines operated by Calpine and Shell Chemical Company running parallel and to the north of the PG&E transmission towers (Figure 2).

Shortcut Pipeline and Recycled Water Pipeline

The Shortcut Pipeline, a 48-inch diameter cement-mortar-lined and coated steel water supply pipeline owned by the United States Bureau of Reclamation (USBR) and maintained and operated by Contra Costa Water District (CCWD), traverses the South Reach of the project site through property owned by Conco and property owned by the District. The Shortcut pipeline crosses through said properties via easements recorded in the Official Records of Contra Costa County. The USBR Shortcut Pipeline crosses through Conco’s property and under District’s Walnut Creek and the existing levees along the creek. Various pipeline facilities, including air release valves and settlement monitoring stations are installed on the Shortcut Pipeline, including stations within the South Reach, to monitor settlement of the pipeline due to ground subsidence or seismic activity.

A 20-inch Recycled Water Pipeline owned, operated and maintained by CCWD is located within the South Reach in a 10-foot wide easement running east-west located north of the USBR’s Shortcut Pipeline. Among other things, the Recycled Water Pipeline connects to a storage tank on Vine Hill and runs under Pacheco Creek and Walnut Creek towards the Marathon Refinery, but is not currently in use at this time.

The new setback levee would cross over the Shortcut Pipeline and Recycled Water Pipeline and their respective easements. To avoid potential settlement impacts to the pipelines by the levee and potential seepage issues through the levees from the pipelines, the Shortcut and Recycled Water Pipelines would be re-routed vertically to go up and over the levee core. The levee adjacent to the pipelines would be constructed using a combination of lightweight and earthwork fill and would result in no new net loading and thus no new potential for settlement. Sheetpiles would be installed in this section of the levee to control through-seepage. The Recycled Water Pipeline would also be realigned horizontally to run adjacent to the Shortcut Pipeline. The design of the levee to avoid impacts to the pipeline would require the demolition and replacement of approximately 170-feet of the Shortcut Pipeline and 220-feet of the Recycled Water Pipeline. Air release valve assemblies would be provided for both pipelines and space for maintenance access of the air valves would also be provided. An access ramp will be constructed south of the Shortcut Pipeline to allow USBR/CCWD access to maintain and inspect the portions of the pipelines within the South Reach on the District's property. The existing levee would remain at current elevations above both pipelines. In addition to the design measures to avoid impacts to the pipelines from settlement, new tidal channels and breaches implemented as part of the South Reach habitat restoration would be designed to avoid conflicts with existing buried utilities.

In order to inspect and maintain their facilities, CCWD requires the use of roads on District and Conco property to access the Shortcut Pipeline and Recycled Water Pipeline. Access is granted through an easement from Conco and a license from the District. To maintain the existing level of access and to inspect and maintain the pipelines, the District's license to CCWD will need to be modified and new easements will need to be obtained by CCWD from Conco and the District.

PG&E

Overhead PG&E 115 kV transmission lines and two support towers are located within the South Reach within a 70-foot wide easement that runs in an east-west direction. This east-west easement alignment continues onto the Conco property. A PG&E easement also runs in a north-south direction along the western side of the District property. There is no known PG&E infrastructure installed in the north-south easement. The easements, power lines and tower locations are shown in Figure 2. Per PG&E, a vertical clearance of at least 28-feet must be maintained between the wires and the ground surface. The easement agreement grants right-of-way to PG&E to access the property for maintenance of their facilities.

The new setback levee would cross under the PG&E transmission lines roughly 30 feet west of the west transmission tower located in the project site. Under existing conditions access to the towers and lines can be achieved by vehicle or foot and may be limited during the wet season due to ponding and saturated soil conditions. Access post construction would remain similar to the existing condition as grading in this area is not proposed and the ground surface in this area is above tidal elevations.

Petroleum Products Pipelines

The Martinez Gas Line (a 10-inch diameter carbon steel natural gas pipeline) owned and operated by Calpine and the Coalinga-Avon Pipeline (a 20-inch concrete coated carbon steel crude oil pipeline) and the Martinez-Shell Point Platform Off-Gas Line (a 4-inch steel natural gas

pipeline) owned and operated by Shell Chemical Company are located within the South Reach. The Martinez Gas Line and the Martinez-Shell Point Platformer Off-Gas Line are located in a 10-foot wide easement identified as belonging to Shell Chemical Company and the Coalinga-Avon Pipeline is located in a 20-foot wide easement identified as belonging to Tidewater Oil Company.¹¹ The agreements grant easement for installation of buried pipelines and right-of-way for maintenance and repairs. The easements cross the Walnut Creek levee and extend across the creek.

The new setback levee would cross over all three pipelines. Design and construction of the setback levee could require special measures to protect the pipelines installed in the easements from damage from settlement of soils or construction activities; see Section 1.2.2 – Setback Levee Configuration for a more detailed discussion of construction constraints. New tidal channels and breaches implemented as part of the South Reach habitat restoration would be designed to avoid conflicts with existing buried utilities. Design details related to the pipelines, including pipeline material improvements or improved coverage requirements would be resolved during final design in coordination with the pipeline operators.

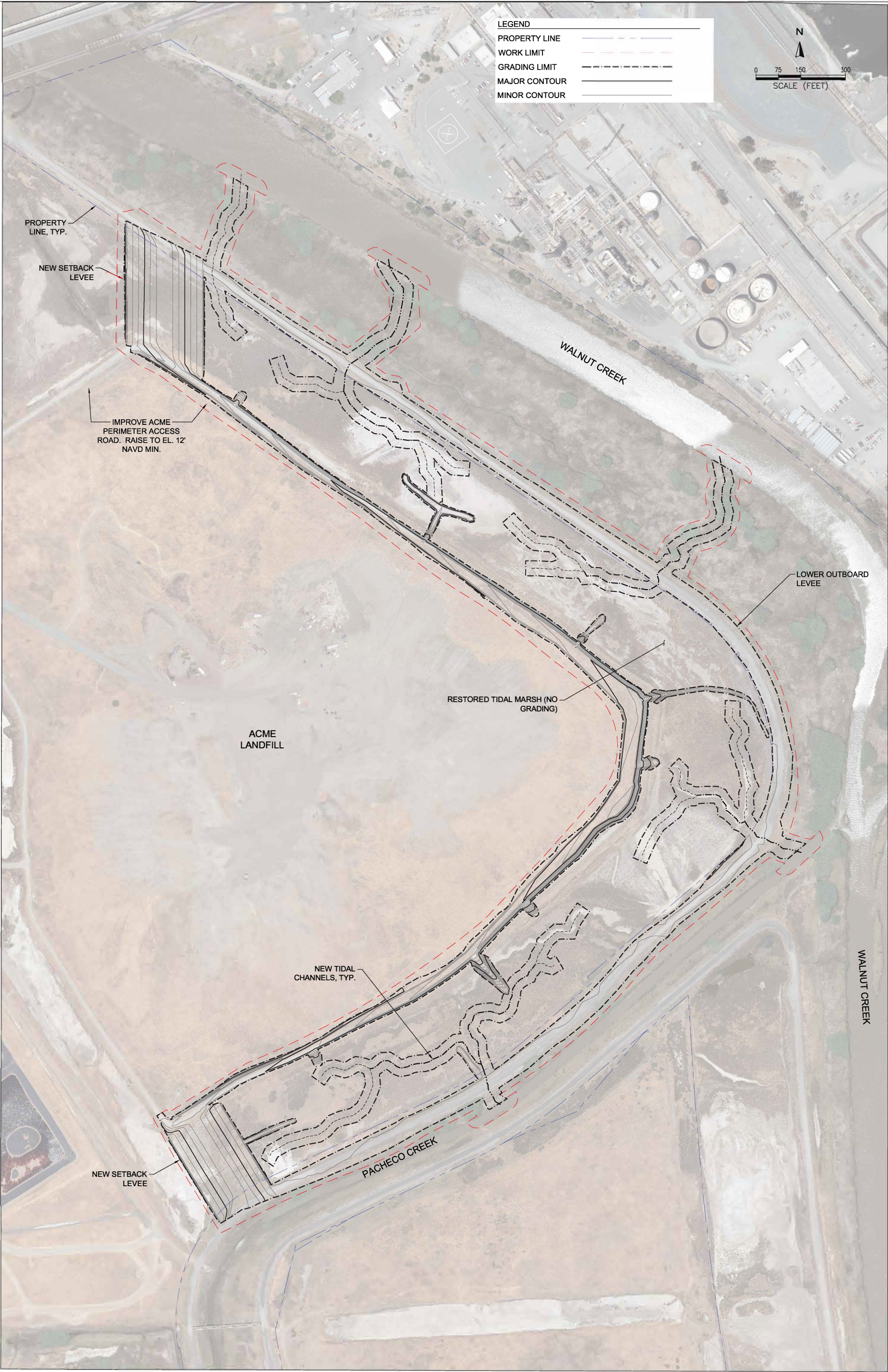
Under existing conditions, access to the pipeline easements can be achieved by vehicle or foot and may be limited during the wet season due to ponding and saturated soil conditions. Post-construction access would be similar to the existing condition as grading in the area is not proposed and the ground surfaces would be above tidal elevations.

1.2.2 Middle Reach

Construction of the Middle Reach is pending agreements with neighboring landowners. Proposed work, impacts and analyses are included in this document if or when the necessary agreements are realized. Tidal marsh would be restored by breaching and lowering the existing flood protection levees along Walnut Creek and Pacheco Creek to restore tidal inundation to the existing non-tidal wetlands. New tidal channels would be excavated within the restored wetlands and adjacent existing fringe marsh, to connect the restored wetlands to the creek. The existing levees would be lowered to create predominantly high marsh habitat, but may also include marsh ponds and small areas of terrestrial lowland grasslands and uplands.

The lowest portions of the Acme landfill cap could be inundated (but not eroded) for brief periods and would not require a new setback levee to provide flood protection. The existing private landfill perimeter access road would be improved to support landfill operations and access for District maintenance. New drainage swales would be constructed on the upslope side of the improved perimeter access route to direct stormwater runoff from the landfill into existing non-tidal basins to the north and south of the Middle Reach project area. Two new short sections of levee would be constructed at the upstream and downstream ends of the reach and would connect to the existing levees along Pacheco and Lower Walnut Creeks. Details of the proposed project elements are provided below and typical cross-sections and the conceptual grading plan can be seen in **Figures 8 and 9**.

¹¹ Nicholas Farros, President/Engineering Manager, Acme Fill Corporation, and Patrick Lacey, Acme Fill Corporation Compliance Officer, conversation with Michelle Orr and Paul Detjens, March 17, 2016.



SOURCE: ESA, 2018

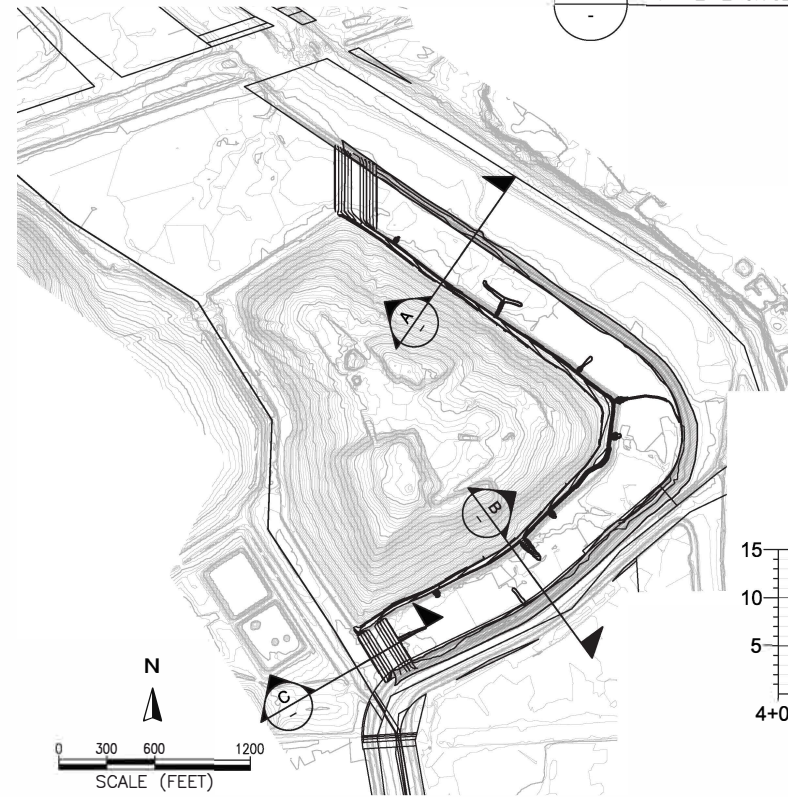
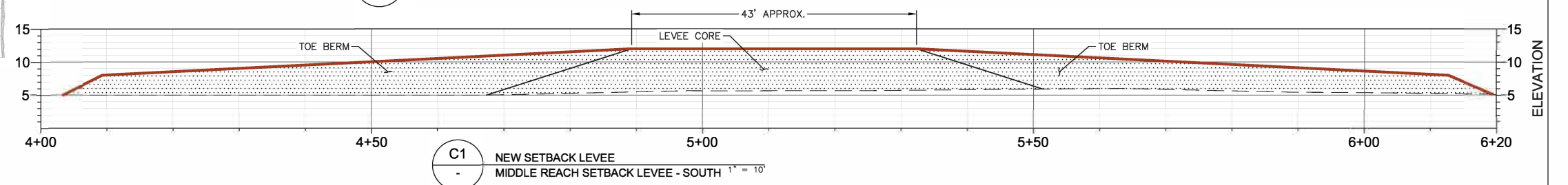
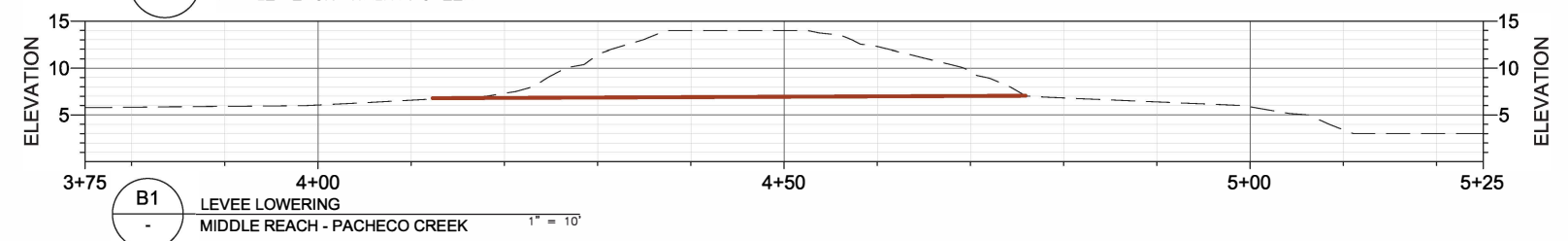
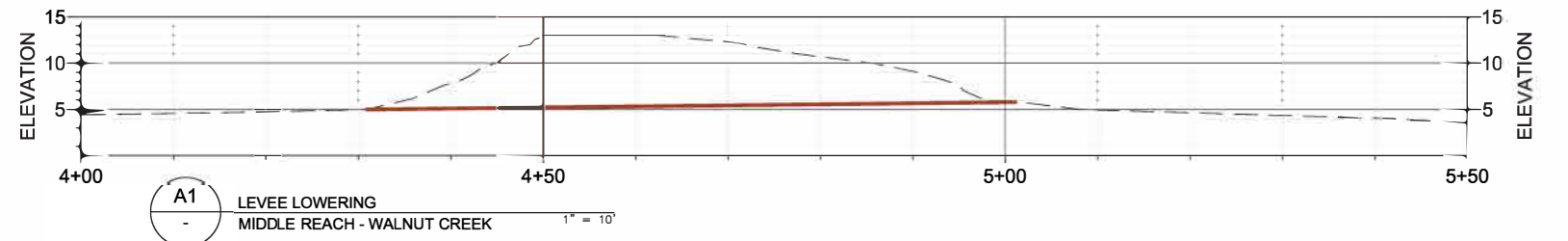
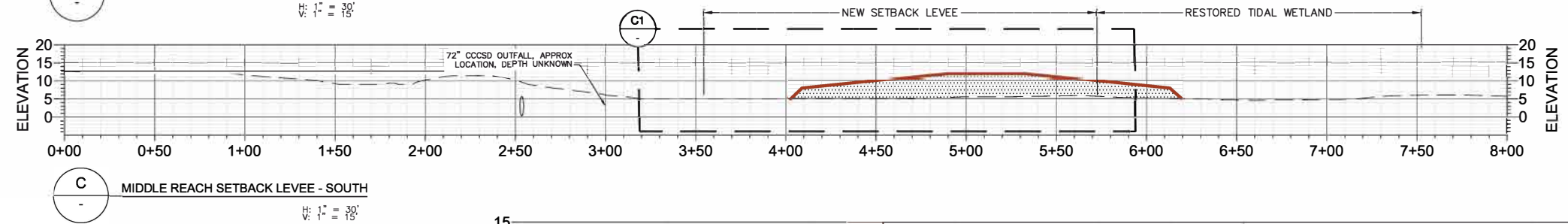
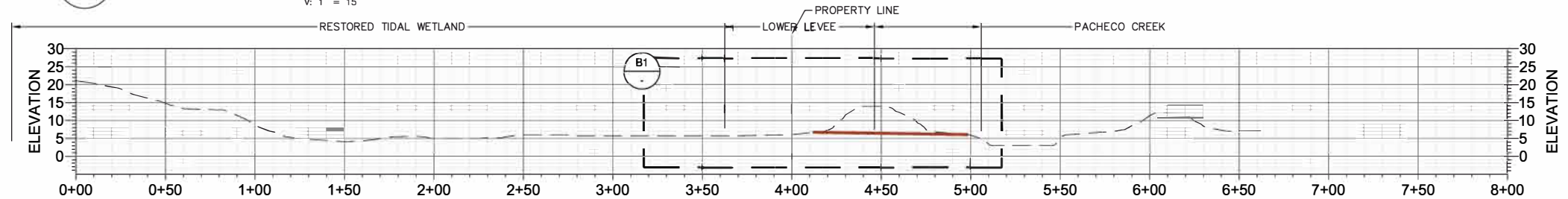
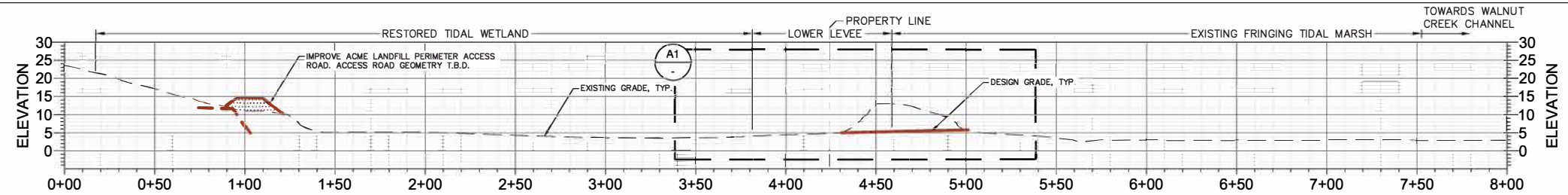
Lower Walnut Creek Restoration D170378

Figure 8
Project Plan Middle Reach



DWG: \\sf01\PROJECTS\SF017\000170378.00 - Lower Walnut Creek Restoration Project\10 CAD\Drawings\CEQA_Figures\Fig 9 Cross Sections Middle Reach.dwg USER: Eddie Divila PLOT DATE: 5/20/2019 3:15:48 PM

LEGEND
EXISTING GRADE
DESIGN GRADE



SOURCE: ESA, 2018

Lower Walnut Creek Restoration D170378

Figure 9
Middle Reach Typical Cross Sections

Habitat Restoration

Tidal Marsh

The existing levees along the Middle Reach would be breached by new tidal channels and lowered to high marsh elevations. The existing diked marsh areas, which vary between low to mid marsh elevations, would not be graded. A segment of the existing levee would be graded down to high marsh elevations with new marshplain slopes ranging from 50 H:1V to 150 H:1V. Figure 8 shows the plan view for restoration of the Middle Reach.

Three new channel networks connecting to Walnut Creek and two new channel networks connecting to Pacheco Creek would be excavated. The channel networks connecting to Walnut Creek would connect to existing tidal channels in the fringing marsh as possible to minimize the need for excavation within the existing tidal wetland habitat along Lower Walnut Creek. The channel networks connecting to Pacheco Creek connection would likely require the creation of new channels through the existing fringing marsh. Material excavated from the channels within the diked marsh area would be sidecast and spread adjacent to the channels to create high marsh berms.

Adjacent Transitional Lowland and Upland Habitat

Transition and upland habitat would be created on the side-slopes of the toe berms of the new setback levees and along portions of the improved Acme perimeter access road. The existing levees along the Middle Reach would be lowered to high marsh elevations. Graded transition and upland areas would be re-vegetated with native plants to minimize soil erosion.

Flood Protection

Setback Levee Configuration

New setback levees would be constructed at the upstream and downstream end of the Middle Reach and connect the existing levees along Pacheco and Lower Walnut Creek with the improved perimeter access road. The final setback levee crest elevation for both setback levees would be approximately 12 feet NAVD. The elevation would be designed to maintain the same level of flood protection as provided by the existing levees. The preliminary levee design sections for the setback levee are shown in Figure 9 and consists of a levee core with a 55-foot wide crown for the north setback levee and a 43-foot width crown with on the south setback, both with 3H:1V slopes. Toe berms would be constructed on both sides of the levee core at 100 feet wide on the north and 80 feet wide on the south to provide stability. The setback levees would support an 18-foot wide access road surfaced with 6 inches of class II aggregate base for District inspections and maintenance.

Improved Landfill Perimeter Access Road

The existing landfill perimeter access road would be improved by raising the road and resurfacing to a 15-foot top width with an upslope shoulder varying in width from 0 to 40 feet and 2H:1V side slopes on the upslope and 3H:1V side slopes on the downslope sides of the road. The access road would be surfaced with 6 inches of class II aggregate base. Passing areas of at least 25 feet clear would be provided at appropriate intervals along the access road alignment.

The subsurface conditions along the perimeter access road alignment have moderate settlement potential. Placement of fill to construct the road improvements may result in post-construction settlement of between 1 to 2 feet for every 10 feet of fill placement. To account for this settlement potential, the road would be constructed higher than the elevations described above to ensure the roadway is accessible during high flow events as subsurface materials consolidate and settle. Lightweight fill material could also be used to minimize settlement. Implementation details for road construction methods would be determined during the design phase of the project.

Existing drainage infrastructure along the access road would be demolished and/or plugged and abandoned in place. On the upslope side of the access road, a new concrete drainage swale would be constructed to collect surface water runoff from the landfill and deliver it to the Acme landfill buffer basins to the north and south of the Middle Reach restoration area. Directing the landfill runoff to areas of the Acme buffer basin that would remain non-tidal would maintain stormwater drainage practices currently in place at the landfill as required by the regulatory agencies.

Landfill Infrastructure

No excavation is proposed, or allowed, into the landfill cap. There are 13 existing water quality compliance wells used to monitor the Acme landfill within the Middle Reach project footprint (locations shown in Figure 8). Acme requires vehicle access to the wells every 3 months for as long as the landfill remains operational.¹² The wells would remain and the standpipes may need to be raised as part of the restoration. Groundwater sampling methods require purging of groundwater prior to sampling, so a vehicle is needed to carry the generator used for purging. Acme currently uses a Gator utility vehicle for access. New well access berms would be constructed to allow continued monitoring of the wells. The berms would have a crest elevation of 6 to 7 feet NAVD 88, a minimum top width of 5-feet and side slope of 3H:1V.

Utilities

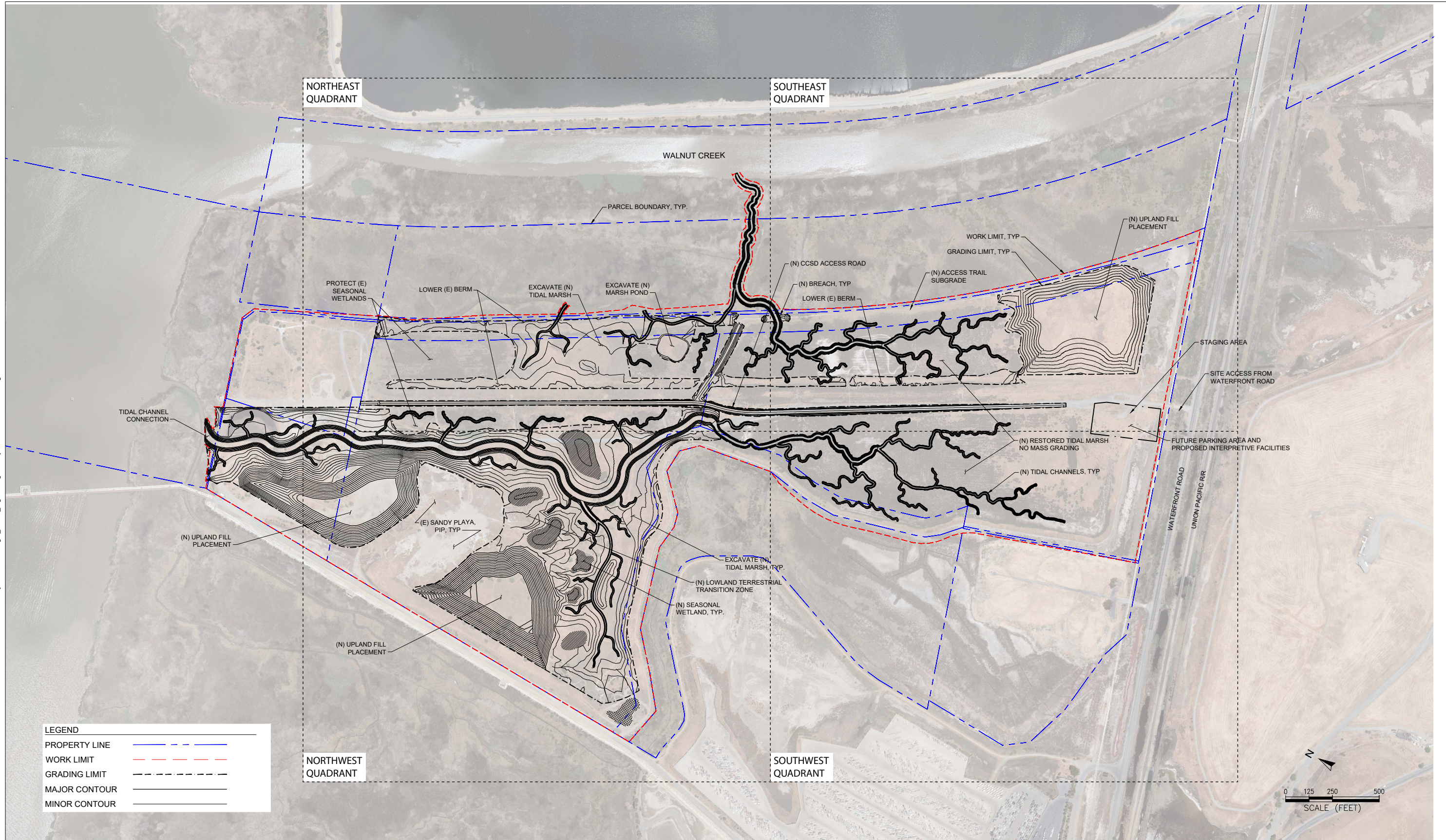
Overhead 21 kV electrical distribution lines and three support poles are located within the Middle Reach. These lines and poles are not identified in PG&E electrical distribution maps and are likely privately owned by a third party. The southern new setback levee would be constructed to the west of the pole located along the existing Pacheco Creek levee and the existing levee adjacent to the pole would be lowered. The new setback levee would not cross under the distribution lines. The improved landfill perimeter access road would cross under the distribution lines.

1.2.3 North Reach

The North Reach project design is divided into four quadrants for planning purposes, as shown on **Figure 10**, and the proposed habitat restoration varies in response to the distinct ecological, topographic and hydrologic characteristics of different parts of the site. In general, existing grades in the North Reach would be higher relative to the tides compared to the Middle and South Reaches. The North Reach design would preserve large portions of the site at supratidal elevations (above the elevations of present day tidal marsh) with the expectation that these areas

¹² Nicholas Farros, President/Engineering Manager, Acme Fill Corporation, and Patrick Lacey, Acme Fill Corporation Compliance Officer, conversation with Michelle Orr and Paul Detjens, March 17, 2016.

DWG: \\iso-file01\PROJECTS\SF017\xxxx\170378.00 - Lower Walnut Creek Restoration Project\10 CAD\Drawgs_CEOA_Figures\Fig 10 Project Plan North Reach.dwg USER: Eddie Divita PLOT DATE: 7/2/2019 2:01:10 PM



SOURCE: ESA

Lower Walnut Creek Restoration D170378



Figure 10
Project Plan North Reach

This page intentionally left blank

would gradually convert to tidal marsh habitats over time as sea levels rise. Restored tidal brackish marsh areas would be fully tidal east of the CCCSD outfall pipeline and muted tidal west of the outfall pipeline. The proposed project includes the Suisun Properties lands.

Habitat Restoration

Habitat restoration features on the North Reach are described below and shown on Figure 10 and Figure 11.

Northwest Quadrant

New tidal marsh and channels in the northwest quadrant would connect to the historic Walnut Creek channel at the northern most boundary of the project site, through the Suisun Properties area. New tidal wetlands would be created in the eastern and southern areas of the northwest quadrant. Grades would be lowered by three to five feet to high- to mid-marsh elevations and new tidal channels would be excavated and integrated with swales in the adjacent terrestrial lowlands to allow for the gradual conversion of the adjacent lowlands to tidal wetland habitats as sea levels rise.

The project would create a mosaic of lowland terrestrial habitats in the areas adjacent to the tidal marsh restoration, in particular in the southern and central sections of the quadrant. These habitats would include a mix of grasslands, seasonal wetlands, and sandy alkali playa flat. Mass grading would be performed in some of the lowland terrestrial habitat areas in order to achieve a gently sloping landscape with an average slope of 50 H:1V or shallower. Typical cut depths in the lowland terrestrial habitat areas would be approximately two to three feet below existing grade. Swales would be excavated through the lowland terrestrial areas extending upslope from the adjacent muted tidal wetland channels. The CCCSD access road would be re-located within the CCCSD easement, and new habitat excavated within the existing road alignment.

Earth excavated from other parts of the project site (South, Middle and North Reaches) would be placed in two locations of the northwest quadrant. The dune feature slopes would vary from 3 H:1V to 20 H:1V, and would be graded to direct runoff towards seasonal wetland areas to the extent possible. Fill thickness would vary, with thickness up to 25 feet in some areas depending on geotechnical design considerations.

Southwest Quadrant

In the southwest quadrant, the existing seasonal wetland basin would be breached and connected to a new fully tidal channel that connects to historic Walnut Creek closer to Suisun Bay. The perimeter berm running along the south and west sides of the quadrant would remain at existing elevation.

Northeast Quadrant

In the northeast quadrant, new tidal marsh and lowland terrestrial habitats would be restored at grade at the north and south ends of the quadrant by re-introducing tides from Lower Walnut Creek. Tidal channels and a marsh pond would be excavated within the new tidal marsh areas and then be re-connected to the tides by breaching the perimeter berm along the east side of the quadrant and connecting to existing tidal channels in the outboard marsh. The perimeter berm

would be lowered to create a gentle transition to the existing fringing tidal marsh along Walnut Creek, and some grading may be performed in adjacent areas in the central and northern thirds of the quadrant to achieve a gently sloping landscape. Existing seasonal wetland habitat would be protected in place.

Southeast Quadrant

In the southeast quadrant, the existing non-tidal wetland basin would be breached and reconnected to Walnut Creek via a tidal channel excavated (as needed) through the fringing marsh and new tidal channels would be excavated within the basin. The berms along the north and east sides of the southeast quadrant would remain and be improved to accommodate future public trails. Lowland terrestrial areas that are impacted by earthwork would be revegetated with native plants, while un-impacted areas would be managed to remove non-native invasive plant species.

Earth excavated from other parts of the project area would be placed in the southern part of the quadrant in a similar manner as described above for the Northwest Quadrant.

Lower Walnut Creek Fringing Marsh

The fringing marsh to the east of the northeast and southeast quadrants would be enhanced with additional excavated tidal channels to the extent feasible.

Flood Protection

The North Reach does not contain flood protection levees and the berms and informal levees that would be lowered as part of the proposed project do not provide flood protection for any vulnerable infrastructure. Existing infrastructure, including the CCCSD access road and Waterfront Road, are inundated during high tide events under existing conditions, which would remain unchanged with the proposed project. High tides flow from Walnut Creek through an existing tidal ditch north of Waterfront Road to overtop low points in the road. Tide waters can also reach low points on Waterfront Road via the existing TransMontaigne Access Road culvert.

Public Access

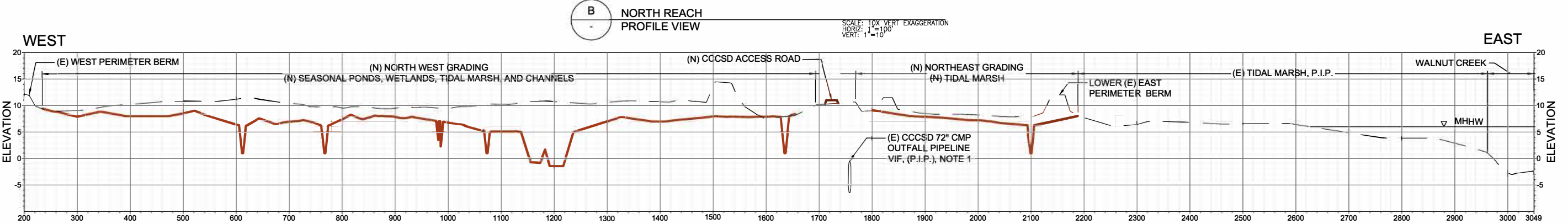
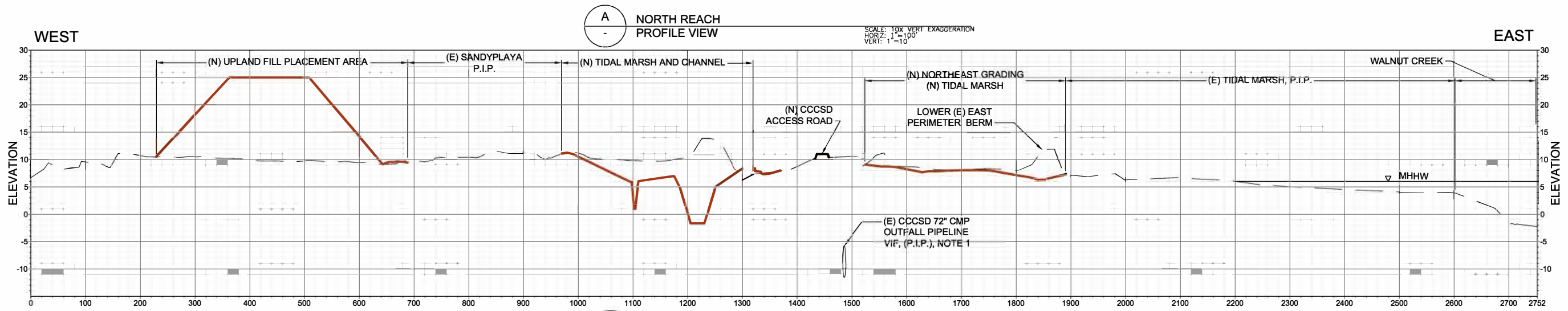
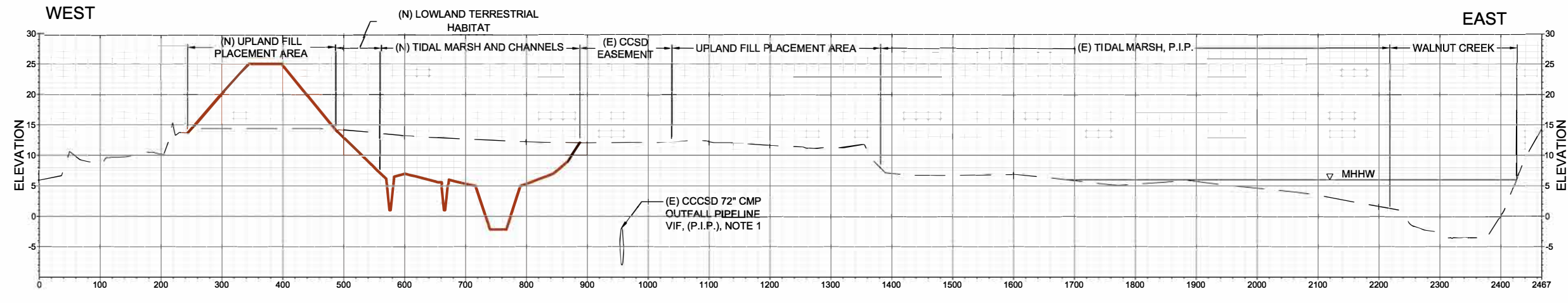
The North Reach includes public trails and other public access features to support recreational and educational use of the restored Pacheco Marsh site as described in detail below.

Trails, Bridges, and Boardwalks

The Project includes approximately 3.9 miles of recreational trails to bring visitors through the marsh restoration. Approximately 0.98 miles of the trail network is along the shared access road with Contra Costa County Sanitation District (CCCSD), while the remaining 2.92 miles of the trail network is dedicated solely to trail use. Trails are primarily within upland and transition habitat areas, although approximately 0.35 miles of trails travel closer to tidal wetlands allow visitors to get closer views of these habitat areas. The 0.35 miles of trails will have limited access and will be closed during sensitive breeding times. **Figure 12** shows the anticipated trails and other public access features.

DWG: \\fs01\PROJECTS\SF017\000\170378.00 - Lower Walnut Creek Restoration Project\10 CAD\Drawings\CEQA_Figures\Fig 11 Cross Sections North Reach.dwg USER: Eddie Divila PLOT DATE: 5/20/2019 3:17:43 PM

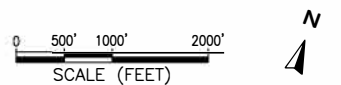
LEGEND
EXISTING GRADE
DESIGN GRADE



NOTES

1. LOCATION AND ELEVATION OF CCCSD OUTFALL PIPELINE BASED ON INFORMATION PROVIDED BY CCCSD AND TO BE VERIFIED IN FIELD

C NORTH REACH PROFILE VIEW
SCALE: 10X VERT EXAGGERATION
HORIZ: 1" = 100'
VERT: 1" = 10'



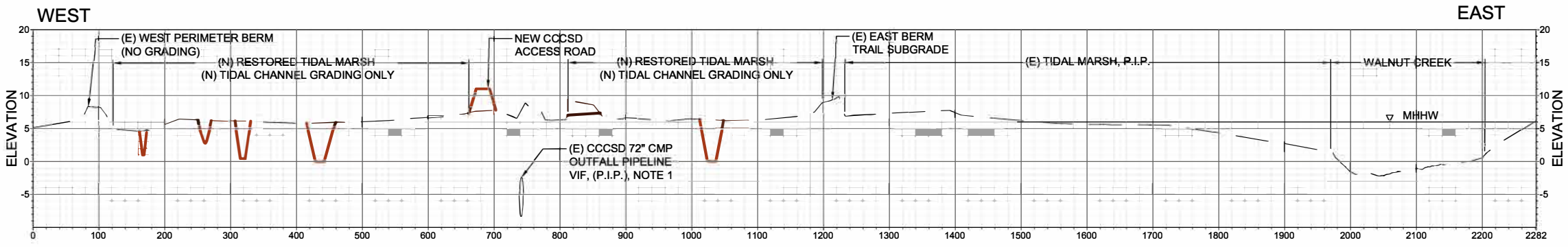
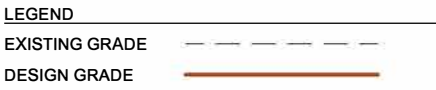
SOURCE: ESA, 2018

Lower Walnut Creek Restoration D170378

Figure 11
North Reach Typical Cross Sections

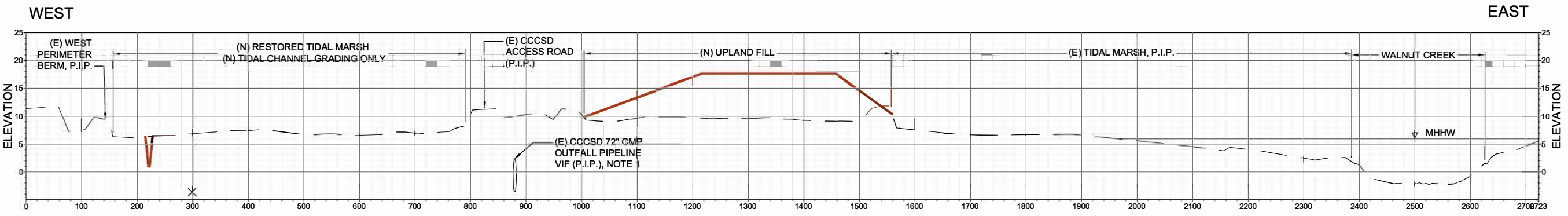
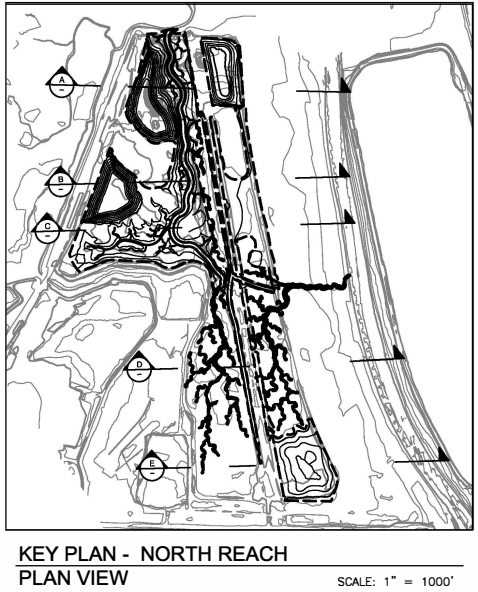


DWG: \\sfo-file01\PROJECTS\SFO17\xxxxID170378.00 - Lower Walnut Creek Restoration Project\10 CAD\Drawings\CEQA_Figures\Fig 11 Cross Sections North Reach.dwg USER: Eddie Divita PLOT DATE: 8/20/2019 3:16:51 PM



D NORTH REACH
PROFILE VIEW

SCALE: 10X VERT EXAGGERATION
HORIZ: 1"=100'
VERT: 1"=10'

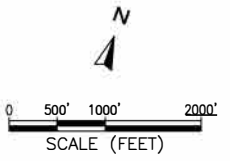


E NORTH REACH
PROFILE VIEW

SCALE: 10X VERT EXAGGERATION
HORIZ: 1"=100'
VERT: 1"=10'

NOTES

1. LOCATION AND ELEVATION OF CCCSD OUTFALL PIPELINE BASED ON INFORMATION PROVIDED BY CCCSD AND TO BE VERIFIED IN FIELD

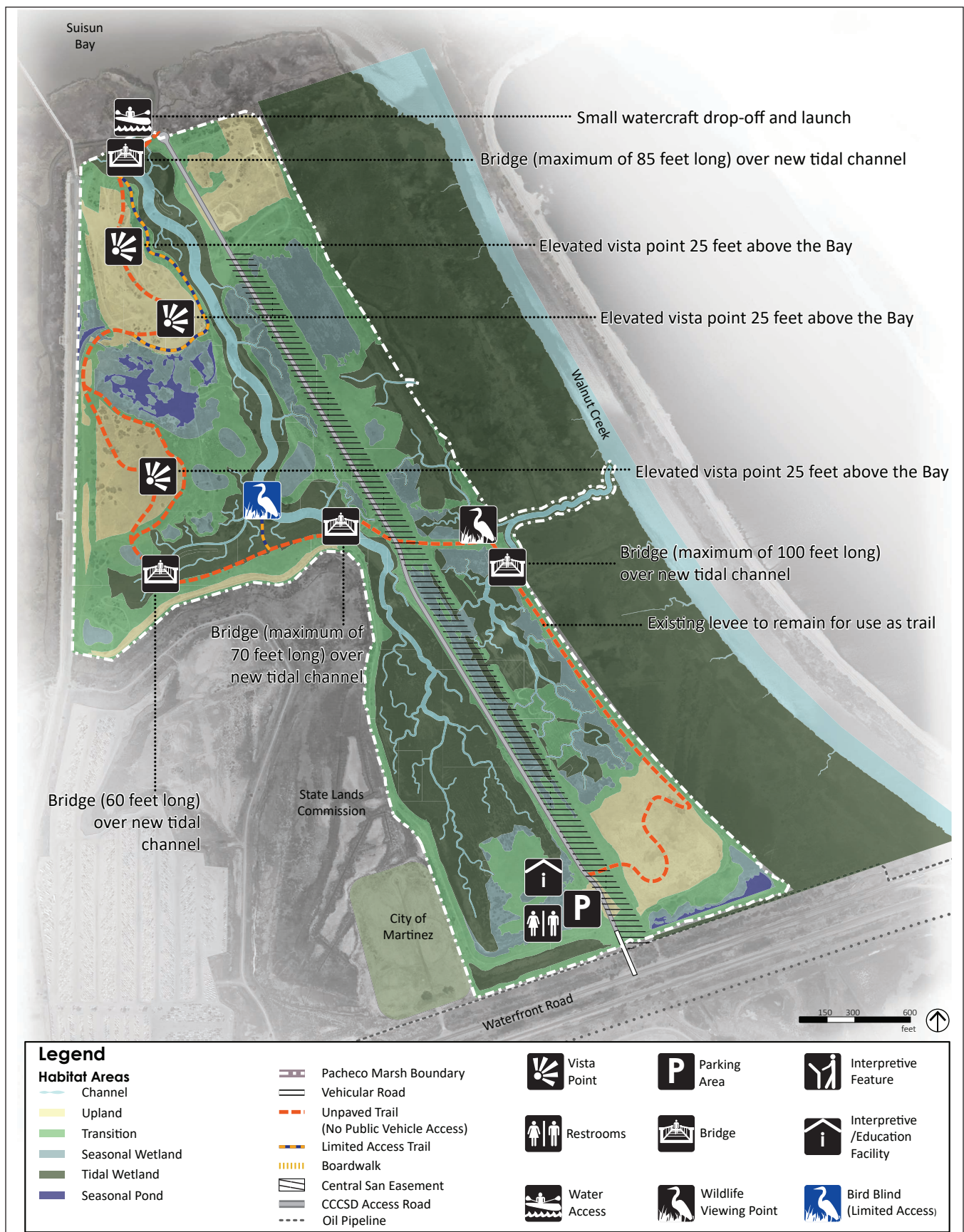


SOURCE: ESA, 2018

Lower Walnut Creek Restoration D170378

Figure 11 Continued
North Reach Typical Cross Sections Continued





SOURCE: ESA, 2018

Lower Walnut Creek Restoration D170378

Figure 12
Pacheco Marsh Public Access

All trails will have a natural surface tread of either rock or dirt. It is anticipated that trail elevation will be between 10 and 30 feet above sea level and all trails will have grades less than 4.9 percent. The service road is anticipated to be 22 feet wide. All other trails will be eight feet wide with two feet of shoulder on either side.

The trail network includes four bridges across tidal channels. The bridges will be prefabricated steel and wood structures and will range in size from 60 feet to 100 feet depending on the width of the channel. All bridges will be eight feet wide and include railings along both sides. Some bridges may have interpretive signage integrated into the railing.

There will be three overlook points along trails at high points or areas with views of the tidal restoration. These overlooks will be constructed of wooden decking and enclosed with guardrails to prevent access beyond the overlook area. It is anticipated that some of the overlooks may be constructed on piers to provide visitors with an elevated view. These overlooks will include benches, interpretive signs, and may include stationary binoculars or viewing scopes to allow for bird watching. Additionally, two wildlife viewing points are located at lower elevations in areas anticipated to have unique wildlife viewing, such as channel confluences or near ponds. One of the wildlife viewing areas is located along a limited access trail and will not be open to the public during sensitive breeding times. The wildlife viewing areas will be constructed in a similar style to the overlooks but will incorporate design elements to limit interaction between the public and wildlife, such as taller guardrails and solid fencing. Interpretive signage will be placed at all overlooks and wildlife viewpoints. Together the overlooks and wildlife viewing areas will compose approximately 0.3 acres and will include eight to ten benches, eight to ten signs, and three to five stationary binoculars or viewing scopes.

Trails will be open for hiking and bicycling, but dogs will not be allowed on the trails. Motorized vehicles will be restricted to the entry driveway and parking lot, with the exception of CCCSD maintenance vehicles that will utilize the service road. Removable bollards will be placed along the service road to limit entrance and split rail fence will be used around the parking area and at the property edge to prevent driving on to the site. The entry to Pacheco Marsh will be controlled by a lockable gate and it is assumed that it will remain locked during closed hours.

Water Access Points

The Project includes one water access point within the Project for small personal watercraft, such as kayaks and canoes. The water access point will be along a new tidal channel near Suisun Bay. A boat drop off will be located near the water access point at the end of the CCCSD access road. Use of this drop off point will be limited by removable bollards along the service road and reservations will be required for use. The water access point may be a floating dock within the channel with space to accommodate up to two boats or a concrete ramp constructed at grade, with a suitable footprint to allow for the launch of small non-motorized watercraft.

Buildings

The Project will include an interpretive/education center (approximately 3,600 square feet) located near the entry. The building would be sited to overlook a restored seasonal wetland, and would include both indoor and outdoor space to view the restoration. It is anticipated that the

interpretive center would include restrooms, and would be used for environmental education classes, conferences, and as a rental space for events. It would include interpretive material about the Pacheco Marsh Restoration. An additional standalone restroom (approximately 400 square feet) would be located near the interpretive center. This restroom would be available to all visitors to the Project, while the interpretive center may have limited hours. The developed area, including the interpretive center, restroom, and associated outdoor space, would be approximately 0.3 acres. Restrooms would be constructed over concrete vaults and would be maintained/emptied by a contractor as needed. No water or wastewater connections would be required for the interpretive center. Drinking water would be supplied by a water cooler with water jugs brought in by a vendor, as needed.

Parking

The Project includes a 0.55-acre asphalt parking area that will accommodate approximately 50 parking spaces, including four accessible parking spaces. The Project additionally includes 0.23 acres of unpaved (gravel or earth) parking area for buses and overflow. Both parking lots can be accessed from Waterfront Road by a 480-foot asphalt entry road (0.24 acres). The parking lot also includes a trail connection to the City of Martinez's parking lot to the west. The parking lot will be enclosed by a split rail wood fence except at entry points.

Landscaping

Within the parking lot, there would be additional landscaping to manage stormwater. These areas would include bioretention soil to allow for treatment of surface runoff. Plants selected for these areas would be suitable for stormwater treatment and would be compatible with plants used in the restoration. Trees may be included in these areas. It is assumed that these areas would be irrigated to allow for plant establishment.

Visitor Use

It is anticipated that the project would be open to the public during daytime hours with some night time events at the interpretive center on a limited basis and with approval from the Project owner. Trail use would likely be the primary use of the Project, including visitors who use the trails for wildlife viewing, walking, or biking. It is assumed that most use by the general public would take place on the weekends, although education groups, such as school groups, summer camps, or scouts, may use the site during the week for field trips. Similarly, it is assumed that the interpretive center would be most used during the weekends, although it may be utilized for conferences or events during the school year. Due to the need to carry boats to the water access point, it is assumed that use of this facility would likely be somewhat limited. Based on these assumptions, it is estimated that the Project could have approximately 13,000 visitors annually.

The mild climate of the Bay Area suggests that the Project would likely have similar use levels during all seasons, although visitation would likely drop during periods of extended rain in the winter months.

Utilities

The Central Contra Costa Sanitary District (CCCCSD) outfall pipeline runs from south to the north through the center of the North Reach. This 72-inch concrete pipe is located in a 130-foot wide easement and has ten manholes, which are used for maintenance of the outfall within the project area. The CCCCCSD uses the existing access road to inspect and maintain the outfall pipeline. This access road is located within the easement on the south half of the site, however on the north half of the site the access road veers to the west of the easement starting approximately 2,500 feet north of Waterfront Road. The elevation of the existing access road varies from approximately 6.5 feet NAVD to 13 feet NAVD, and sections of the road become inundated during spring tides. The project would raise and re-align the CCCCCSD access road to provide continued access to the pipeline under the proposed project. Project features including tidal channel excavation and upland fill placement would be offset from the outfall pipeline to avoid any potential impacts to the pipeline.

1.2.4 Pacheco Reach

Invasive species removal and native vegetation planting would occur along Pacheco Creek Reach of the project site. Vegetation management activities could include removal of invasive species using hand, low impact mechanical, and/or herbicide application methods. Revegetation would focus on planting native species to enhance habitats for native fish and wildlife along Pacheco Creek.

1.2.5 Project Construction for All Reaches

The proposed project would construct/restore all four reaches in an integrated manner that allows for balance of cut and fill between the reaches, that minimizes potential impacts to ecologically sensitive areas, and in the case of the Middle Reach, when agreements can be obtained. **Table 5** presents the main disturbance activities and their size for each reach. The following sections describe construction schedule and phasing, site access, haul routes, and staging, construction methods, sequencing and equipment and provides a summary of earthwork volumes.

Construction Schedule

The available construction window for the project is limited by the presence of protected species and sensitive habitats and by the potential for flooding in the project area due to rainy season storms. Seasonal work windows related to special status species and the preferred construction season are shown in **Table 6** below; with green shaded months indicating when work is acceptable by species and orange shaded months indicating the preferred duration to allow flexibility in construction approaches and minimize costs. To avoid disturbing special status wildlife species, including Ridgway's rail, California black rail, and nesting birds, project construction could be limited to September 1 – January 30 (non-breeding season). To minimize impacts to special status fish species, in water work could be further limited to September 1 – November 30.

TABLE 5
CONSTRUCTION OVERVIEW

Reach	Item	Area (acres)
South	Existing Levee Cut	5.05
	Interior Channel Cut	4.77
	Connector Channel Cut	0.26
	New Levee Foundation Cut	-
	New Levee and Transition Fill	8.14
	Source - Import from North	-
	Source - South Excavation	-
	Export to North Reach	-
Middle	Existing Levee Cut	6.46
	Interior Channel Cut	10.26
	Connector Channel Cut	1.78
	Levee Fill	6.08
	Export to North Reach	-
North	NW Cut	34.64
	NE Cut	9.78
	Interior Channel Cut	5.63
	Connector Channel Cut	0.83
	Upland Fill	21.94
	Road/Trail Fill	2.86

TABLE 6
SEASONAL WORK WINDOWS FOR SPECIAL STATUS SPECIES

	January	February	March	April	May	June	July	August	September	October	November	December
Ridgway's and Black Rails												
Nesting birds												
Steelhead												
Chinook salmon												
Longfin smelt												
Delta smelt												
Preferred Construction Season												

Protocol-level surveys for the presence of rails would need to be conducted the year of construction to determine the seasonal work restrictions. If Ridgway's and California black rail are present in tidal marsh habitat, they would require an appropriate buffer between work areas and potential habitat during the breeding and nesting season (February – August) to avoid

impacts. Rail surveys were conducted in early Winter 2019, the results of which are described in the Biology Section.

While it may be possible to construct the project within the limited special status species construction season, it is preferable to have a longer construction period available. In particular, it may be necessary to provide a longer construction period for the construction of the new setback levees in order to allow for adequate time for moisture treatment and compaction of levee fill. The construction schedule presented here assumes that the work windows are not limited by the presence of special status species and that the preferred construction season is available for the project.

Construction for the North and South Reaches would be conducted in the Phase 1, anticipated to begin in 2020 and the Middle Reach would be constructed at a later date under Phase 2. See detailed construction phasing descriptions further in this chapter. Construction of each reach would ideally occur within one construction season, but this may occur over multiple construction seasons depending on seasonal work restrictions and timing and sequencing related to new levee construction/existing levee removal. Construction of the North Reach is expected to occur over several construction seasons. The North Reach would receive excess cut from the South and Middle Reaches, to be placed as upland fill, and therefore the timing for of completion of the final upland fill placement in the North Reach would be dependent on the construction of the South and Middle Reaches. Vegetation management in the Pacheco Reach is independent of the construction of the North, Middle, and South Reaches and could be implemented as early as Spring 2020.

The John Muir Land Trust (JMLT) is leading efforts to design and install public access amenities on the North Reach. Construction of the public access amenities is dependent on the completion of the restoration grading work and as such will follow in Phase 3. The timing of the installation of these amenities will be determined by the JMLT in coordination with the District. Other public access improvements, including the proposed East Bay Regional Park District (EBRPD) trail network, would be installed by EBPRD after the Phase 1 restoration earthwork has been completed.

Site Access, Haul Routes, and Staging

Site access, haul routes, and staging areas are shown in **Figure 13** and **Figure 14**. Site access and haul routes are discussed in the sections by color as shown in the figures.

South Reach

Construction access to the South Reach would be provided from Interstate 680 (I-680) via Highway 4, Pacheco Boulevard, Blum Road, Imhoff Drive, and Waterbird Way (see yellow route on Figure 13). From Waterbird Way, access would be along Conco's access road. After the access road crosses the BNSF railroad tracks, access would be via existing access roads on Conco's property.

On-site access routes, parking, and staging would be limited to the project footprint. Haul routes within the project area are shown in black in Figure 13 and utilize the existing levee and the new setback levee alignments. Two-way traffic along the existing levee alignments may be limited by the width of the levee crests (approximately 16-feet) and movement of materials may require a



SOURCE: ESA 2017

Lower Walnut Creek Restoration D170378

Figure 13
Potential Construction Haul Routes
South Reach



SOURCE: ESA 2017

Lower Walnut Creek Restoration D170378

Figure 14
Potential Construction Haul Routes
Middle Reach

circular haul path. Staging would be on District owned property at upland elevations at the south end of the South Reach area. Prior to construction, the selected contractor would develop a site operations plan to finalize the locations of site access routes, construction equipment staging and support areas, exclusion areas, limits of work, and parking areas that would be approved by the District.

Potential haul routes between the South and North Reaches for placement of excess cut from the South Reach in the North Reach are shown in yellow, blue, and black in Figure 13. Along the yellow route, access from the South Reach to I-680 would be as described above. Access to the North Reach is provided from I-680 via Waterfront Road. Along the blue route, access to the North Reach would be provided via Conco's access road, Central Avenue, the existing levees along Pacheco and Lower Walnut Creek and Waterfront Road. This route requires crossing the UPRR railroad tracks that parallel Waterfront Road. This is a passive crossing (no warning lights or gates) and would likely require safety measures such as a flagger to ensure safe crossing of the tracks. The final haul routes for the South Reach would be determined during the final design phase of the project.

All access and haul routes to and from the South Reach require travel along portions of Conco access roads and would require agreements allowing access prior to the start of construction.

Middle Reach

Construction access to the Middle Reach would be provided via two potential routes as shown in Figure 14. All routes access the Middle Reach from I-680 via Waterfront Road. The most direct access is via the blue route, which runs directly from Waterfront Road to the existing levees. This route requires crossing the UPRR railroad tracks that parallel Waterfront Road. This is a passive crossing (no warning lights or gates) and would likely require safety measures such as a flagger to ensure safe crossing of the tracks. The yellow route provides access to the north end of the Middle Reach via Waterfront Road, Waterbird Way and Acme landfill access roads. The yellow route would require agreement with Acme prior to the start of construction.

On-site access routes, parking, and staging would be limited to the project footprint. Haul routes within the project area are shown in black in Figure 14 and utilize the existing levee and the new setback levee alignments. Two-way traffic along the existing levee alignments may be limited by the width of the levee crests (approximately 16 feet) and movement of materials may require a circular haul path. Areas for staging and support are limited within the Middle Reach due to the presence of wetland habitat over much of the project area and high, sloped land along the landfill. Temporary placement of fill within existing wetlands may be needed to create an on-site staging area in the Middle Reach. Prior to construction, the selected contractor would develop a site operations plan to finalize the locations of site access routes, construction equipment staging and support areas, exclusion areas, limits of work, and parking areas.

Potential haul routes between the Middle and North Reaches for placement of excess cut from the Middle Reach on the North Reach are the same as the access routes discussed above.

North Reach

Construction access to the North Reach is provided from I-680 via Waterfront Road. Staging for the North Reach would utilize an existing gravel staging area created by the Marathon Refinery just inside the entrance to Pacheco Marsh. Prior to construction, the selected contractor would develop a site operations plan to finalize the locations of site access routes, construction equipment staging and support areas, exclusion areas, limits of work, and parking areas that would be approved by the District.

Construction Methods, Sequencing, and Equipment

There are several important considerations affecting construction methods, sequencing, and equipment including:

- Removing populations of invasive exotic weeds prior to ground disturbing activities; and collecting propagules/salvaging native plant material for revegetating the restored site as possible.
- Maintaining appropriate levels of flood protection when lowering and breaching existing levees
- Setback levee and upland fill construction
- Constructability of elements in existing wetland habitats and soft soils

This section provides discussion of key factors affecting construction methods, descriptions of construction sequencing by phase and reach, a summary of potential equipment to be used to complete project construction.

Construction Methods

Vegetation Management

Prior to initiation of ground disturbing construction activities, vegetation management would be implemented to remove/restrict the spread of invasive exotic plant species and to collect propagules of native plant species needed for restoration of target habitats as feasible.

Invasive Species Control

Actions to control non-native invasive plant species are outlined below. Mediterranean stinkwort and perennial pepperweed are species of particular concern and thus top priority for control. Populations targeted for interim management would be selected based upon population size and location relative to restoration design elements, and on feasibility of elimination/control within the available timeframe.

- Mechanically treat (hard mow, manually pull, mechanically scrape) selected stinkwort colonies in late summer/early fall, during the earliest flowering stages, prior to seed set; treat regrowth and new seedlings with herbicides approved by federal (e.g., U.S. Environmental Protection Agency) and state (e.g., California Environmental Protection Agency) of regulatory and permitting agencies for wetland applications.
- Treat selected pepperweed and other invasive plant species with mechanical removal and/or glyphosate herbicide formulations approved for wetland applications. Treat during late pre-flowering bolting (maximum shoot elongation) or up to earliest flowering stages (usually late

March to early May, depending on temperatures); retreat new growth with herbicides in summer prior to seed set.

Table 7 identifies a list of target weeds for management and provides summary information on management methods. A preliminary schedule of weed management activities for control of potential invasive plant species is provided in **Table 8**.

Collection and propagation/salvage of on-site native perennial plants

It is anticipated that plant material for revegetation of the restored site would be sourced from a combination of onsite collection/propagation/salvage, contract growing at offsite location(s) and purchase of genotypically appropriate native plant nursery stock. Activities to implement a program of translocation and field propagation of onsite native perennial plant species for use revegetation would be conducted as follows:

- Collect propagules/sod fragments from onsite native plant populations in late fall, during periods of cool, moist weather. Manually excavate spade-sized sod plugs or rolls of creeping wildrye, saltgrass, and alkali-heath. Excavation may be accomplished utilizing a small-tracked vehicle equipped with a bucket (e.g. smallest available bobcat) or by hand labor using spades. If a mechanized vehicle is used, it may be necessary to utilize marsh mats to minimize potential access impacts.
- Transport: Cover harvested sods to keep shaded and moist; transport on-site by truck as immediately following excavation as is practicable.
- Onsite Stockpile/Propagation: The southwestern section of the Suisun Properties parcel in the North Reach presents an ideal location for stockpiling salvaged material and/or onsite propagation of collected propagules.

Levee Lowering and Breaching

Levee lowering would involve a phased removal of earth to provide continuous flood protection while setback levees are constructed and to limit the risk of uncontrolled breaching. The construction contractor would be required to phase levee removal to prevent site inundation. The first phase would be accomplished by partially lowering and then removing the landside portions of existing the levee, leaving a smaller raised area (check berm) on the water side. The check berm would be wide enough to maintain egress and tall enough to prevent flooding in the dry season. The check berm would stay in place until the interior channel excavation and habitat grading is complete and the setback levees are constructed to adequate heights to protect from tidal inundation and flooding. Following completion of this work, the second phase of levee removal would begin. The second phase would be sequenced to maintain egress along the levee in consideration of breach locations and may be timed for a neap tide.¹³ Breaching would be completed by long reach excavators working from the lowered levee on either one or both sides of the breach to be excavated, with excavated material loaded into low ground pressure track dump trucks and hauled either for reuse within the Middle or South Reach or to the North Reach for fill placement. Following the completion of each breach, the remaining portions of the lowered levees would be removed using a combination of excavators and low ground pressure

¹³ Neap Tide: a tide just after the first or third quarters of the moon when there is the least difference between high and low water.

TABLE 7
TARGET WEEDS AND MANAGEMENT METHODS

Species	Common Name	Plant Form	Life Form	Cal-IPC Priority	Mgmt. Methods	Recommended Priority for Control	Notes
<i>Arundo donax</i>	giant reed	G	P	High	C,E,S	High	Excavate in uplands, cut near ground, spray cut ends
<i>Brassica nigra</i>	black mustard	G	A	Mod	C,M,S	Moderate	Cut/mow in spring before seed set, spray regrowth
<i>Carduus pycnocephalus</i>	Italian thistle	H	A	Mod	C,M,S	High	Cut/mow in spring before seed set, spray regrowth
<i>Carpobrotus edulis</i>	ice plant	H	P	High	E,S	Moderate	Excavate, place in piles to decompose, spray seedlings
<i>Centaurea solstitialis</i>	yellow starthistle	H	A	High	C,M,S	High	Cut/mow in spring before seed set, spray regrowth
<i>Cirsium vulgare</i>	bull thistle	H	A	Mod	C,M,S	Moderate	Cut/mow in spring before seed set, spray regrowth
<i>Conium maculatum</i>	poison hemlock	H	A	Mod	C,M,S	Moderate	Cut/mow in spring and repeat in summer, spray regrowth
<i>Dittrichia graveolens</i>	Stinkwort	H	A	Mod	M,S	High	Mow and/or spray in late summer/early fall (~ 1 st week Sept)
<i>Hirschfeldia incana</i>	short pod mustard	H	P	Mod	C,M,S	Moderate	Cut/mow in spring before seed set, spray regrowth
<i>Lepidium latifolium</i>	perennial pepperweed	H	P	High	C,M,S	High	Cut/mow in spring before seed set, spray regrowth
<i>Rubus armeniacus</i>	Himalayan blackberry	W	P	High	C,S	Moderate	Cut in spring, spray resprouts
<i>Tamarix ramosissima</i>	Saltcedar	T	P	High	C,S	High	Cut near ground and spray stump at same time

NOTES:

Plant Form: G = Grass or grass-like plant; H = Herbaceous plant; W = Woody perennial; T = Tree

Life Form: A = Annual plant, includes biennial plants; P = Perennial plant

Cal IPC Priority: Moderate (Mod) = On a state-wide basis have substantial ecological impacts on physical processes, plant and animal communities and vegetation structure; High = On a state-wide basis have severe ecological impacts on physical processes, plant and animal communities and vegetation structure

Management Method: C = Cut with line trimmer, blade or chain saw; E = Excavate by soil knife, shovel or backhoe bucket; M = Mow with high clearance mower set to 6"; S = Spray with herbicide (Herbicides to be applied under the direction of a licensed pest control applicator)

TABLE 8
INVASIVE VEGETATION MANAGEMENT SCHEDULE

Species	Common Name	PRE-CONSTRUCTION MANAGEMENT					CONSTRUCTION		POST-CONSTRUCTION MANAGEMENT					
		2019					2020				2021			
			Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter	Spring	Summer	Fall	Winter
<i>Arundo donax</i>	Giant Reed	CES		S		MONITOR, NO VEGETATION MANAGEMENT TO BE PERFORMED	S	CONSTRUCTION WINDOW, NO VEGETATION MANAGEMENT TO BE PERFORMED		MONITOR, SPRAY HERBACEOUS SEEDLINGS AS NECESSARY	ES	S		MONITOR, CUT/SPRAY HERBACEOUS SEEDLINGS AS NECESSARY
<i>Brassica nigra</i>	Black Mustard	CM	M	S			M					S		
<i>Carduus pycnocephalus</i>	Italian Thistle	CM	M	S			S				S			
<i>Carpobrotus edulis</i>	Ice Plant			S			E				ES	S		
<i>Centaurea solstitialis</i>	Yellow Starthistle	CM	M	S	S		M				S	S		
<i>Cirsium vulgare</i>	Bull Thistle	CM	M	S			M				S			
<i>Cortaderia selloana</i>	Pampas Grass	BE		BS			S				CS	BS		
<i>Cynara cardunculus</i>	Artichoke Thistle	C	S	BS			S				CS	BS		
<i>Dittrichia graveolens</i>	Stinkwort			MS			M					CS		
<i>Lepidium latifolium</i>	Perennial Pepperweed	CM	M	S	S		S				CS	S		
<i>Rubus armeniacus</i>	Himalayan Blackberry	CS	C	S	S		S				CS	S		
<i>Tamarix ramosissima</i>	Saltcedar	CS		S			S					S		

NOTES:

B = Bag seed heads, C = Cut, E = Excavate, M = Mow and S = Spray with herbicide

dump trucks to haul material for reuse and bull dozers to quickly remove the check berms and side cast earth into the site.

Setback Levee and Upland Fill Construction

Setback levees in the South and Middle Reaches would be constructed using material excavated in lowering the existing levees in the South and Middle Reaches and material excavated from the North Reach to create new habitats. Upland fill in the North Reach would be constructed using materials excavated from the existing levees, diked basins, and fringing tidal marshes along Lower Walnut and Pacheco Creeks.

Construction of both the setback levees and upland fill would require subgrade preparation, including excavation of foundations to remove unsuitable materials and placement and compaction of foundation fill material. Construction of the levees and upland fill would involve placement of fill in lifts¹⁴ to be moisture conditioned and compacted.

Earthwork in Existing Wetlands

Construction in areas with wet or saturated soils, such as the existing seasonal and tidal wetland habitats in the project area, requires special equipment and construction methods. To facilitate construction of the project elements, the following equipment may be utilized:

- Low ground pressure (LGP) equipment: smaller, lighter equipment with large surface area tires or treads that reduce bearing pressure.
- Mats: Timber planks lashed together or PVC mats used for access across soft soils.
- Long reach excavator: Track or wheel mounted excavator with a long arm to allow extended reach to over 40 feet.
- Amphibious Excavator: Excavator specifically designed to maneuver in marshes, swampy areas and soft terrain, as well as to float on water, and can excavate in shallow standing water.
- Rotary Ditcher: Equipment that excavates with rotating wheels spraying sediment across adjacent areas, and resulting in a narrow ditch. Typically pulled behind other equipment but can be self-propelled.

Revegetation

Planting, seeding, and other revegetation techniques would be used after grading to create a mosaic of native wetland, ecotone transition, and upland habitats that would provide valuable ecosystem functions. Revegetation efforts would focus on active planting and vegetation management in the lowland terrestrial and upland areas of the restoration site. No significant active revegetation efforts are planned for the tidally inundated areas of the project site because native tidal wetland plant communities are expected to establish primarily through passive recolonization in these areas. Only tidal marsh benches along newly created tidal channels would be lightly planted to provide early cover in tidal areas. Planting actions would include planting of sod fragments, rhizomes and plugs, container plants, and seeding. Graded areas would be planted as rapidly after construction as feasible to stabilize the newly graded soil while also being timed

¹⁴ Lifts: Thin layer of material, usually 0.5-1 feet thick.

with late fall/early winter rain events. Areas not planted with salvaged plants or container stock, would be drill seeded, broadcast seeded, or hydroseeded as appropriate to each habitat. If seed is not applied until just before the onset of winter rains, the seeded areas would be covered with straw mulch, tacked down and monitored throughout the first rainy season. If seed is applied earlier, it would be irrigated such that vegetation is sufficiently established to protect against erosion by the onset of winter rains.

The revegetation strategy would incorporate pre-construction propagation of native plant species, selective grading practices during construction to scrape and bury topsoil containing invasive plant species seedbank, as well as post-construction monitoring and adaptive management to control early stage invasions by problematic weed species. Invasive, non-native plant species are present within all habitats on the project site and on adjacent properties. Upland communities in particular are dominated by invasive non-native plants with only small clusters of native vegetation. A successional planting strategy may be implemented to provide for short-term erosion control while encouraging the establishment of slower growing but ecologically valuable native perennial grasses and shrubs.

Construction Phasing and Sequencing

Implementation of the project would be completed in three phases. The first phase would include construction of the South and North Reaches, which would proceed simultaneously. Independent from the construction of the South and North reaches, but during the first phase, vegetation management would occur within the Pacheco Reach. The Middle Reach would be constructed as a second phase. Public access would be constructed in a third phase for construction of the public access trails and amenities, and the interpretive center, respectively. Each phase of work could take up to two construction seasons.

Phase 1

South Reach

Construction of the South Reach would begin in late spring with site preparation, including clearing and grubbing and installation of wildlife exclusion fencing to isolate the work area from adjacent habitat as needed. Material generated during clearing and grubbing would be hauled to the North Reach and stockpiled for future placement in the upland fill. Following site preparation, construction would begin with subgrade preparation and construction of the setback levee and protection of the existing utility infrastructure. Following commencement of the setback levee construction, the next steps would be excavation and grading of tidal channels and seasonal wetland and lowland terrestrial habitats within the diked basin, and the first phase of lowering of the existing levee, and completion of the setback levee to appropriate elevations for flood protection. When these elements are completed, the second phase of levee lowering would begin. Excavation of the tidal connector channels to Lower Walnut Creek would begin on September 1 and the breaches would be completed by November 30. Once site grading is complete, revegetation of upland and lowland terrestrial habitats would occur, as well as surfacing and fence installation along the new setback levees. The surfacing would include adding gravel material to the levee road.

Concurrent with the setback levee construction, the project would protect and modify the Shortcut Pipeline and Recycled Water Pipeline. Realignment of the Shortcut Pipeline would require the pipeline to be taken temporarily out of service. The allowable shut-down windows for the Shortcut Pipeline would be a maximum 4-week duration between April 15 to May 30 and/or between September 1 to October 15. Any shutdowns during these time periods would also require the pipeline to be returned to service within 24 hours. In order to facilitate the construction of the new levee and the realignment of the Shortcut pipeline within these timeframes, the pipeline would be shut down during the April 15 to May 30 window, the pipeline drained, and a temporary bypass installed, designed to support the fully operational capacity of the Shortcut Pipeline. The pipeline would then be returned to service using the temporary bypass. Then, construction of the new setback levee and demolition and replacement of the Shortcut and Recycled Water Pipelines would begin. Construction of the setback levee at the pipelines would include subgrade excavation, dewatering, placement of lightweight fill, placement of earth fill, and installation of the sheetpile cutoff wall. Following completion of the levee and installation of the new section of pipeline, the Shortcut Pipeline would be shut down during the September 1 to October 15 window, the pipeline drained, the temporary bypass removed and the new pipeline connected. The replacement of the Recycled Water Pipeline would occur during the same time as the Shortcut Pipeline replacement following the same general sequence of work, with the exception that the Recycled Water Pipeline is inactive and would not need to be shutdown or drained.

Protection and modifications to the Calpine Martinez Gas Line and the Shell Coalinga-Avon and Martinez-Shell Point Platformer Off-Gas Line pipelines would also occur concurrent with the setback levee construction.

While the setback levee is being constructed, tidal channels would be excavated within the diked basin and the excavated materials would be sidecast to create high marsh, reused on site to create transitional habitat along the new setback levee, or hauled to the North Reach to be sorted and treated for use as upland fill, as needed.

Tidal channels would also be excavated between the existing levee and Lower Walnut Creek, to connect the new tidal channels within the diked basin to the creek. Excavating the connector channels would require work in existing high and low marsh and within the creek channel. A temporary access road would be constructed along the alignment of the tidal connector channels to facilitate access for construction equipment. The final means and methods of access would be determined by the construction contractor, but would likely involve either the temporary placement of fill from material excavated elsewhere on site or the use of wooden or PVC mats. The access road materials would be removed as the tidal channels are constructed. Construction of the tidal connector channels would be isolated from Lower Walnut Creek using a silt curtain with a floating boom installed at the confluence of the new tidal channels and Lower Walnut Creek. Installation of the silt curtain would contain turbidity and sediment resulting from construction activity, exclude fish from access to the active construction area, and allow water to pass between the connector channels and Lower Walnut Creek with the tides. The curtain would span the width of the connector channel and would be at least 6 feet tall to maintain a fish barrier at high tide. The curtain would consist of permeable filter fabric supported by a line of floats on the water

surface and a line of weights on the channel bottom. Once excavation of the tidal connector channels and the breaches in the levees are complete, the silt curtain would be removed.

Simultaneously with the excavation of the internal and connector tidal channels, the existing levee along Lower Walnut Creek would be lowered. Material excavated from the existing levee would be used to construct the new setback levee. Material would be transported from the existing levee to the new levee location, where it would be placed, treated as needed for moisture content, and compacted. Material excavated from the levee that is determined not to meet levee material requirements would either be reused within the South Reach to create terrestrial lowland slopes along the south end of the new setback levee or hauled to the North Reach for use as upland fill. Levee removal would be phased as described above to provide continuous flood protection.

Following the completion of the earthwork and access road surfacing of the new setback levees, installation of fencing and revegetation of the terrestrial lowland and upland habitats would begin. Revegetation would be accomplished using a combination of hydroseeding, drill seeding, plug planting, and transplanting of dormant sod fragments and/or discing of sod fragments into the finished grades.

North Reach

Earthwork on the North reach would begin with clearing and grubbing of temporary stockpile areas and fill placement areas designated for the placement of material hauled from the South and Middle reaches. Fill placement on the North Reach would occur concurrently with the earthwork on the South and Middle reaches, and may occur over several construction seasons. The majority of the fill material brought to the North Reach would be placed on the existing upland area at the south end of the southeast quadrant. Select fill material, such as material with high sand or organic content and native topsoil, may be sorted and placed in temporary stockpiles and some of the sand material in the North Reach (approximately 44,000 cubic yards) would be removed to a stockpile site on the Marathon Refinery property prior to work in the northern section of the North Reach in coordination with the District.

Following the initial placement of imported fill material, earthwork on each of the four quadrants of the North Reach can be sequenced independently. Considerations that would inform the timing of the restoration of each quadrant include:

- integration with planned public access improvements (e.g., by EBRPD and JMLT)
- ability of the Project Vegetation Management Program and local nurseries to provide sufficient native plant materials to support timely re-vegetation of restored areas
- coordination with project partners and funding agencies

The earthwork on each quadrant would begin with site preparation, including clearing and grubbing and installation of wildlife exclusion fencing to isolate the work areas from adjacent habitat as needed to protect biological resources. Temporary access routes would also be established within and between the four quadrants. Material generated during clearing and

grubbing would be hauled to the upland fill placement areas in the North Reach and stockpiled for future placement in the upland fill.

Following site preparation, construction of the project elements would begin with mass grading, including the excavation and grading of tidal channels, grading seasonal wetland and terrestrial lowland habitats within the diked basins, and the excavation of the tidal connector channels to Lower Walnut Creek. Some upland and transition zone areas would require fine grading following mass grading activities. This may include the placement of stockpiled topsoils and the possible placement of mulch or other soil amendments; shaping to create fine scale drainage features such as shallow swales, depressions, ponds and berms; and/or surface treatments such as ripping, track walking, and/or application of water to achieve desired surface texture.

Tidal channels would be excavated through the existing outboard marsh areas to connect the northeast and southeast quadrants to Lower Walnut Creek. Excavating the connector channels would require work in existing high and low marsh areas and within the creek channel. A temporary access road would be constructed along the alignment of the tidal connector channels to facilitate access for construction equipment. The final means and methods of access would be determined by the construction contractor, but would likely involve either the temporary placement of fill from material excavated elsewhere on site or the use of wooden or PVC mats. The access road materials would be removed as the tidal channels are constructed. Construction of each tidal connector channel would be isolated from Lower Walnut and Pacheco Creek using a silt curtain with a floating boom installed at the confluence of the new tidal channel and Lower Walnut Creek. Installation of the silt curtains would contain turbidity and sediment resulting from construction activity, exclude fish from access the active construction area, and allow water to pass between the connector channels and creeks with the tides. Each curtain would span the width of the connector channel and a sufficient height to maintain a fish barrier at high tide. The curtain would consist of permeable filter fabric support be a line of floats on the water surface and a line of weights on the channel bottom. Once excavation of the tidal connector channels and the breaches in the levees are complete, the silt curtain would be removed.

Spoils from the outboard channel excavation would be placed in the upland fill placement areas. Due to the anticipated high moisture and organic content of this material, it may be necessary to spread and dry the spoils before final placement in the fill areas.

Once all earthwork has been completed in the inboard and outboard areas of the project site, the contractor would then breach, lower or re-shape the perimeter berms as appropriate for each quadrant. The Southwest Quadrant perimeter berm would not be excavated. Excess material from the berm lowering would be transported to upland fill placement areas or side cast to create high marsh. The re-aligned access road would be fine graded and re-surfaced, permanent fencing would be installed and revegetation of the terrestrial lowland and upland habitats would begin. Revegetation would be accomplished using a combination of hydro-seeding, drill seeding, plug planting, and transplanting of dormant sod fragments and/or discing of sod fragments into the finished grades.

Pacheco Reach

During Phase 1 invasive species removal and native vegetation planting would occur along Pacheco Creek Reach. Vegetation management activities could include removal of invasive species using hand, low impact mechanical, and/or herbicide application methods. Following vegetation management, revegetation would be accomplished using a combination of hydro-seeding, drill seeding, and plug planting. No excavation or earthmoving activities would occur in the Pacheco Reach.

Phase 2

Middle Reach

Construction of the Middle Reach would begin with site preparation, including clearing and grubbing and installation of wildlife exclusion fencing to isolate the work area from adjacent habitat as needed. Material generated during clearing and grubbing would be hauled to the North Reach and stockpiled for future placement in the upland fill. Following site preparation, construction of the Middle Reach would begin with construction of the new setback levees at the north and south end of the Middle Reach. Fill for the new setback levees would be hauled from the North reach and would consist of materials excavated from both the North and South reaches. Excavation and grading of tidal channels within the diked basin, excavation of the tidal connector channels to Lower Walnut Creek, improvements to the existing perimeter landfill access road and the first phase of lowering of the existing levee would follow construction of the setback levees. Excavation of the tidal connector channels would begin in early fall to avoid impacts to special status fish species in the channels. When these elements are completed, the second phase of levee lowering would begin, including the levee breaches. Once site grading is complete, revegetation of upland and lowland terrestrial habitats would occur, as well as surfacing and fence installation along the new setback levees.

Tidal channels would be excavated within the diked basin and the excavated materials would be sidecast to create high marsh or used to create the monitoring well access berms. Tidal channels would also be excavated between the existing levee and Lower Walnut and Pacheco Creeks, to connect the new tidal channels within the diked basin to the creek. Excavating the connector channels would require work in existing high and low marsh and within the creek channel. A temporary access road would be constructed along the alignment of the tidal connector channels to facilitate access for construction equipment. The final means and methods of access would be determined by the construction contractor, but would likely involve either the temporary placement of fill from material excavated elsewhere on site or the use of wooden or PVC mats. The access road materials would be removed as the tidal channels are constructed. Construction of each tidal connector channel would be isolated from Lower Walnut and Pacheco Creek using a silt curtain with a floating boom installed at the confluence of the new tidal channel and Lower Walnut Creek. Installation of the silt curtains would contain turbidity and sediment resulting from construction activity, exclude fish from access the active construction area, and allow water to pass between the connector channels and creeks with the tides. Each curtain would span the width of the connector channel and would be at least 6 feet tall to maintain a fish barrier at high tide. The curtain would consist of permeable filter fabric support be a line of floats on the water surface and a line of weights on the channel bottom. Once excavation of the tidal connector channels and the breaches in the levees are complete, the silt curtain would be removed.

Simultaneously with the excavation of the internal and connector tidal channels, the existing levees along Lower Walnut Creek and Pacheco Creeks would be lowered. Material excavated from the existing levee would be used to and improve the perimeter landfill access road. Material would be transported from the existing levee to the perimeter access road, where it would be placed, treated as needed for moisture content, and compacted. Material excavated from the levee that is determined to not meet road material requirements would be hauled to the North Reach for use as upland fill. Levee removal would be phased as discussed above to provide continuous flood protection. On the upslope side of the access road, a new drainage swale would be constructed to collect surface water runoff from the landfill and deliver it to the Acme landfill buffer basins to the north and south of the Middle Reach restoration area.

Following completion of the earthwork, surfacing of the new setback levees and access road, installation of fencing and revegetation of the terrestrial lowland and upland habitats would begin. Revegetation would be accomplished using a combination of hydroseeding, drill seeding, plug planting, and transplanting of dormant sod fragments and/or discing of sod fragments into the finished grades.

Phase 3

North Reach Public Access Amenities and Interpretive Center

Construction of the North Reach public access amenities would include the trail network, bridges, boardwalks, water access points, parking area, and limited bioretention landscaping.

As previously discussed, the JMLT is leading efforts to design and install public access amenities on the North Reach as part of the project. The timing of the installation of these amenities would be determined by JMLT in coordination with the District. Other public access improvements, including the proposed EBRPD trail network and staging area facilities, would be installed by others after Phase 1 restoration earthwork has been completed.

Construction Equipment

Equipment anticipated for construction includes: mowers, long and short reach excavators, bulldozers/graders, rotary ditchers, wheel dump trucks, low ground pressure track dump trucks, track pulled scrapers, conventional big wheel scrapers, water trucks, pumps, rollers, sheepfoot compactor, pile drivers, cranes, and concrete mixers. **Table 9** below provides a summary of equipment to be used for construction of the project elements of each reach.

Earthwork Volumes

Earthwork volumes for the project are provided in **Table 10**, below. Assumed losses are based on a geotechnical assessment for the project.¹⁵ The upland fill volume for the North Reach includes both import from the South Reach and the Middle Reach and excavation within the North Reach.

¹⁵ Hultgren – Tillis Engineers. 2019. Draft Geotechnical Investigation Lower Walnut Creek Project. Letter memorandum to ESA. March 2019.

**TABLE 9
CONSTRUCTION EQUIPMENT**

Project Element	Equipment	Description
Site Preparation	Mower	Clear vegetation
	Track Pulled Scraper Conventional Scraper Bulldozer	Clear and grub excavation and fill placement areas
	Dump Truck LGP Track Dump truck	South Reach: Haul clear and grub material to South Reach staging area and to North Reach for stockpile and storage (wheel dump truck only) Middle Reach: Haul clear and grub material to Middle Reach staging area and North Reach for stockpile and storage (wheel dump truck only)
	Hand tools	Remove vegetation in sensitive habitats, install exclusion fencing
Levee Removal	Track Pulled Scraper Conventional Scraper	Excavate levee material, haul and place material to setback levee alignment
	Excavator Bulldozer	Excavate "check berm" portion of levee, load into dump truck for transfer to setback levee alignment or North Reach
	Dump Truck LGP Track Dump truck	Haul levee material to setback levee alignment or North Reach (wheel dump truck only)
Setback Levee	Bulldozer/Grader	Place levee fill material, finished grading
	Compactor	Compact Material
	Water Truck	Moisture condition levee fill material
	Drill seeder Hydroseeder	Revegetation
Interior Tidal Channel	Excavator	Excavate channels and side cast materials
	LGP Track Dump truck	Haul material to staging area stockpile for transfer to wheel dump trucks
Connector Tidal Channel	Excavator	Place and remove temporary marsh access road material (earth or mats), excavate channels, place and remove temporary silt curtain
	Rotary Ditcher	Excavate channels
	Small watercraft	Install temporary silt curtain
	LGP Track Dump truck	Haul material to staging area for transfer to wheel dump trucks
Excess Material	Excavator Front Loader	Transfer material from stockpile to wheel dump truck for haul to North Reach
	Dump Truck	Haul material to North Reach
Tidal Marsh and Interior Channels	Excavator	Excavate channels and marsh benches
	LGP Track Dump truck	Haul material to upland fill placement
Playas	Track Pulled Scraper Conventional Scraper	Create microtopography, gently sloping swales, pools, and sills
	Portable Pumps and Hoses	Finish grades hydraulically by washing over graded surfaces with high-volume, high velocity jets of bay water to re-establish stratified, sorted sediment
Seasonal Wetland Flats	Track Pulled Scraper Conventional Scraper	Scrape the surface of the flats as needed to remove weeds and their seed bank
High Marsh Pond	Excavator	Excavate pond
	LGP Track Dump truck	Haul material to upland fill placement

TABLE 9 (CONTINUED)
CONSTRUCTION EQUIPMENT

Project Element	Equipment	Description
Lowland Grasslands	Track Pulled Scraper Conventional Scraper	Excavate and grade Haul material to upland fill placement area for placement Sod fragment dispersion
	Tractor and Discer	Sod fragment dispersion
	Drill seeder	Revegetation
Upland Fill	Track Pulled Scraper Conventional Scraper Bulldozer/Grader	Place fill material, finished grading
	Compactor	Compact Material
	Water Truck	Moisture condition fill material
	Drill Seeder Hydroseeder	Revegetation
Trail Building	Rubber Tired Dozer	Grading trail materials
	Tractor/Loader/Backhoe	Earthmoving
	Water Trucks	Control dust
Boardwalk, Bridge, Restroom, Interpretive Facility Construction	Forklifts	Moving construction materials to locations
	Tractor/Loader/Backhoe	Earthmoving
	Concrete Truck	Laying building foundation
	Crane	Construction of building
Road, Parking Lot, Interpretive Signage, Bench Construction	Paver	Asphalt paving of parking lot
	Paving Equipment	Pave roads and building footprints
	Roller	Grading and leveling cement and other materials

TABLE 10
EARTHWORK VOLUMES

Reach	Item	Quantity	Unit	Losses (%)	Available for Fill	Unit
South	Existing Levee Cut	35,000	CY	20	28,000	CY
	Interior Channel Cut	14,900	CY	45	8,200	CY
	Connector Channel Cut	2,300	CY	65	800	CY
	New Levee Foundation Cut	34,600	CY	20	27,700	CY
	New Levee and Transition Fill	94,100	CY			
	<i>Source - Import from North</i>	<i>34,200</i>	CY			
	<i>Source - South Excavation</i>	<i>59,800</i>	CY			
	Export to North Reach	6,400	CY			
Middle	Existing Levee Cut	40,800	CY	25	30,600	CY
	Interior Channel Cut	6,300	CY	45	3,465	CY
	Connector Channel Cut	2,100	CY	65	735	CY
	Levee Fill	13,300	CY			
	Export to North Reach	25,700	CY			
North	NW Cut	228,100	CY	15	193,900	CY
	NE Cut	29,400	CY	15	25,000	CY
	Interior Channel Cut	39,600	CY	35	25,800	CY
	Connector Channel Cut	5,100	CY	65	1,800	CY
	Upland Fill	266,700	CY			
	Road/Trail Fill	8,800	CY			

1.2.6 Operations, Maintenance, Monitoring and Management

The District is the current site manager and would manage the restoration and flood protection levees. The District may partner with the JMLT to manage the public access facilities on Pacheco Marsh (North Reach) and with the EBRPD to manage future public access facilities in the South Reach.

Operations and Maintenance

The project has been designed to minimize the need for active operations and ongoing maintenance of the restoration area. The District would perform routine observation and maintenance to maintain flood protection facilities along the project reaches, including the new setback levees as part of the District's regular levee monitoring program. Typical levee monitoring activities include inspection for erosion or rodent damage along the levee tops and slopes. Monitoring of levees would be conducted annually after construction and after major storm events. Typical levee maintenance activities would include mowing and weed control and repair of erosion sites. The District would continue to observe geomorphic changes along Walnut Creek in order to monitor the flood conveyance capacity of the creek channel.

Similarly, the public access facilities will also require periodic inspection and maintenance. Because those areas will be open to the public, JMLT would perform appropriate and necessary operations and maintenance to minimize trash accumulation, vandalism and illegal site access. CCWD and USBR would also use the trails and roadways for access to and from their respective water pipelines and the operation, maintenance and repair thereof.

Monitoring and Adaptive Management

Monitoring and adaptive management activities would be used to increase the efficiency and effectiveness of restoration strategies and to achieve restoration benefits. Pre-construction monitoring would be used to establish pre-project (existing) conditions for vegetation and channel planform. After construction, the following monitoring data would be collected periodically to assess restoration success and inform any potential remedial action. Monitoring and adaptive management reports would be produced following each monitoring event/year.

- **Hydrology** – Water levels and salinity, to evaluate restoration of hydrologic functions of the Project (Years 1, 2, 4, and 10)
- **Geomorphology** – Channel development in planform and cross-section (Years 1, 2, 4, and 10)
- **Vegetation** – Photo-documentation, limited ground-truthing and weed-survey, to monitor vegetation succession (Years 1, 2, 4, and 10, with photo-documentation and invasive plant surveys also in Years 6 and 8)
- **Wetlands** – Re-delineation of jurisdictional wetlands to verify that the target wetland acreage has been attained (Year 5)

The actual schedule and sampling design (location and number of sampling sites and event) would be tailored to the project needs prior to construction, and in coordination with the Invasive Spartina Project and other regional monitoring programs. The effectiveness of the monitoring program would be periodically evaluated during the first few years and adjustments would be made as necessary, based on interim findings and feedback on methods from the federal and state permitting agencies (e.g., California Department of Fish and Wildlife).

CHAPTER 2

Environmental Checklist

1. **Project Title:** Lower Walnut Creek Restoration Project
2. **Lead Agency Name and Address:** Contra Costa County Department of
Development and Conservation
30 Muir Road
Martinez, CA 94553
3. **Contact Person and Phone Number:** Paul Detjens, (925) 313-2394
4. **Project Location:** Lower Walnut Creek, Contra Costa County
(see Project Description for more details)
5. **Project Sponsor's Name and Address:** Contra Costa County Flood Control and Water
Conservation District
255 Glacier Drive
Martinez, CA 94553-4825
6. **General Plan Designation(s):** Open Space (OS) and Heavy Industry (HI)
7. **Zoning:** Heavy Industry (HI)
8. **Description of Project:**

This project would enhance and restore 1.5 miles of coastal marsh habitat along Walnut Creek and Pacheco Creek, 0.5 miles north of the City of Concord. Portions of Walnut Creek and its floodplain are artificially confined by earthen levees, built by the Army Corps of Engineers and other groups in the 1960's and 1970's.¹⁶ The project would set back those levees in key locations, extend tidal marsh channels under earthen berms and through culverts, and grade existing seasonal wetlands in order to expand tidal marsh habitat in the project area. In addition, the project would maintain an appropriate level of flood protection for the area, while also creating opportunities for the future expansion of public access in the project area. See Chapter 1, Project Description for details.

9. Surrounding Land Uses and Setting.

Surrounding land uses include industrial land uses and open space. The site is composed of Lower Walnut Creek, its tributary Pacheco Creek, and adjacent lands. Adjacent lands that are part

¹⁶ Bay Conservation and Development Commission, 2015. "Walnut Creek – Asset Profile Sheet".
http://www.adaptingtorisingtides.org/wp-content/uploads/2015/12/Walnut-Creek_PS_120315.pdf.

of the project include closed and currently operating landfills, levees, pipeline Rights-of-way, tidal and seasonal marsh, seasonal wetlands, and upland and scrub habitat.

10. Other public agencies whose approval is required

US Army Corps of Engineers – 404 and 401D permits; US Fish and Wildlife Service – Biological Opinion; National Marine Fisheries Service – Biological Opinion; California Department of Fish and Wildlife – Lake and Streambed Alteration Agreement 1602; California State Lands Commission – Lease Agreement; San Francisco Regional Water Quality Control Board – National Pollutant Discharge Elimination System General Construction Permit; BCDC – Major Permit and Bay Plan Amendment; United States Bureau of Reclamation – MP620 facility relocation agreement; Contra Costa Water District – Utility Relocation Agreement and Construction Permit(s); Central Contra Costa County Sanitary District – Discharge Permit.

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

According to the requirements of PRC Section 21080.3.1(b), one tribe, the Wilton Rancheria, requested consultation regarding projects in Contra Costa County. The Contra Costa County Flood Control and Water Conservation District (District) sent a letter to Wilton Rancheria with information about the proposed project that was confirmed delivered on June 15, 2018. No responses have been received to date.

2.1 Environmental Factors Potentially Affected

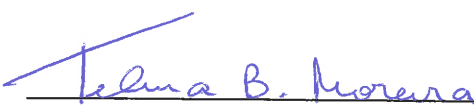
The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

- | | | |
|---|--|---|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Agriculture and Forestry Resources | <input checked="" type="checkbox"/> Air Quality |
| <input checked="" type="checkbox"/> Biological Resources | <input checked="" type="checkbox"/> Cultural Resources | <input type="checkbox"/> Energy |
| <input type="checkbox"/> Geology/Soils | <input checked="" type="checkbox"/> Greenhouse Gas Emissions | <input checked="" type="checkbox"/> Hazards & Hazardous Materials |
| <input checked="" type="checkbox"/> Hydrology/Water Quality | <input type="checkbox"/> Land Use/Planning | <input type="checkbox"/> Mineral Resources |
| <input checked="" type="checkbox"/> Noise | <input type="checkbox"/> Population/Housing | <input type="checkbox"/> Public Services |
| <input type="checkbox"/> Recreation | <input checked="" type="checkbox"/> Transportation | <input checked="" type="checkbox"/> Tribal Cultural Resources |
| <input checked="" type="checkbox"/> Utilities/Service Systems | <input type="checkbox"/> Wildfire | <input type="checkbox"/> Mandatory Findings of Significance |

DETERMINATION: (To be completed by the Lead Agency)

On the basis of 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.
- ☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.


 Telma B. Moreira
 Principal Planner
 Contra Costa County
 Department of Conservation and Development

9/11/2019
 Date

2.2 Environmental Checklist

2.2.1 Aesthetics

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
I. AESTHETICS — Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion

Environmental Setting

The study area for aesthetic resource impacts analysis includes the project site and adjacent staging and laydown areas, Martinez Gun Club, State Lands Commission lands, and public areas along Waterfront Road from which proposed project activities would be visible.

Photographs depicting representative views of site vegetation, infrastructure, and other important features are presented in **Figures 15** through **24**. As shown, the project site is a non-urbanized area, generally characterized by flat topography with varying degrees of vegetation and exposed soil, marshes and adjacent creeks, lowland grasslands, earthen levees, and adjacent industrial infrastructure. The primary waterways through the site are Walnut Creek, which ranges in width from 30 feet at the southern end of the site to around 90 feet at the northern end connection to Suisun Bay, and its tributary Pacheco Creek, which is approximately 20-feet wide.

The project site is divided into four areas – the North Reach, the Middle Reach, the South Reach, and the Pacheco Reach. The North Reach is a flat, nearly treeless expanse of marsh and grasslands and includes the least disturbed marsh vegetation (**Figures 15** and **17**). Vegetation at the site includes tidal marsh on the western shore of Walnut Creek, transitioning westward and uphill to lowland grassland and scrub vegetation (**Figure 16**). There are several white oil pipelines that runs parallel to Waterfront Road traversing the North Reach, which are highly visible in the foreground of views because they are approximately 3 feet above the ground and bundled in a protective tubular framework that is about 10 to 20 feet wide (Figure 15). Additionally, the Contra Costa County Sanitation District outfall pipe, which runs in a north-south direction through the site, is underground, but is covered by a gravel road approximately 30-feet wide,



SOURCE: ESA, 2019

Lower Walnut Creek Restoration D170378.00

Figures 15 and 16
Representative Photos of the North Reach



SOURCE: ESA, 2019

Lower Walnut Creek Restoration D70378.00

Figures 17 and 18
Representative Photos of the North Reach

visible in Figure 14. Suisun Bay can be viewed in the distance from certain vantage points (**Figure 18**), as can the hills to the northeast of Benicia across Suisun Bay (Figure 18).

The Middle, South, and Pacheco Reaches are more disturbed, in part due to the active Acme landfill (adjacent to the Middle Reach), the closed IT Baker landfill (adjacent to the South and Pacheco Reaches), and the closed Acme landfill (adjacent to the Pacheco Reach) that are the primary topographic features of the area. These areas are characterized by tall earthen mounds, rising 50 to 60 feet above and 300 to 400 feet from the creek, and extending for nearly one mile adjacent to Walnut Creek and Pacheco Creek (**Figures 19 through 22**). Walnut Creek and Pacheco Creek are the primary waterways in these areas, which have slow slack flows and marsh on their fringes (**Figure 23**). Seasonal wetlands exist behind the levees, and are different in character and vegetation from the tule marshes immediately adjacent to the Creeks (Figures 19 and 20). Public views of the project site are primarily from Waterfront Road and Interstate-680, as well as from Suisun Bay. **Figure 24** shows the pipeline adjacent to Waterfront Road, while Figure 16 shows a representative view from Waterfront Road. Motorists and boaters are the primary groups that can currently view the site. The project is not within a County Scenic corridor and the nearest designated scenic road is Highway 4, approximately one mile from the southern edge of the project site.¹⁷

a) Would the project have a substantial adverse effect on a scenic vista? (*Less than Significant*)

The project site and surrounding areas do not offer notable views of a scenic vista and are not the primary focus of any designated scenic vista. Distant views across Suisun Bay to the hills beyond Benicia include industrial infrastructure immediately east of the site on the east bank of Walnut Creek, as shown in **Figure 21**. Additional industrial infrastructure exists west of the site at the Acme landfills, and northeast of the site at the TransMontaigne refinery. The marsh, bay, and creek views are scenic resources that beneficially contribute to the area's visual quality, despite the nearby industrial elements. These are defining features of the study area's visual character.

Construction Impacts

Construction of the proposed project would include: equipment and materials staging and laydown; site preparation, consisting of vegetation management, excavation, and grading; construction of new levees; and, landscape improvements by fine grading and revegetation. These activities would be visible at times to motorists traveling along Waterfront Road, as well as visitors to adjacent public lands and people in vessels on Suisun Bay. Some residents in the neighborhood along Blum Road may be able to see construction work along Pacheco Creek, but this would be limited to no more than two construction seasons and would proceed linearly, with only a short section of Pacheco Creek visible to residential areas 1,600 feet from the project site. The work in this area would also be limited to plantings as described in the Chapter 1, Project Description, and would be less intense than the other construction along the main channel of Walnut Creek.

¹⁷ Contra Costa County, 2004. County General Plan – Chapter 5 – Transportation and Circulation Element – Scenic Routes Plan. <https://www.contracosta.ca.gov/DocumentCenter/View/30915/Ch5-Transportation-and-Circulation-Element?bidId=>



SOURCE: ESA, 2019

Lower Walnut Creek Restoration D170378.00

Figures 19 and 20
Representative Photos of the Middle Reach



SOURCE: ESA, 2019

Lower Walnut Creek Restoration D170378.00

Figures 21 and 22
Representative Photos of the South Reach



SOURCE: ESA, 2019

Lower Walnut Creek Restoration D70378

Figures 23
Industry in Distance, Representative Wetlands
and Uplands



SOURCE: ESA, 2019

Lower Walnut Creek Restoration D170378

Figures 24
Pipeline Adjacent to Waterfront Road

Due to the isolated location of the project site, few people would see the construction activities. However, construction work would be visible to motorists along Waterfront Road, I-680, and from portions of the Vine Hill community of single-family homes to the southwest edge of the project site. These activities would not have a substantial adverse effect on views of scenic landscape features; most of the existing tidal wetlands would not be impacted by construction, leaving the primary scenic resources intact during construction. Furthermore, views of the work would be temporary, short-term, and indirect, as motorists would be traveling through the area with no established viewing locations along the road. The construction equipment would be similar in character to equipment used at other industrial facilities in the vicinity.

Construction of the proposed project is expected to occur over the course of three and a half years, though construction would be limited by permit conditions for protected species and sensitive habitats, as well as by the potential for flooding during seasonal storms. Thus, construction aesthetic impacts would be limited to the seasonal permitted work windows, and would likely not occur during the months of February through April. As discussed previously in the *Project Description*, staging areas will be on District-owned property at upland elevations at the south end of the South Reach area.

For the reasons above, project construction would not have a substantial adverse effect on a scenic vista, scenic resources, or the visual character of the project area or its surroundings as viewed from existing residential areas, public lands, water bodies, or roads. Therefore, the impact would be **less than significant**.

Operational Impacts

The project would enhance and expand coastal wetlands. All of the areas behind levees in the Middle and South Reaches within the project boundaries are currently seasonal wetlands that are disconnected from tidal action and have a different plant community; dominant species include creeping wildrye, sedges, rushes, and forbs, which are mostly non-native plants. The project would set back the levee that currently disconnects these seasonal wetlands from tidal action, creating tidal conditions where there currently are none. Thus, the primary aesthetic impact of the project would be a change in vegetation at the site, as well as the creation of new tidal channels where there currently are none. In addition, new plantings in these and other areas would create new vegetation communities, representative of tidal wetlands.

While these proposed changes would not be noticeable to motorists along Waterfront Road and I-680, nor from vessels on Suisun Bay due to the distance at which they would be viewed, the new tidal plant communities would be of a similar height and ground cover as nearby existing seasonal wetland communities. The proposed new levee would be in a new position approximately 350 to 400 feet westward and would remain a levee of similar design. Thus, the overall character of the site would remain similar, though with levees and plant communities in new locations. Further, the expansion of tidal wetlands would be a beneficial aesthetic change to the area and more representative of areas that have remained in a more native and natural state. The visitor center would be set back from the Waterfront Road and would be at most 30 feet in height and cover approximately 3,000 square feet. The visitor center encompasses a very small portion of the overall site and would not obscure view of most of the areas to the project site, Bay

or surrounding areas. Further, the visitor center would not result in a substantial change to the surrounding aesthetic resources.

Upon completion of construction, laydown and staging areas would be returned to their approximate pre-construction condition or better with native plantings, resulting in less-than-significant impact on aesthetic resources.

For the reasons above, project operations would not have a substantial adverse effect on a scenic vista, scenic resources, or the visual character of the project area or its surroundings as viewed from existing residential areas, public lands, water bodies, or roads. The project would likely be viewed as a benefit to aesthetic resources in the area. Therefore, the impact would be **less than significant**.

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

For the same reasons explained in the analysis of impacts on visual resources above under checklist item ‘a’, and because the project is not within a County Scenic corridor and the nearest designated scenic road is Highway 4, approximately one mile from the southern edge of the project site,¹⁸ impacts would be **less than significant**.

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

For the same reasons explained in the analysis of impacts on visual resources above under checklist item ‘a’, the project would not substantially degrade the visual character of public views and impacts would be **less than significant**.

d) Would the project create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area? (*Less than Significant Impact*)

The proposed project would not include nighttime construction, and there would be no lighting required during the construction phase. The proposed interpretive center is expected to have low-intensity outdoor lights that would be downturned to prevent light emanating directly outward. The low-intensity nighttime lighting would not substantially increase the amount of nighttime lighting that exists in the areas surrounding the project site from industrial operations and from residential development. The required project materials for construction and operation would not be reflective, and therefore would not result in new sources of substantial glare. For these reasons, the proposed project would have **less-than-significant impacts** relative to light or glare.

¹⁸ Contra Costa County, 2004. County General Plan – Chapter 5 – Transportation and Circulation Element – Scenic Routes Plan. <https://www.contracosta.ca.gov/DocumentCenter/View/30915/Ch5-Transportation-and-Circulation-Element?bidId=>

2.2.2 Agriculture and Forestry Resources

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
II. AGRICULTURE AND FORESTRY RESOURCES —				
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.				
Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

The California Department of Conservation's Important Farmland Maps indicate that the project area is designated as Other Land and Urban and Built Up Land.¹⁹ None of the project area includes land covered by a Williamson Act contract. The project area would be accessed from existing roads – Waterfront Road, Arthur Road, and Conco Road from I-680 (Figures 13 and 14). None of these roads cross or are adjacent to Agricultural Land. The nearest farmland includes Unique and Prime Farmland along Morello Avenue in Martinez, approximately one mile away from the project area.

¹⁹ California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program. 2016. *Contra Costa County Important Farmland*. Available: <ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2016/con16.pdf>. Accessed September 17, 2018.

- a) **Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? (*No Impact*)**
- b) **Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract? (*No Impact*)**

The project would not involve conversion of any farmland, or any other type of land conversion, because all work would take place on land not designated Farmland. For these reasons, the project would not result in the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use, nor would it conflict with existing zoning for agricultural use, existing Open Space Easement, or a Williamson Act contract and there would be **no impact**.

- c) **Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))? (*No Impact*)**
- d) **Would the project result in the loss of forest land or conversion of forest land to non-forest use? (*No Impact*)**
- e) **Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use? (*No Impact*)**

The project would involve restoration and enhancement of tidal wetlands. The project site does not include any existing forest land, timberland, or farmland.²⁰ For this reason there would be no conflicts with existing zoning or the need for rezoning, and the project would result in **no impacts** to forest land, timberland, or farmland.

²⁰ California Department of Fish and Wildlife. 2017. Forests and Timberlands – Region 3. Available: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=111191&inline>. Accessed September 17, 2018.

2.2.3 Air Quality

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
III. AIR QUALITY — Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Result in other emissions (such as those leading to odors) affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion

The project site is located within the San Francisco Bay Area Air Basin (SFBAAB), and is regulated by the Bay Area Air Quality Management District (BAAQMD). The SFBAAB is currently designated as a nonattainment area for state and national ozone standards, state respirable and fine particulate matter (PM₁₀ and PM_{2.5}) standards, and the federal PM_{2.5} (24-hour) standard.²¹

a) Would the project conflict with or obstruct implementation of the applicable air quality plan? (*Less than Significant*)

The most recently adopted air quality plan to address nonattainment issues for the Bay Area is the 2017 Bay Area Clean Air Plan (CAP).²² The 2017 CAP provides a regional strategy to protect public health by continuing progress toward attaining all state and federal air quality standards. Additionally the CAP is focused on eliminating health risk disparities from exposure to air pollution among Bay Area communities. The 2017 CAP includes a wide range of 85 control measures designed to decrease emissions of the air pollutants that are most harmful to Bay Area residents, including particulate matter, ozone, and toxic air contaminants.²³

The BAAQMD CEQA Guidelines recommend that a project's consistency with the current CAP be evaluated using the following three criteria:

- a) The project supports the goals of the Air Quality Plan,
- b) The project includes applicable control measures from the CAP, and

²¹ Bay Area Air Quality Management District, 2017. Air Quality Standards and Attainment Status. Available: <http://www.baaqmd.gov/research-and-data/air-quality-standards-and-attainment-status>, last updated January 1, 2017.

²² Bay Area Air Quality Management District, 2017. Spare the Air: Cool the Climate – Final 2017 Clean Air Plan, adopted April 19.

²³ Bay Area Air Quality Management District, 2017. Spare the Air: Cool the Climate – Final 2017 Clean Air Plan, adopted April 19.

- c) The project does not disrupt or hinder implementation of any control measures from the CAP.

If it can be concluded with substantial evidence that a project would be consistent with the above three criteria, then the BAAQMD would consider it to be consistent with air quality plans prepared for the Bay Area.²⁴

The primary goals of the 2017 CAP are to make progress towards achieving attainment for all air quality standards, reduce population exposure to air pollution and protect public health in the Bay Area. The BAAQMD-recommended guidance for determining if a project supports the goals in the current CAP is to compare project-estimated emissions with BAAQMD thresholds of significance. If project emissions would not exceed the thresholds of significance after the application of all feasible mitigation measures, the project would be consistent with the goals of the 2017 CAP. As indicated in the following discussion with regard to air quality impact question b) in this checklist, the project would result in a less-than-significant impact related to construction emissions and would not result in long-term adverse air quality impacts. Operational emissions are negligible. Therefore, the project would meet the requirements in criteria a) above and support the primary goals of the 2017 CAP.

As noted above, the 2017 CAP contains 85 control measures aimed at reducing air pollution in the SFBAAB. Projects that incorporate all feasible air quality plan control measures are considered consistent with the 2017 CAP. The 2017 CAP does not contain any measures specific to recreational park land uses and, therefore, no inconsistency with the 2017 CAP is identified. With no specific control measures from the 2017 CAP applicable, the project would not hinder implementation of CAP control measures and would meet the requirements in criteria b) above. Additionally the project will not disrupt or hinder implementation of any CAP measure and therefore meet the requirements of criteria c) above.

In summary, the project would be consistent with all three criteria listed above to evaluate consistency with the 2017 CAP and, therefore, would not conflict with or obstruct implementation of the 2017 CAP. This impact would be **less than significant**.

b) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard? (*Less than Significant with Mitigation Incorporated*)

The Federal Clean Air Act and the California Clean Air Act both require the establishment of standards for ambient concentrations of air pollutants, called Ambient Air Quality Standards (AAQS). The federal National Ambient Air Quality Standards (NAAQS), established by the USEPA, are typically less stringent, or the same as the state AAQS, which are established by the California Air Resources Board (CARB) and enforced by the BAAQMD based on the project's location and jurisdiction.

²⁴ Bay Area Air Quality Management District, 2017. California Environmental Quality Act – Air Quality Guidelines, May 2017.

The Bay Area experiences occasional violations of ozone and particulate matter (PM₁₀ and PM_{2.5}) standards. As discussed above, the project area currently is designated as a non-attainment area for violation of the state 1-hour and 8-hour ozone standards, the federal ozone 8-hour standard, the state PM₁₀ 24-hour and annual average standards, the state PM_{2.5} annual average standard, and the federal PM_{2.5} 24-hour standard. The project area is designated as attainment for all other state and federal standards.²⁵

Project Construction

Construction activities associated with the project would involve use of equipment that would emit exhaust containing ozone precursors, which are reactive organic gases (ROG) and nitrogen oxides (NO_x). These ROG and NO_x emissions can impact ground level ozone concentrations. Ground level ozone is a secondary photochemical pollutant that is generated through the combination of ROG, NO_x and ultraviolet solar radiation.

On-site and off-site vehicle activity associated with material transport and construction worker commuting would also generate emissions. Emission levels for these activities would vary depending on the number and types of equipment used, duration of use, operation schedules, and the number of construction workers. Criteria pollutant emissions of ROG and NO_x from these emission sources would incrementally add to the regional atmospheric loading of ozone precursors during project construction.

Air pollutant emissions of ROG, NO_x, PM₁₀, and PM_{2.5} that would be generated by off-road construction equipment (e.g., excavators, graders, loaders) were estimated using the CalEEMod (version 2016.3.2) model along with the project-specific construction schedule and equipment requirements that would be used during the following construction seasons of the project as presented in **Table 11**.

TABLE 11
CONSTRUCTION SEASONS AND DURATION

Emissions	Start	End
North and South Reach Restoration	May 2020	January 2021
Middle Reach Restoration	May 2021	January 2022
Middle Reach Restoration	May 2022	January 2023
Public Access Construction	June 2023	August 2023
Interpretive Center Building and Foundation	September 2023	November 2023

Project-related construction emissions were modeled under the assumption that construction would begin in May 2020 and would only occur between the months of May through January of the following year for all years of restoration construction. The public access construction would occur in the following two season after the final restoration component is completed (i.e. June 2023 to August 2023 and September 2023 to November 2023 for the Interpretive Center Building and Foundation). The seasonal construction period of May through January is a period of 275

²⁵ Bay Area Air Quality Management District, 2017. Air Quality Standards and Attainment Status. Available: <http://www.baaqmd.gov/research-and-data/air-quality-standards-and-attainment-status>, last updated January 1, 2017.

days; the public access component from June 2023 to November 2023 is a period of 182 days. The BAAQMD recommends that for construction projects that are less than one-year duration, impacts should be annualized over the scope of actual days that peak impacts are to occur, rather than a full year.²⁶ Although the project would require more than one year of construction, because the construction periods are seasonal and do not include three months of the year (six months of the year for the public access construction), average daily construction emissions were estimated by dividing the total construction emissions for each construction season by the 275 and 182 days available, respectively. All assumptions and calculations used to estimate the project-related construction emissions are provided in **Appendix A**. Estimated average daily emissions are shown in **Table 12** and are compared to the BAAQMD thresholds.

TABLE 12
AVERAGE DAILY PROJECT CONSTRUCTION-RELATED POLLUTANT EMISSIONS
(POUNDS/DAY)

Emissions	ROG	NO_x	Exhaust PM₁₀¹	Exhaust PM_{2.5}¹
North and South Reach Restoration, total	2.84	49.0	1.02	0.96
North and South Reach Restoration	2.37	40.6	0.86	0.81
Sand Pile Removal/Relocation	0.47	8.40	0.16	0.15
Middle Reach Restoration First Season	0.36	7.78	0.10	0.09
Middle Reach Restoration Second Season	0.25	6.27	0.06	0.06
Public Access/Facility Building ²	2.43	19.9	0.89	0.82
Maximum Average Daily Emissions	2.84	49.0	1.02	0.96
<i>BAAQMD Construction Threshold</i>	54	54	82	54
Significant Impact?	No	No	No	No

NOTES:

¹ BAAQMD's construction-related significance thresholds for PM₁₀ and PM_{2.5} apply to exhaust emissions only and not to fugitive dust.

² NO_x Public Access phase is lower than N&S Phase because emission factor from NO_x has greatly reduced between years 2021 and 2023. PM emission factors are almost the same between the years, only slightly reduced. The ROG is from architectural coating of building.

As indicated in Table 12, the average daily construction exhaust emissions would not exceed the BAAQMD's significance thresholds. Therefore, impacts associated with the potential for construction-related exhaust emissions to result in or contribute to a violation of an air quality standard would be **less than significant**.

In addition to exhaust emissions, emissions of fugitive dust would also be generated by construction activities associated with grading and earth disturbance, travel on paved and unpaved roads, etc. Such emissions could result in a significant impact. With regard to fugitive dust emissions, the BAAQMD Guidelines focus on implementation of recommended dust control measures rather than a quantitative comparison of estimated emissions to a significance threshold.

²⁶ Bay Area Air Quality Management District, 2017. California Environmental Quality Act – Air Quality Guidelines, May 2017.

For all projects, the BAAQMD recommends the implementation of its Basic Control Mitigation Measures.²⁷ The implementation of the BAAQMD's fugitive dust Basic Control Mitigation Measures, which are listed in Mitigation Measure AQ-1, would reduce potential impacts associated with fugitive dust emissions to a **less-than-significant level**.

Project Operation

Once construction is complete, the source of operational emissions are mobile sources from transportation to the Pacheco marsh and its interpretive facility building(s). The public access in the North Reach includes a parking/staging area with a restroom, a trail network with interpretive signage, and overlooks at the north end of the site. Of the restored tidal marshes, only 11.7 acres are to be designated as developed. Daily emissions that would be associated public park operation were calculated and are shown in **Table 13** and are compared to the BAAQMD thresholds. The annual operational emissions are shown in **Table 14** and are compared to the BAAQMD thresholds. The emissions would be under the significance thresholds; therefore, the operational emissions of the project would be **less than significant**.

TABLE 13
AVERAGE DAILY OPERATIONAL POLLUTANT EMISSIONS (POUNDS/DAY)

Emissions	ROG	NOx	PM ₁₀	PM _{2.5}
Public Access Park Operations	0.19	0.23	0.18	0.05
<i>BAAQMD Construction Threshold</i>	54	54	82	54
Significant Impact?	No	No	No	No

TABLE 14
ANNUAL OPERATIONAL POLLUTANT EMISSIONS (TONS/YEAR)

Emissions	ROG	NOx	PM ₁₀	PM _{2.5}
Public Access Park Operations	0.03	0.04	0.03	0.01
<i>BAAQMD Construction Threshold</i>	10	10	15	10
Significant Impact?	No	No	No	No

In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels at which a project's individual emissions would be cumulatively considerable. Therefore, if a project would result in an increase in ROG, NO_x, PM₁₀, or PM_{2.5} emissions more than its respective average daily emissions significance thresholds, then it would also contribute considerably to a significant cumulative impact. If a project would not exceed the significance thresholds, its emissions would not be cumulatively considerable. As presented above, the project's short-term construction exhaust emissions would not exceed the applicable significance thresholds and, with the implementation of Mitigation Measure AQ-1, the project's fugitive dust emission-related impacts would also be reduced to a less-than-significant level. In addition, operational emissions associated with the public access to the North Reach would not exceed the

²⁷ Bay Area Air Quality Management District, 2017. California Environmental Quality Act – Air Quality Guidelines, May 2017.

applicable significance thresholds and would not cause or contribute substantially to a significant cumulative impact. In summary, the project's operational emissions would not be cumulatively considerable and construction-related cumulative impacts would be mitigated to a **less-than-significant level**.

c) Would the project expose sensitive receptors to substantial pollutant concentrations? (*Less than Significant*)

The BAAQMD recommends that lead agencies assess the incremental toxic air contaminant (TAC) exposure risk to all sensitive receptors (e.g., residences, schools) within a 1,000-foot radius of a project's fence line.²⁸ Long-term TAC emissions that would be associated with the project would be from the routine testing of proposed potential diesel-powered emergency backup generator, which would emit emissions of diesel particulate matter (DPM). The generator would be required to comply with the BAAQMD's permit requirements for a stationary source. The BAAQMD would not approve an Authority to Construct or a Permit to Operate any new or modified source of a TAC, such as DPM, that exceeds a cancer risk of 10 in one million or a chronic or acute hazard index of 1.0. Therefore, the health risk impact of the backup generator would be **less than significant**.

Short-term project construction activities would also generate DPM. The majority of DPM exhaust emissions that would be generated during construction would be from the use of diesel off-road equipment with a smaller amount generated by the use of heavy duty trucks to deliver building material and equipment to the site. The closest sensitive receptor is a single family residence located approximately 1,010 feet south of the proposed onsite construction areas of the Pacheco Reach, across Explorer Way.

The dose to which receptors are exposed is the primary factor affecting health risk from exposure to TACs. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. According to the Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments should be based on a 9, 30, and/or 70-year exposure periods to determine the health risk to sensitive receptors from cancer or chronic non-cancer health effects of TAC emissions (such as DPM). However, OEHHA also states that such health risk assessments should be limited to the duration of the emission-producing activities associated with the project, unless the activities occur for less than six months. Activities that would last more than two months, but less than six months, are recommended to be evaluated as if they would last for six months.²⁹

DPM emissions would be generated at the project site over a period of three and a half years. Table 12 shows that the average daily PM₁₀ exhaust emissions (PM₁₀ is considered the surrogate for DPM to ensure conservative modeling assumptions) from construction at the project site would be anywhere from 0.06 pounds per day to approximately 1.03 pounds per day. At this

²⁸ Bay Area Air Quality Management District, 2017. California Environmental Quality Act – Air Quality Guidelines, May 2017.

²⁹ Office of Environmental Health Hazard assessment, 2015. Air Toxics Hotspot Program, Risk Assessment Guidelines - Guidance Manual for Preparation of Health Risk Assessments, February.

emission rate, exposure of a receptor located more than 1,000 feet from the project over a period of 3.5 years (i.e. the duration of construction activities for the project) would not be considered substantial and would not result in a significant incremental cancer risk.³⁰ Additionally, even though the project would result in a less-than-significant impact related to incremental cancer risk and the exposure of sensitive receptors to substantial pollutant concentrations, the implementation of Mitigation Measure AQ-1 would further limit receptors' exposure to DPM emissions because it would require the contractor for the project to implement idling restrictions when operating construction equipment reducing DPM emissions further. Impacts related to exposure of sensitive receptors would be **less than significant**.

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

The project does not include any long-term sources of odor. Diesel equipment used to construct the project may emit objectionable odors associated with combustion of diesel fuel. However, as the nearest sensitive receptors that could be affected by this would be located approximately 1,010 feet south from the site of construction, odor emissions during the construction period would result in impacts that would be **less than significant**.

Impacts and Mitigation Measures

Impact AQ-1: The project would result in vehicle emissions and fugitive dust during construction.

Based on the analysis presented above, implementation of the following mitigation measures would reduce the potential impacts to air quality to **less than significant**.

Mitigation Measure AQ-1: Implement BAAQMD Basic Construction Mitigation Measures

The following applicable Bay Area Air Quality Management District (BAAQMD) Basic Construction Mitigation Measures shall be implemented by construction contractors to reduce emissions of fugitive dust and equipment exhaust:

- 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 off-site 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 mph within the project area.

³⁰ Bay Area Air Quality Management District, 2017. California Environmental Quality Act – Air Quality Guidelines, May 2017.

- 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 Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
 - All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
 - Post a publicly visible sign with the telephone number and person to contact at the District (or its designee) regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.
-

2.2.4 Biological Resources

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
IV. BIOLOGICAL RESOURCES — Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

Environmental Science Associates (ESA) conducted reconnaissance-level field surveys on August 6 and 27, 2015, September 15, 2015, January 5 and 6, 2017, March 29, 2017, April 28, 2017, and November 6 and 7, 2017 to document existing biological conditions, assess vegetation and wildlife habitats, and identify potential for special-status species to occur on the project area. Rare plant surveys were conducted on May 16, 17, 24, June 8, October 30 and November 1, 2018 in accordance with CDFW's 2009 *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities*.³¹ Rare plant surveys did not include portions of the North, Middle and South reaches due to access limitations; this limitation is addressed in the analysis, below. All biological resource field surveys were informed by a desktop review of historic and current aerial imagery, subscription-based biological resource databases, publicly-available citizen science data, biological resources reports for Lower Walnut Creek, and restoration plans for Pacheco Marsh. In addition, ESA utilized information and analysis of current and potential salt marsh harvest mouse habitat and trapping results

³¹ California Department of Fish and Wildlife, 2009. *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities*, State of California, California Natural Resources Agency, November 24, 2009.

summarized in the Lower Walnut Creek Restoration Project Salt Marsh Harvest Mouse Technical Memorandum.³² The Lower Walnut Creek Restoration Project Habitat Assessment,³³ which describes the existing biological resources in the project area and the potential for special-status plant and wildlife species, sensitive natural communities and state- and federally-regulated waters and wetlands to occur in the project area, is included in **Appendix B**. The Habitat Assessment includes the Lower Walnut Creek Restoration Project Rare Plant Survey Report and the Lower Walnut Creek Restoration Project Salt Marsh Harvest Mouse Technical Memorandum as attachments.

The project area for biological resources is referred to in this analysis as the “project area”, in which biological resources were inventoried and analyzed to determine potential direct and indirect project impacts to these resources. The “project area” is defined as the work limit (i.e., project site), which includes areas of ground disturbance (e.g., channel excavation and grading); areas in the vicinity of, and directly affected by, ground disturbance activities; and, an approximately 50-foot buffer.

The project’s potential impacts on biological resources are analyzed below. All potential impacts would be mitigated to less-than-significant levels.

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? (Less than Significant with Mitigation Incorporated)

The California Natural Diversity Database (CNDDDB), U.S. Fish and Wildlife Service (USFWS) Official Species List,³⁴ and the California Native Plant Society (CNPS) document 83 special-status plant³⁵ and wildlife³⁶ species within a 10-mile buffer of the project area. Habitats at the project area were assessed for their potential to support special-status species using information about local species occurrences and species’ habitat requirements, in combination with the site visits described above.

Terrestrial Species

The project area does not include suitable habitat, or is outside of the known geographic or elevation range, for many of the terrestrial species documented within 10 miles; therefore, the analysis is limited to the following terrestrial wildlife species, which have a moderate to high potential to occur due to the project area including suitable habitat and being within the species’ known range: Western pond turtle (*Actinemys marmorata*), tricolored blackbird (*Agelaius tricolor*), short-eared owl (*Asio flammeus*), northern harrier (*Circus cyaneus*), saltmarsh common

³² H.T. Harvey & Associates, 2018. Lower Walnut Creek Restoration Project, Salt Marsh Harvest Mouse Technical Memorandum. October 25, 2018.

³³ Environmental Science Associates, 2019. Lower Walnut Creek Restoration Project – Habitat Assessment (District Lands) and Lower Walnut Creek Restoration Project – Habitat Assessment (Expanded North Reach).

³⁴ U.S. Fish and Wildlife Service, 2018. Official Species List for project location. Accessed May 7, 2018.

³⁵ California Native Plant Society, 2018. Online Inventory of Rare, Threatened, and Endangered Plants of California. Available: <http://www.rareplants.cnps.org/>. Accessed May 2018.

³⁶ California Department of Fish and Wildlife, 2018. California Natural Diversity Database (CNDDDB), Wildlife and Habitat Data Analysis Branch. Sacramento, CA. Accessed May 2018.

yellowthroat (*Geothlypis trichas sinuosa*), Suisun song sparrow (*Melospiza melodia pusillula*), California black rail (*Laterallus jamaicensis coturniculus*), Ridgway's rail (*Rallus obsoletus*), salt marsh harvest mouse (*Reithrodontomys raviventris*), Suisun shrew (*Sorex ornatus sinuosus*), pallid bat (*Antrozous pallidus*), and Townsend's big-eared bat (*Corynorhinus townsendii*). Three special-status plant species were identified in the project area during botanical surveys: Delta tule pea (*Lathyrus jepsonii* var. *jepsonii*), Mason's lilaeopsis (*Lilaeopsis masonii*), and Suisun Marsh aster (*Symphotrichum lentum*).

Aquatic Species

Multiple special-status fish species have the potential to occur within the project area, primarily in the context of migrating through Suisun Bay and occasionally straying into Lower Walnut Creek. Those species with potential to occur, and/or with critical habitat in the project footprint, include: the southern Distinct Population Segment (DPS) of North American green sturgeon (*Acipenser medirostris*), Sacramento River winter-run Chinook salmon Evolutionarily Significant Unit (ESU) (*Oncorhynchus tshawytscha*), Central Valley spring-run Chinook salmon ESU (*O. tshawytscha*), Steelhead – central California coast DPS (*O. mykiss*), Longfin smelt (*Spirinchus thaleichthys*), Delta smelt (*Hypomesus transpacificus*), and Central Valley fall/late fall-run Chinook salmon (*O. tshawytscha*).³⁷ Central Valley fall/late fall-run Chinook salmon are likely the only listed fish species to spawn successfully, albeit in low densities, in Lower Walnut Creek upstream of the project area.³⁸ As such, special-status fish species are most likely to occur within the vicinity on the project area during migration periods from the Pacific Ocean to freshwater spawning habitat, primarily rivers in the Sacramento and San Joaquin basins. All of the fish species described above are listed as Endangered or Threatened under the Federal Endangered Species Act (FESA), with the exception of Longfin smelt, which is candidate for listing under FESA, and Central Valley fall/late fall-run Chinook salmon, which is a California species of special concern. The two common marine mammals within San Francisco Bay, the resident harbor seal (*Phoca vitulina*) and California sea lion (*Zalophus californianus*), are not expected to occur within the vicinity of the project area. Therefore, marine mammals are not discussed further.

Potential impacts to species with a moderate to high potential to occur in the project area are analyzed below.

Western Pond Turtle

A California species of special concern, the western pond turtle inhabits relatively calm water such as lakes, natural and artificial ponds, irrigation ditches, and marshes with basking sites such as logs and mud banks. Although generally found in freshwater habitats, it may briefly visit brackish or saltwater habitats.³⁹ Adjacent terrestrial habitat is also critical for egg-laying, winter refuge, and dispersal. Suitable aquatic habitat is present within Lower Walnut Creek and Pacheco

³⁷ U.S. Fish and Wildlife Service, 2018. Critical Habitat Mapper. Available: <http://fws.maps.arcgis.com/> Accessed May 2018.

³⁸ Jones & Stokes, 2007. Data Summary Report for Chinook Salmon Spawning Escapement and Fry Emergence in Lower Walnut Creek. Final Report. Prepared for USACE. September 2007.

³⁹ Stebbins and McGinnis, 2012. Field Guide to Amphibians and Reptiles of California. University of California Press, Berkeley. 538 pages.

Creek within the project area, but basking sites are limited. CNDDDB occurrences exist in Pacheco Creek at the upstream end of the project area, as well as a mile from the upstream extent of the project area in tributaries to Walnut Creek. This species has a moderate potential to occur in project area.

Construction Impacts

Restoration Project

Restoration-related construction activities in the North, Middle and South Reaches that could impact western pond turtles using channel banks or crossing roads and levees include the following: clearing and grubbing vegetation from excavation areas using mower, scraper and bulldozer; lowering the existing levee along Walnut Creek using scraper, excavator and bulldozer; constructing new connector tidal channels to Walnut Creek and Pacheco Creek causing increased sediment in the creeks; placement and removal of temporary marsh access road material (earth or mats) to facilitate channel construction; and, hauling the clear and grub, levee, and excavation materials by dump truck. Restoration-related construction activities could result in **potentially significant** impacts on western pond turtles.

Public Access and Recreational Facilities

Construction activities associated with public access and recreational facilities will occur following excavation of tidal channels, but prior to a full conversion of habitat, meaning that the majority of trails, bridge footings, overlook points, and wildlife viewing points will be built in habitat that is in the process of converting from upland grassland to transitional habitat. The trail alignment includes a section of “limited access trail” and one wildlife viewing platform constructed in the vicinity of the new north-south tidal channel, habitat that will be in the process of converting from upland grassland to tidal wetland.

Construction activities associated with public access and recreational facilities that could impact western pond turtles using channel banks or crossing roads and levees include clearing and grubbing excavation areas, grading, and placing fill associated with constructing recreational earthen trails and bridge supports, and installing piles into channel mud to support a floating dock or constructing a concrete boat ramp at grade. Construction of proposed public access and recreational facilities could result in **potentially significant** impacts on western pond turtles.

Invasive Vegetation Management

Prior to initiation of ground disturbing construction activities, vegetation management activities, as described in Chapter 2, Project Description, would be implemented to remove/restrict the spread of a number of invasive species, and to collect propagules of native plant species needed for restoration of target habitats. Treatment of the invasive species would include mechanical methods (e.g., hard mowing, manually pulling, mechanically scraping) and use of herbicides approved for wetland applications to treat regrowth and new seedlings of invasive plants. In addition, the project would collect and propagate on-site native perennial plants by hand using spades or with a small-tracked vehicle equipped with a bucket (e.g., smallest available bobcat), using marsh mats as needed. Propagules/sod fragments would be transported by truck using existing access roads, and would be stockpiled in the southwestern section of the Suisun

Properties parcel in the North Reach. Direct impacts on western pond turtles could occur due to vehicle use associated with excavation and transportation of propagules.

Overall, use of heavy equipment and vehicles within 150 feet of Lower Walnut Creek and Pacheco Creek would have the potential to impact the western pond turtle either through direct injury or mortality, or by exposure to accidental release of construction-related pollutants. If construction personnel, vehicles or heavy equipment were working within 150 feet of channel areas, western pond turtle could potentially be directly impacted through injury or mortality, or indirectly impacted by disturbance that interrupts basking, an important behavior required for thermoregulation in western pond turtles; this would be a significant impact. In addition, equipment staging and project construction could render the site temporarily unsuitable for western pond turtle due to the noise, vibration, and increased activity levels associated with grubbing, earth moving, heavy equipment operation, and increased human presence. These construction-related impacts would be temporary and would cease upon completion of invasive vegetation management and native plant growing operations.

Operational/Long-term Impacts

Ongoing Maintenance

The project has been designed to minimize the need for active operations and ongoing maintenance. Typical levee monitoring activities include inspection for erosion or rodent damage along the levee tops and slopes. Typical levee maintenance activities include mowing and weed control and repair of erosion sites.

Western pond turtles basking on the inboard sides of levees could be directly impacted by ongoing monitoring and maintenance activities along the levee tops and slopes. In addition, repair of erosion sites could cause short-term discharge of soil into channels during repair activities, which could negatively affect water quality and directly impact western pond turtle; however, this temporary impact would be alleviated by the long term benefit of slope stabilization following repairs. Western pond turtles could also be indirectly impacted by disturbance that interrupts basking, an important behavior required for thermoregulation in this species. However, impacts associated with ongoing monitoring and maintenance are expected to be of short duration (i.e., on the order of hours to days) and infrequent, and are a continuation of comparable operations and maintenance activities currently implemented by the District on existing levees. In addition, maintenance activities will follow Best Management Practices (BMPs) outlined in the District's Routine Maintenance Agreement (RMA) with CDFW; examples include, but are not limited to, performing Habitat Assessments, establishment of sensitive area buffers, and biological monitoring if applicable. In both jurisdictional and non-jurisdictional areas, standard BMPs to avoid erosion and accidental releases into adjacent waterways will be implemented; examples include, but are not limited to, use of wattles or silt fencing and covering stockpiles. The impacts to western pond turtle associated with ongoing operations and maintenance are less than significant because activities will be limited in duration and frequency, are a continuation of comparable current operations and maintenance activities, and are mitigated under the District's RMA with CDFW.

Public Access and Recreational Facilities

The restoration site is projected to receive approximately 13,000 visitors annually, and visitation is expected to be fairly evenly spread across all seasons. Recreational activities are expected to primarily occur on weekends and during daytime hours, with occasional evening hour events. Low-intensity lighting is anticipated on paths around the education center building and in the parking lot. Trails and viewing platforms are planned to minimize the disturbance associated with people walking near special-status species habitat. Viewing platforms will have taller guardrails, solid fencing, and educational signage to reduce disturbance to special-status species. The trail leading to the viewing platform near a tidal channel will be “limited access,” meaning it will only be open during the non-breeding season for special-status birds, such as California black rail and Ridgway’s rail. A small watercraft launch will be located near the water access point at the end of the CCCSD service road. The anticipated number of boaters to use the area is not known; however, use of this drop-off point will be limited by removable bollards along the service road, and reservations will be required for use, thereby limiting the level of access and unauthorized use of the area.

Because the interpretive/education center and associated infrastructure would avoid sensitive habitat such as wetlands and channels which could support special-status species, either currently or post-restoration, the use of this area is not expected to significantly impact western pond turtles. Public use of trails and viewing platforms are expected to have a less-than-significant impact on western pond turtle, due to: 1) the very limited section of trail and wildlife viewing areas located near sensitive habitat such as wetlands and channels, which could support special-status species, either currently or post-restoration; 2) the closure of the “limited access” trail during much of the year to avoid the breeding season for special-status birds, but which will benefit other species in the immediate area; 3) the design of viewing platforms and a bird blind adjacent to post-restoration sensitive habitats that will limit interactions between the public and wildlife; 4) public education at the interpretive/education center and wildlife viewing points about the restoration project and special-status species present; 5) the ability of native wildlife to habituate to low levels of disturbance, such as pedestrians, and the ability for wildlife to disperse into suitable high quality adjacent habitat, which will increase substantially post-restoration; and 6) the presence of existing ongoing industrial disturbance adjacent to the restoration site to which current wildlife is already habituated. Due to the restricted use associated with the boat launch, which will serve small, non-motorized craft such as kayaks and canoes, and the relatively saline waters at the north end of the project area, impacts to western pond turtle associated with the use of the boat launch would not be significant.

Habitat Restoration and Conversion

Habitat restoration elements would consist of creating and enhancing tidal marsh, as well as adjacent terrestrial lowlands and uplands, to support a diversity of plant communities and wildlife species. Existing habitats in the project boundaries are shown in Figure 3. The post-restoration habitats are shown in Figure 4. Table 1 in Chapter 1, Project Description, shows the estimated restored habitat areas (acres) by project reach.

Restoration will have a less-than-significant impact on western pond turtle. Because this species is primarily associated with fresh and brackish water, the net increase of tidal waters and non-

tidal waters may create habitat for this species, or may be too saline, depending on location relative to freshwater drainages. Breaches in the Middle and South reaches to create connector channels would remove a small portion of potential basking habitat on the banks of Lower Walnut Creek; however, channels created in these reaches would increase potential western pond turtle habitat overall.

Impacts and Mitigation Measures

Impact BIO-1: The project would result in potential impacts on western pond turtle.

In summary, construction-related impacts on western pond turtle would be potentially significant. However, implementation of **Mitigation Measures BIO-1** and **BIO-2** would reduce construction-related impacts on western pond turtle to a less-than-significant level by providing biological monitoring within 150 feet of sensitive aquatic sites; environmental training to construction personnel; general protection measures, including speed limits on all levees and roads during construction; and, specific survey and relocation measures for western pond turtles, if encountered. With implementation of Mitigation Measures BIO-1 and BIO-2, construction-related impacts would be less than significant. Operational and long-term effects of the project on western pond turtle would be **less than significant**.

Mitigation Measure BIO-1: General Construction-related Mitigation Measures

- A qualified biologist will provide Worker Environmental Awareness Training (WEAT) to field management and construction personnel. Communication efforts and training will take place during preconstruction meetings so that construction personnel are aware of their responsibilities and the importance of compliance. WEAT will identify the types of sensitive resources located in the project area and the measures required to avoid impacts on these resources. Materials covered in the training program will include environmental rules and regulations for the specific project and requirements for limiting activities to the construction right-of-way and avoiding demarcated sensitive resource areas.
- If new construction personnel are added to the project, the contractor will ensure the new personnel receive WEAT before starting work. A sign-in sheet of those contractor individuals who have received the training will be maintained by the project proponent. A representative will be appointed during the WEAT to be the contact for any employee or contractor who might inadvertently kill or injure a listed species or who finds a dead, injured, or entrapped individual. The representative's name and telephone number will be provided to the U.S. Fish and Wildlife Service (USFWS) before the initiation of ground disturbance.
- If individuals of listed wildlife species may be present and subject to potential injury or mortality from construction activities, a qualified biologist will conduct preconstruction surveys. If a listed wildlife species is discovered, construction activities will not begin in the immediate vicinity of the individual until USFWS and/or CDFW is contacted and the individual has been allowed to leave the construction area.
- Minimum qualifications for a qualified biologist will be a four-year college degree in biology or related field and demonstrated experience with the species of concern.

- Any special-status species observed during surveys will be reported to the USFWS and CDFW so the observations can be added to the CNDDDB.
- All vehicle operators will limit speed to 15 mph within the project area.
- Because the work area is larger than 1 acre, the project proponent would be required to prepare a Stormwater Pollution Prevention Plan (SWPPP) for construction activities according to the National Pollutant Discharge Elimination System (NPDES) Construction General Permit requirements (State Water Resources Control Board Order 2009-0009-DWQ). The objectives of the SWPPP will be to (1) identify pollutant sources associated with construction activity and project operations that may affect the quality of stormwater and (2) identify, construct, and implement stormwater pollution prevention measures to reduce pollutants in stormwater discharges during and after construction. The project proponents and/or their contractor(s) will develop and implement a spill prevention and control plan as part of the SWPPP to minimize effects of spills of hazardous, toxic, or petroleum substances during construction of the project. Implementation of this measure will comply with state and federal water quality regulations. The SWPPP will be kept on site during construction activity and during operation of the project and will be made available upon request to representatives of the Regional Water Quality Control Board (Regional Water Board). The SWPPP will include but is not limited to:
 - a) A description of potential pollutants to stormwater from erosion.
 - b) Management of dredged sediments and hazardous materials present on site during construction (including vehicle and equipment fuels).
 - c) Details of how the sediment and erosion control practices comply with state and federal water quality regulations.
 - d) A description of potential pollutants to stormwater resulting from operation of the project.
- The SWPPP will include a hazardous materials management plan (HMMP). The plan will describe the actions that will be taken in the event of a spill. The plan also will incorporate preventive measures to be implemented (such as vehicle and equipment staging, cleaning, maintenance, and refueling) and contaminant (including fuel) management and storage. In the event of a contaminant spill, work at the site immediately will cease until the contractor has contained and mitigated the spill. The contractor will immediately prevent further contamination, notify appropriate authorities, and mitigate damage as appropriate. Adequate spill containment materials, such as oil diapers and hydrocarbon cleanup kits, will be available on site at all times. Containers for storage, transportation, and disposal of contaminated absorbent materials will be provided on the project site.
- Do not use any hazardous material in excess of reportable quantities, as specified in Title 40 Code of Federal Regulations (CFR) Part 355, Subpart J, Section 355.50, unless approved in advance by the Office of Emergency Services (OES), and will provide to the OES in the annual compliance report a list of hazardous materials contained at a project site in reportable quantities.

Mitigation Measure BIO-2: Avoidance and Minimization Measures for Western Pond Turtle

- Preconstruction surveys for western pond turtle shall be conducted by a qualified biologist prior to clearing and grubbing, equipment staging, excavation or other construction-related activity or vegetation management activities requiring the use of heavy equipment (e.g., bobcat), within 150 feet of Walnut Creek and Pacheco Creek, as specified below:
 - Prior to conducting preconstruction surveys, the qualified biologist shall prepare a relocation plan that describes the appropriate survey and handling methods for western pond turtle and identify nearby relocation sites where individuals would be relocated if found during the preconstruction surveys. The relocation plan shall be submitted to CDFW for review prior to the start of construction activities. The animal shall be relocated to equivalent or better western pond turtle habitat relative to where it was found.
 - Preconstruction surveys shall be conducted within 5 days prior to, and again immediately prior to activities described in the first bullet, above, to identify any presence of western pond turtle.
 - The qualified biologist shall monitor areas described in the first bullet above, to identify and relocate western pond turtle as necessary. If western pond turtle is observed within the construction area, the qualified biologist shall relocate the individual according to the relocation plan above.

Tricolored Blackbird, Short-eared Owl, Northern Harrier, Saltmarsh Common Yellowthroat, Suisun Song Sparrow, and Nesting Birds Protected by the Migratory Bird Treaty Act

Tricolored blackbird is listed under the California Endangered Species Act (CESA) as threatened and is under review by the USFWS in response to a petition filed in February 2015 to list the tricolored blackbird as an endangered species under the FESA. Marsh cattails and reeds provide suitable breeding habitat for tricolored blackbird colonies in the project area, and the species was recently documented north of Suisun Bay, 4.3 miles from the project area.

Short-eared owl, northern harrier, saltmarsh common yellowthroat, and Suisun song sparrow are California Species of Special Concern. The project area provides suitable foraging habitat for short-eared owl and northern harrier in the tidal and non-tidal marsh, and nesting habitat for both of these ground-nesting species in non-tidal marsh and upland areas. The project area provides suitable nesting habitat in emergent marsh vegetation and tall, dense ruderal vegetation for salt marsh common yellowthroat and Suisun song sparrow. It is likely that common species, also subject to provisions of the Migratory Bird Treaty Act (MBTA), such as house finch (*Haemorrhous mexicanus*), northern mockingbird (*Mimus polyglottos*), and California towhee (*Melozone crissalis*) nest in the project area. Bird species listed under FESA and CESA, as well as non-ESA-listed birds, are afforded conservation protections. Breeding birds are protected under California Fish and Game Code Section 3503 and raptors are protected under Section 3503.5. In addition, Section 3513 of the Code and the Federal MBTA (16 USC, Sec. 703 Supp. I, 1989) prohibits the killing, possession, or trading of migratory birds. Finally, Section 3800 of the

Code prohibits the taking of non-game birds, which are defined as birds occurring naturally in California that are not game birds or fully protected species.

Construction Impacts

Construction activities associated with the restoration project, public access and recreational facilities, and vegetation management are summarized under *Construction Impacts* under Impact BIO-1 *Western Pond Turtle* analysis, above.

Because special-status bird species and birds protected by the MBTA could nest in trees, shrubs, grasses, emergent vegetation, marsh vegetation or even on bare ground, all parts of the project area are considered potential nesting habitat. Therefore, restoration-related construction activities in the North, Middle, and South Reaches that could impact nesting birds include clearing and grubbing vegetation from excavation areas using mower, scraper and bulldozer; excavating tidal channels; use of heavy equipment and dump trucks; and presence of workers and vehicles associated with all aspects of construction.

Construction activities associated with public access and recreational facilities proposed in the North Reach that could impact special-status bird species include clearing and grubbing excavation areas, grading, and placing fill associated with constructing recreational earthen trails and bridge supports; and installing piles into channel mud to support the floating dock or constructing a concrete boat ramp at grade. Construction of the interpretive center and associated infrastructure will be built in what is currently a barren area of hard-packed dirt and gravel; however, killdeer (*Charadrius vociferus*) are known to nest on such substrates. Clearing and grubbing is not anticipated; however, ground disturbance such as grading is assumed to be required prior to construction of asphalt parking and access areas, and concrete structural foundations for the interpretive/education center and stand-alone restroom.

Impacts could occur to resident and migratory species during construction during breeding and non-breeding seasons. Impacts during the non-breeding season are not considered significant, primarily due to the birds' mobility and ability to access other high-quality foraging habitat in the region. However, equipment staging and project construction could render the site temporarily unsuitable for breeding birds due to the noise, vibration, and increased activity levels associated with grubbing, earth moving, heavy equipment operation, and increased human presence even when the nest itself is unaffected. These activities could cause birds that have established a nest prior to the start of construction to change their behavior or even abandon an active nest, putting eggs and nestlings at risk for mortality. This would be considered a **significant impact**.

Operational/Long-term Impacts

Ongoing maintenance activities, public access and recreational facilities, and habitat restoration and conversions are summarized under *Operational/Long-term Impacts* under Impact a.1 *Western Pond Turtle* analysis, above.

Ongoing Maintenance

Breeding birds could be directly or indirectly impacted by ongoing maintenance activities including inspection for erosion or rodent damage along the levee tops and slopes, and levee maintenance activities such as mowing and weed control and repair of erosion sites. However,

impacts associated with ongoing monitoring and maintenance are expected to be of short duration (i.e., on the order of hours to days) and infrequent, and are a continuation of comparable operations and maintenance activities currently implemented by the District on existing levees. The impacts to special-status birds associated with ongoing operations and maintenance are considered less than significant because activities would be limited in duration and frequency, are a continuation of comparable current operations and maintenance activities, and are mitigated under the District's RMA with CDFW.

Public Access and Recreational Facilities

Because the interpretive/education center and associated infrastructure would avoid sensitive wildlife habitats and will be in an area with very limited nesting and foraging habitat for birds, and because a significant area of higher quality habitat will be present in the project area, the use of the interpretive center complex is not expected to have a significant impact on special-status birds.

Public use of trails and viewing platforms are not expected to have a significant impact on special-status birds, due to: (1) the very limited section of trail and wildlife viewing areas located near sensitive habitat such as wetlands and channels, which could support special-status species, either currently or post-restoration; (2) the closure of the "limited access" trail during much of the year to avoid the breeding season for special-status birds, but which will benefit other species in the immediate area; (3) the design of viewing platforms and a bird blind adjacent to post-restoration sensitive habitats that will limit interactions between the public and wildlife; (4) public education at the interpretive/education center and wildlife viewing points about the restoration project and special-status species present; (5) the ability of native wildlife to habituate to low levels of disturbance, such as pedestrians, and the ability for wildlife to disperse into suitable high quality adjacent habitat, which will increase substantially post-restoration; and (6) the presence of existing ongoing industrial disturbance adjacent to the restoration site to which current wildlife is already habituated.

Due to the restricted use associated with the boat launch and due to the overall increase in suitable high quality adjacent habitat post-restoration, impacts to special-status birds associated with the use of the boat launch would be **less than significant**.

Habitat Restoration and Conversion

Restoration of tidal marshes is expected to have a less-than-significant impact on special-status bird species that forage and/or nest in marsh habitat, including short-eared owl, northern harrier, saltmarsh common yellowthroat, and Suisun song sparrow. Although these species use non-tidal marsh habitat, the existing non-tidal marsh habitat in the Middle and South reaches is primarily low, sparse pickleweed interspersed with grasses and barren, seasonally-ponded area. This habitat provides less cover for nesting and small mammal prey relative to the tidal wetland habitat expected to develop post-restoration. The increase in fully tidal marsh habitat could also benefit tricolored blackbird due to an increase in tidal marsh-associated emergent vegetation.

Impacts and Mitigation Measures

Impact BIO-2: The project would result in potential impacts on special-status birds.

In summary, construction-related impacts on tricolored blackbird, short-eared owl, Northern harrier, saltmarsh common yellowthroat, Suisun song sparrow, and nesting birds protected by the Migratory Bird Treaty Act would be potentially significant. However, implementation of **Mitigation Measures BIO-1 and BIO-3** would reduce potential construction-related impacts to nesting special-status birds to a less-than-significant level by providing environmental training to construction personnel, providing general protection measures, and requiring avoidance of construction-related work during the nesting bird season. If avoidance of the nesting season is not possible, then pre-construction nesting bird surveys and establishment of no-construction buffer zones around active bird nests would avoid or minimize the potential for this impact to occur. With implementation of Mitigation Measures BIO-1 and BIO-3, construction-related impacts would be less than significant. Operational and long-term effects of the project on tricolored blackbird, short-eared owl, Northern harrier, saltmarsh common yellowthroat, Suisun song sparrow, and nesting birds protected by the Migratory Bird Treaty Act would be **less than significant**.

Mitigation Measure BIO-3: Avoid and Minimize Impacts to Nesting Birds, Except Rails (see Mitigation Measure BIO-4 for rails)

Project staging, project construction, vegetation removal (e.g., clearing and grubbing), vegetation management activities requiring heavy equipment, or tree trimming shall be performed outside of the bird nesting season (February 1st through August 31st) to avoid impacts to nesting birds; if these activities must be performed during the nesting bird season, a qualified biologist shall be retained to conduct a pre-construction survey in the project construction and staging areas for nesting birds and verify the presence or absence of nesting birds no more than 14 calendar days prior to construction activities or after any construction breaks of 14 calendar days or more. Surveys shall be performed for the project construction and staging areas and suitable habitat within 250 feet of the project construction and staging areas in order to locate any active passerine (perching bird) nests and within 500 feet of the project construction and staging areas to locate any active raptor (birds of prey) nest. If nesting birds and raptors do not occur within 250 and 500 feet of the Project area, respectively, then no further action is required if construction begins within 14 calendar days.

If active nests are located during the pre-construction bird nesting surveys, no-disturbance buffer zones shall be established around nests, with a buffer size established by the qualified biologist. Typically, these buffer distances are between 50 feet and 250 feet for passerines and between 300 feet and 500 feet for raptors. These distances may be adjusted depending on the level of surrounding ambient activity and if an obstruction, such as a building or structure, is within line-of-sight between the nest and construction. Reduced buffers may be allowed if a full-time qualified biologist is present to monitor the nest and has authority to halt construction if bird behavior indicates continued activities could lead to nest failure. Buffered zones shall be avoided during construction-related activities until young have fledged or the nest is otherwise abandoned.

California Black Rail and Ridgway's Rail

California black rail. California black rail is listed as threatened under CESA and is a state fully-protected species. More than 90 percent of California black rails are located in the marshes of northern San Francisco Bay, primarily San Pablo Bay and Suisun Bay. Black rails prefer

marshes that are close to water, are large (interior more than 50 meters from edge), away from urban areas, and brackish to fresh with a high proportion of pickleweed (*Salicornia pacifica*), maritime bulrush (*Bolboschoenus maritimus*), and marsh gumplant (*Grindelia stricta* var. *angustifolia*), rush (*Juncus* spp.) and cattails (*Typha* spp.).⁴⁰ This species nests and forages in tidal emergent wetland. Suitable marsh habitat is present within the project area, and documented occurrences are known from within and adjacent to the project area. Black rail has a high potential to occur in the project area.

Ridgway's rail. Ridgway's rail is listed as endangered under both FESA and CESA, and is a state fully-protected species. Ridgway's rails are found in tidal and brackish marshes where they typically construct nests in or under dense marsh vegetation, such as marsh gumplant and pickleweed at an elevation high enough to avoid inundation during high tides. Ridgway's rail forages on a variety of marsh crabs, mussels, clams, and amphipods in channel mudflats.⁴¹ Suitable marsh habitat is present within the project area and multiple occurrences are known from marshes adjacent to or nearby the project area. Ridgway's rail has a high potential to occur in the project area.

Construction Impacts

Construction activities associated with the restoration project, public access and recreational facilities, and vegetation management are summarized under *Construction Impacts* under Impact BIO-1 *Western Pond Turtle* analysis, above.

Suitable nesting and foraging habitat for California black rail and Ridgway's rail is found throughout all three reaches of the project area. Construction activities in the North, Middle and South reaches that could impact nesting and foraging rails includes clearing and grubbing vegetation from excavation areas using mower, scraper and bulldozer, and use of heavy equipment and dump trucks, as well as presence of workers and vehicles, near suitable rail habitat.

Construction activities associated with public access and recreational facilities in the North Reach that could impact California black rail and Ridgway's rail include clearing and grubbing excavation areas, grading, and placing fill associated with constructing recreational earthen trails and bridge supports; and installing piles into channel mud to support the floating dock or constructing a concrete boat ramp at grade.

Impacts could occur to rails during construction during breeding and non-breeding seasons. Impacts during the non-breeding season are not considered significant, primarily due to the birds' mobility and ability to access other high-quality foraging habitat in the region. However, equipment staging and project construction could render the site temporarily unsuitable for breeding rails due to the noise, vibration, and increased activity levels associated with grubbing, earth moving, heavy equipment operation, and increased human presence even when the nest

⁴⁰ Spautz, H., Nur, N., Stralberg, D., 2005. *California Black Rail (Laterallus jamaicensis coturniculus) Distribution and Abundance in Relation to Habitat and Landscape Features in the San Francisco Bay Estuary*, 2005.

⁴¹ U.S. Fish and Wildlife Service, 2013. Recovery Plan for the Tidal Marsh Ecosystems of Northern and Central California. Region 8, Sacramento, California. August 2013.

itself is unaffected. These activities could cause birds that have established a nest prior to the start of construction, to change their behavior or even abandon an active nest, putting eggs and nestlings at risk for mortality. This would be considered a **significant impact**.

Operational/Long-term Impacts

Ongoing maintenance activities, public access and recreational facilities, and habitat restoration and conversions are summarized under *Operational/Long-term Impacts* under Impact a.1 *Western Pond Turtle* analysis, above.

Ongoing Maintenance

Breeding birds could be directly or indirectly impacted by ongoing maintenance activities including inspection for erosion or rodent damage along the levee tops and slopes, and levee maintenance activities such as mowing and weed control and repair of erosion sites. However, impacts associated with ongoing monitoring and maintenance are expected to be of short duration (i.e., on the order of hours to days) and infrequent, and are a continuation of comparable operations and maintenance activities currently implemented by the District on existing levees. The impacts to California black rail and Ridgway's rail associated with ongoing operations and maintenance are considered less than significant because activities would be limited in duration and frequency, are a continuation of comparable current operations and maintenance activities, and are mitigated under the District's RMA with CDFW.

Public Access and Recreational Facilities

The interpretive/education center and associated infrastructure would be located away from breeding and foraging habitat for California black rail and Ridgway's rail and an increasing area of high quality habitat would be present in the project area post-restoration; therefore, the use of the interpretive center complex is not expected to have a significant impact on California black rail and Ridgway's rail.

Public use of trails and viewing platforms are not expected to have a significant impact on California black rail or Ridgway's rail, due to: (1) the very limited section of trail and wildlife viewing areas located near sensitive habitat such as wetlands and channels, which could support special-status species, either currently or post-restoration; (2) the closure of the "limited access" trail during much of the year to avoid the breeding season for California black rail and Ridgway's rail; (3) the design of viewing platforms and a bird blind adjacent to post-restoration sensitive habitats that will limit interactions between the public and wildlife; (4) public education at the interpretive/education center and wildlife viewing points about the restoration project and special-status species present; (5) the ability of native wildlife to habituate to low levels of disturbance, such as pedestrians, and the ability for wildlife to disperse into suitable high quality adjacent habitat, which will increase substantially post-restoration; and (6) the presence of existing ongoing industrial disturbance adjacent to the restoration site to which current wildlife is already habituated.

Due to the restricted use associated with the boat launch, which will serve small, non-motorized craft such as kayaks and canoes, and due to the overall increase in suitable high quality adjacent habitat post-restoration, impacts to special-status birds associated with the use of the boat launch would be **less than significant**.

Habitat Restoration and Conversion

Restoration of tidal marshes would have a less-than-significant impact on black rail and Ridgway's rail and, in fact, would benefit these species due to the increase in tidal marsh and associated vegetation, such as tall, continuous stands of pickleweed and emergent vegetation for nesting. In addition, tidal restoration would result in the development of a higher density of channels, which has been identified as the most important feature favoring high Ridgway's rail density.⁴²

Impacts and Mitigation Measures

Impact BIO-3: The project would result in potential impacts on California black rail and Ridgway's rail.

In summary, temporary construction-related impacts would result in significant impacts on California black rail and Ridgway's rail. However, implementation of **Mitigation Measures BIO-1 and BIO-4** would reduce potential construction-related impacts to Ridgway's rail and black rail to less-than-significant by providing environmental training to construction personnel, providing general protection measures, avoiding disturbance to rail nesting habitat, conducting pre-construction protocol surveys to identify any active nests, and stopping work if project activities disturb nesting rails. With implementation of Mitigation Measures BIO-1 and BIO-4, construction-related impacts would be less than significant. Operational and long-term effects of the project on California black rail and Ridgway's rail would be **less than significant**.

Mitigation Measure BIO-4: Avoid and Minimize Impacts to California Black Rail and Ridgway's Rail

- To minimize or avoid the loss of individual California black rail and Ridgway's rail, construction activities, including vegetation management activities requiring heavy equipment, adjacent to tidal marsh areas (within 500 feet [150 meters] or a distance determined in coordination with U.S. Fish and Wildlife (USFWS) or the California Department of Fish and Wildlife (CDFW), shall be avoided during the breeding season from February 1 through August 31.
- If areas within or adjacent to rail habitat cannot be avoided during the breeding season (February 1 through August 31), protocol-level surveys shall be conducted to determine rail nesting locations. The surveys will focus on potential habitat that could be disturbed by construction activities during the breeding season to ensure that rails are not breeding in these locations.

Survey methods for rails will follow the *Site-Specific Protocol for Monitoring Marsh Birds*, which was developed for use by USFWS and partners to improve bay-wide monitoring accuracy by standardizing surveys and increasing the ability to share data (Wood et al. 2017). Surveys are concentrated during the approximate period of peak detectability, January 15 to March 25 and are structured to efficiently sample an area in three rounds of surveys by broadcasting calls of target species during specific periods of each survey round. Call broadcast increase the probability of detection compared to passive surveys when no call broadcasting is employed. This protocol

⁴² Liu, et al., 2012. California Clapper Rail (*Rallus longirostris obsoletus*) Population Monitoring: 2005-2011. Point Reyes Bird Observatory Technical Report to the California Department of Fish and Wildlife.

has since been adopted by Invasive Spartina Project (ISP) and Point Blue Conservation Science to survey Ridgway's rails at sites throughout San Francisco Bay Estuary. The survey protocol for Ridgway's rail is summarized below.

- Previously used survey locations (points) should be used when available to maintain consistency with past survey results. Adjacent points should be at least 200 meters apart along transects in or adjacent to areas representative of the marsh. Points should be located to minimize disturbances to marsh vegetation. Up to 8 points can be located on a transect.
- At each transect, three surveys (rounds) are to be conducted, with the first round of surveys initiated between January 15 and February 6, the second round performed February 7 to February 28, and the third round March 1 to March 25. Surveys should be spaced at least one week apart and the period between March 25 to April 15 can be used to complete surveys delayed by logistical or weather issues. A Federal Endangered Species Act Section 10(a)(1)(A) permit is required to conduct active surveys.
- Each point on a transect will be surveyed for 10 minutes each round. A recording of calls available from USFWS is broadcast at each point. The recording consists of 5 minutes of silence, followed by a 30-second recording of Ridgway's rail vocalizations, followed by 30 seconds of silence, followed by a 30-second recording of California black rail, followed by 3.5 minutes of silence.
- If no breeding Ridgway's rails or black rails are detected during surveys, or if their breeding territories can be avoided by 500 feet (150 meters), then project activities may proceed at that location.
- If protocol surveys determine that breeding Ridgway's rails or black rails are present in the project area, the following measures would apply to project activities conducted during their breeding season (February 1- August 31):
 - A USFWS- and CDFW-approved biologist with experience recognizing Ridgway's rail and black rail vocalizations will be on site during construction activities occurring within 500 feet (150 meters) of suitable rail breeding habitat.
 - All biologists accessing the tidal marsh will be trained in Ridgway's rail and black rail biology and vocalizations, and will be familiar with both species of rail and their nests.
 - If a Ridgway's rail or black rail vocalizes or flushes within 10 meters, it is possible that a nest or young are nearby. If an alarmed bird or nest is detected, work will be stopped, and workers will leave the immediate area carefully and quickly. An alternate route will be selected that avoids this area, and the location of the sighting will be recorded to inform future activities in the area.
 - All crews working in the marsh during rail breeding season will be trained and supervised by a USFWS- and CDFW-approved rail biologist.
 - If any activities will be conducted during the rail breeding season in Ridgway's rail- or black rail-occupied marshes, biologists will have maps or GPS locations

of the most current occurrences on the site and will proceed cautiously and minimize time spent in areas where rails were detected.

- All personnel walking in the marsh will be required to limit time spent within 50 meters of an identified Ridgway's rail or black rail calling center to half an hour or less.
- For vegetation management activities in suitable habitat for Ridgway's rail or black rail, the following measures will be implemented:
 - Only herbicides to be used will be EPA-certified for use in/adjacent to aquatic environments.
 - Vegetation management activities will be limited to areas outside of tidal marsh and non-tidal pickleweed marsh habitats.

Salt Marsh Harvest Mouse and Suisun Shrew

Salt marsh harvest mouse is listed as endangered under both FESA and CESA, and is a state fully-protected species. Preferred mouse habitat includes the middle and upper portions of dense, perennial salt marshes; they will move into adjacent grasslands in spring and summer when the grasslands provide maximum cover.⁴³ They will also use similar habitat in diked wetlands adjacent to the Bay. Recent research has identified salt marsh harvest mouse in marshes dominated by alkali bulrush (*Schoenoplectus maritimus*)⁴⁴ and in mixed vegetation not dominated by pickleweed, including Baltic rush (*Juncus balticus*), prickly lettuce (*Lactuca serriola*), and sow thistle (*Sonchus asper*). During high tides, salt marsh harvest mouse will use upland habitats for high tide refugia, and they also cross levees.⁴⁵ Suitable habitat for this species is present in the project area in the brackish tidal marshes, and tidal and non-tidal pickleweed habitats. In addition, CNDDDB records exist from trapping efforts within the project area in the locality of Shell Marsh, Peyton Slough, and Pacheco Creek. Salt marsh harvest mice were also trapped in Pt. Edith Wildlife Area, adjacent to project area, throughout the 1970s, 1980s and 1990s; as well as in Avon-Port Chicago Marsh in 1997.⁴⁶ In 2008 four salt marsh harvest mice were captured during trapping efforts in the north part of the South Reach in pickleweed dominated vegetation.⁴⁷ There is a high potential for salt marsh harvest mouse to occur in the project area and it is assumed salt marsh harvest mouse occupies suitable pickleweed and marsh habitats within the project area.

The Suisun shrew is a California species of special concern that lives in the tidal marshes of Suisun and San Pablo Bays. The species requires dense low cover above the median tide line for nesting and foraging. Suitable habitat for this species is present in the project area. The Suisun

⁴³ Goals Project. 2000. Baylands Ecosystem Species and Community Profiles: Life histories and environmental requirements of key plants, fish and wildlife. Prepared by the San Francisco Bay Area Wetlands Ecosystem Goals Project. P.R. Olofson, editor. San Francisco Bay Regional Water Quality Control Board, Oakland, Calif.

⁴⁴ Shellhammer, H., R. Duke, and M. Orland. 2010. *Use of Brackish Marshes in the South San Francisco Bay by Salt Marsh Harvest Mice*. California Fish and Game 96(4): 256-259.

⁴⁵ Bias, M.A. and M.L. Morrison. 1999. Movements and Home Range of Salt Marsh Harvest Mice. The Southwestern Naturalist 44(3):348-353.

⁴⁶ California Department of Fish and Wildlife, 2018. California Natural Diversity Database (CNDDDB), Wildlife and Habitat Data Analysis Branch. Sacramento, CA. Accessed May 2018.

⁴⁷ Monk & Associates, Inc. 2008. Salt Marsh Harvest Mouse Presence/Absence Trapping Survey Report, Shell Pipeline Corporation – Pipeline Repair Site, Martinez, Contra Costa County, California.

shrew is not well-studied and less is known about its life history than salt marsh harvest mouse; however, the nearest known occurrences are restricted to north Suisun Bay. There is a moderate potential for Suisun shrew to occur in the project area.

Construction Impacts

Construction activities associated with the restoration project, public access and recreational facilities, and vegetation management are summarized under *Construction Impacts* under Impact BIO-1 *Western Pond Turtle* analysis, above.

Although habitat quality varies substantially throughout the project area, suitable habitat for salt marsh harvest mouse and Suisun shrew is found throughout all reaches of the project area. Restoration-related construction activities in the North, Middle and South reaches that could impact salt marsh harvest mouse and Suisun shrew include clearing and grubbing vegetation from excavation areas using mower, scraper and bulldozer, use of heavy equipment and dump trucks, and presence of workers and vehicles associated with all aspects of construction in suitable salt marsh harvest mouse/Suisun shrew habitat.

Construction activities associated with public access and recreational facilities in the North Reach that could impact salt marsh harvest mouse and Suisun shrew include clearing and grubbing excavation areas, earthwork associated with constructing recreational trails and bridge supports, and equipment staging on land to install piles into channel mud to support the floating dock or constructing a concrete boat ramp at grade. Other than the in-water work associated with the floating dock option, all public access infrastructure would be built in upland or transitional habitat. These habitats are used by salt marsh harvest mouse, and possibly Suisun shrew, especially as refugia during high tides.

Direct impacts that could occur to salt marsh harvest mouse and Suisun shrew include mortality due to crushing by vehicles, materials staging, heavy equipment or human activity in suitable salt marsh harvest mouse/Suisun shrew habitat, or mutilation by mowers or other motorized equipment used for vegetation removal. Indirect impacts could occur if equipment staging, project construction or human activity render otherwise suitable habitat temporarily unsuitable due to the lack of accessibility, noise, vibration, and increased activity levels associated with grubbing, earth moving, and heavy equipment operation. Any of these would be considered a **significant impact**.

Operational/Long-term Impacts

Ongoing maintenance activities, public access and recreational facilities, and habitat restoration and conversions are summarized under *Operational/Long-term Impacts* under Impact a.1 *Western Pond Turtle* analysis, above.

Ongoing Maintenance

Impacts associated with ongoing monitoring and maintenance are expected to be of short duration (i.e., on the order of hours to days) and infrequent, and are a continuation of comparable operations and maintenance activities currently implemented by the District on existing levees.

However, salt marsh harvest mice are known to cross levees,⁴⁸ probably when accessing high tide refugia on the other side of the levee or during dispersal events; therefore, levee inspections and maintenance could impact salt marsh harvest mouse, and possibly Suisun shrew, during high tides. The potential impacts to salt marsh harvest mouse and Suisun shrew associated with ongoing operations and maintenance during high tide events include unintentional flushing of these species back into tidal areas, thus preventing them from accessing refugia, and mortality due to crushing by vehicles, materials staging, heavy equipment or human activity; these would be **significant impacts**.

Public Access and Recreational Facilities

The interpretive/education center and associated infrastructure would be located away from breeding and foraging habitat for salt marsh harvest mouse and Suisun shrew, and an increasing area of high quality habitat would be present in the project area post-restoration; therefore, the use of the interpretive center complex would have **less-than-significant impact** on these species.

While the majority of the trail alignment would be built away from high quality breeding and foraging habitat for salt marsh harvest mouse and Suisun shrew, approximately 1,800 linear feet of trail and two wildlife viewing points will be adjacent to existing or post-restoration tidal marsh. During very high tides, marsh harvest mouse and Suisun shrew will likely use the elevated trail to access high tide refugia. Because of the lack of cover on the new trail, salt marsh harvest mouse and Suisun shrew would not be expected to remain on the trail, but use it relatively briefly to move to high tide refugia with vegetative cover, such as transitional habitat on the other side of the trail. In addition, an approximately 500-foot section of “limited access” trail is aligned to travel through post-restoration tidal marsh to a wildlife viewing point near a new tidal channel. The trail leading to the viewing platform would be “limited access” and the closure of the trail during the bird breeding season will benefit other marsh-dwelling species such as salt marsh harvest mouse and Suisun shrew.

The presence of hikers and bicyclists on these trails could have a negative impact on salt marsh harvest mouse and Suisun shrew during very high tides as presented in the maintenance discussion above. However, these trails will be built in transitional habitat that will convert over time to tidal marsh following excavation of new channels. This would allow dispersing individuals that result from a growing population of salt marsh harvest mice and Suisun shrew the opportunity to establish territories in areas less disturbed by public use and avoid areas more impacted by public use. A small watercraft launch will be located near the water access point at the end of the CCCSD service road. The anticipated number of boaters to use the area is not known; however, use of this drop-off point will be limited by bollards along the service road, and reservations will be required for use, thereby limiting the level of access and unauthorized use of the area. Although a short walk (~0.1 mile) through or adjacent to tidal marsh habitat may be required post-restoration to carry boats to the water, the restricted use associated with the boat launch and overall increase in suitable high quality adjacent habitat post-restoration would offset adverse effects of recreational activities in suitable habitat. Overall, use of recreational facilities would result in a less-than-significant impact to salt marsh harvest mouse and Suisun shrew

⁴⁸ Bias, M.A. and M.L. Morrison. 1999. Movements and Home Range of Salt Marsh Harvest Mice. *The Southwestern Naturalist* 44(3):348-353.

because the number of individuals potentially impacted by trail use during very high tides would be small, and would be offset by expected population increases resulting from the overall increase in quantity and quality of salt marsh harvest mouse and Suisun shrew habitat post-restoration.

Habitat Restoration and Conversion

Restoration of tidal marshes is expected to have a less-than-significant impact on salt marsh harvest mouse and Suisun shrew due to the beneficial restoration and enhancement of tidal wetland and non-tidal wetlands (see Table 1 in Chapter 1, Project Description). Although diked marsh in Suisun Bay has been found to provide comparably high quality habitat to tidal marsh for salt marsh harvest mouse,⁴⁹ the diked tidal marsh currently present within the Middle and South reaches is of low habitat value due to sparse vegetation.⁵⁰ Restoring tidal action to the currently diked marshes will replace sparsely vegetated marginal habitat with densely vegetated tidal marshes in the Middle and South Reaches. Good quality salt marsh harvest mouse and Suisun shrew habitat currently present in the North Reach would be maintained and enhanced. In addition, the project would create an increase in transitional and upland habitat by creating lowland grassland transition zones, which would provide upland refugia to salt marsh harvest mouse and Suisun shrew immediately post-restoration and would accommodate up to 5 feet of sea level rise as lowland grassland converts to tidal wetland. This would compensate for future sea level rise-induced conversion of salt marsh harvest mouse habitat (i.e., tidal wetland) into permanently inundated wetlands providing a long-term habitat benefit to these species resulting in a **less-than-significant impact**.

Impacts and Mitigation Measures

Impact BIO-4: The project would result in potential impacts on salt marsh harvest mouse and Suisun shrew.

In summary, construction-related impacts on salt marsh harvest mouse and Suisun shrew would be potentially significant. However, implementation of **Mitigation Measures BIO-1** and **BIO-5** would reduce potential construction and vegetation management impacts to salt marsh harvest mouse and Suisun shrew to a less-than-significant level by providing environmental training to construction personnel, providing general protection measures, conducting pre-construction surveys, identification and avoidance of suitable habitat for the species, and where avoidance is not possible, using hand tools to clear vegetation. Further, with implementation of Mitigation Measure BIO-5, suitable marsh habitat will be protected during work activities, silt fencing will separate suitable habitat from adjacent work areas, a biomonitor will be in place to stop work if the species is detected, and work during high tide periods will be avoided. With implementation of Mitigation Measures BIO-1 and BIO-5, construction-related impacts would be less than significant. Operational and long-term effects of the project on salt marsh harvest mouse and Suisun shrew would be **less than significant**.

⁴⁹ Sustaita, et al., 2011. Salt Marsh Harvest Mouse Demography and Habitat Use in the Suisun Marsh, California. The Journal of Wildlife Management 75(6):1498-1507;2011; DOI: 10.1002/jwmg.187.

⁵⁰ H.T. Harvey & Associates, 2018. Lower Walnut Creek Restoration Project, Salt Marsh Harvest Mouse Technical Memorandum. October 25, 2018.

Mitigation Measure BIO-5: Avoid and Minimize Impacts to Salt Marsh Harvest Mouse and Suisun shrew

- A USFWS and CDFW-approved biologist, with knowledge and experience with salt marsh harvest mouse habitat requirements, will conduct pre-construction surveys for the species and identify and mark suitable salt marsh harvest mouse marsh habitat prior to project initiation.
- Ground disturbance to suitable salt marsh harvest mouse habitat (including, but not limited to pickleweed, and emergent salt marsh vegetation including bulrush and cattails) will be avoided to the extent feasible. Where salt marsh harvest mouse habitat cannot be avoided - such as for channel excavation, access routes and grading, or anywhere else that vegetation could be trampled or crushed by work activities - vegetation will be removed from the ground disturbance work area plus a 10-foot buffer around the area, as well as any access routes within salt marsh harvest mouse habitat, utilizing mechanized hand tools or by another method approved by the USFWS and CDFW. Vegetation height shall be maintained at or below 5 inches above ground. Vegetation removal in salt marsh harvest mouse habitat will be conducted under the supervision of the USFWS- and CDFW-approved biologist.
- To protect salt marsh harvest mouse from construction-related traffic, access roads, haul routes, and staging areas within 200 feet of salt marsh harvest mouse habitat will be bordered by temporary exclusion fencing. The fence should be made of a smooth material that does not allow salt marsh harvest mouse to climb or pass through, of a minimum above-ground height of 30 inches, and the bottom should be buried to a depth of at least 6 inches so that mice cannot crawl under the fence. Any supports for the salt marsh harvest mouse exclusion fencing (e.g., t-posts) will be placed on the inside of the project area. The last 5 feet of the fence shall be angled away from the road to direct wildlife away from the road. A USFWS- and CDFW-approved biologist with previous salt marsh harvest mouse experience will be on site during fence installation and will check the fence alignment prior to vegetation clearing and fence installation to ensure no salt marsh harvest mice are present.
- Salt marsh harvest mouse marsh habitat that must be accessed by mini-excavators or other vehicles to complete project construction (e.g., excavating connector channels to Lower Walnut Creek) will be protected through use of low ground pressure (LGP) equipment, wooden or PVC marsh mats, or other method approved by USFWS and CDFW following vegetation removal (see 3rd bullet, above).
- Construction activities related to restoration and recreational infrastructure, as well as ongoing Operations and Maintenance activities will be scheduled to avoid extreme high tides when there is potential for salt marsh harvest mouse to move to higher, drier grounds, such as ruderal and grassland habitats. Extreme high tides would be in excess of six feet as predicted for the nearest tide gauge, Point Chicago tide gauge.
- All construction equipment and materials will be staged on existing roadways and away from suitable wetland habitats when not in use.
- Vegetation shall be removed from all non-marsh areas of disturbance (driving roads, grading and stockpiling areas) to discourage presence of salt marsh harvest mouse.

- A USFWS- and CDFW-approved biologist with previous salt marsh harvest mouse monitoring and/or surveying experience will be on site during construction activities occurring in suitable habitat. The biologist will document compliance with the project permit conditions and avoidance and conservation measures. The USFWS- and CDFW-approved biologist has the authority to stop project activities if any of the requirements associated with these measures is not being fulfilled. If salt marsh harvest mouse is observed in the work area, construction activities will cease in the immediate vicinity of the salt marsh harvest mouse. The individual will be allowed to leave the area before work is resumed. If the individual does not move on its own volition, the USFWS-approved biologist would contact USFWS (and CDFW if appropriate) for further guidance on how to proceed.
- If the USFWS- and CDFW-approved biologist has requested work stoppage because of take of any of the listed species, or if a dead or injured salt marsh harvest mouse is observed, the USFWS and CDFW will be notified within one day by email or telephone.
- For vegetation management activities in suitable habitat for salt marsh harvest mouse and Suisun shrew, the following measures shall be implemented:
 - Only herbicides to be used will be EPA certified for use in/adjacent to aquatic environments.
 - Work in upland habitat within 100 feet of salt marsh harvest mouse and Suisun shrew habitat will be scheduled to avoid extreme high tides when there is potential for salt marsh harvest mouse and Suisun shrew to move to higher, drier grounds, such as ruderal and grassland habitats. Extreme high tides would be in excess of six feet as predicted for the nearest tide gauge, Port Chicago tide gauge.

Special-status Bats

Several special-status bat species have the potential to occur in the project area, including pallid bat and Townsend's big-eared bat. Suitable roosting habitat for these bats includes the undersides of bridges over Lower Walnut Creek. Observations of these species are recorded at least 5.2 miles from the project area. These species have a moderate potential to occur in the project area.

Construction Impacts

Construction activities associated with the restoration project, public access and recreational facilities, and vegetation management are summarized under *Construction Impacts* under a.1. *Western Pond Turtle* analysis, above.

Within the project area, potential roosting habitat for special-status bats is limited to the Union Pacific Railroad (UPRR) and Burlington Northern Santa Fe (BNSF) bridges that cross Lower Walnut Creek. Excavation of connector channels could indirectly impact roosting bats if excavation occurred within 100 feet of an active roost, such as the underside of a bridge; however, no connector channels are planned within 100 feet of bridges, and impact on special-status bats would be **less than significant**.

Operational/Long-term Impacts

Ongoing maintenance activities, public access and recreational facilities, and habitat restoration and conversions are summarized under *Operational/Long-term Impacts* under Impact a.1 *Western Pond Turtle* analysis, above.

Ongoing Maintenance

Levee inspections and maintenance activities are not expected to affect roosting bats since there are no suitable roosting sites within 100 feet of levees. Therefore, ongoing operations and maintenance on roosting bats would be **less than significant**.

Public Access and Recreational Facilities

The proposed recreational infrastructure, including the interpretive/education center, trails, viewing platforms and a small watercraft launch are located in areas where there is no bat roosting habitat. Therefore, impacts from public access and recreational facilities on special-status bats would be **less than significant**.

Habitat Restoration and Conversion

Habitat restoration and conversion would not convert or destroy potential bat roosting sites and there would be **no impact**.

In summary, project construction and implementation would not result in significant impacts on special-status bats; there would be **less-than-significant impacts** on special-status bats.

Special-Status Plants

Delta tule pea, Suisun marsh aster and Mason's lilaeopsis are known to be present within the project area based on special-status plant surveys conducted in 2018.⁵¹ Delta tule pea has a CNPS Rare Plant Rank (CRPR) of 1B.2, Suisun marsh aster has a CRPR of 1B.2, and Mason's lilaeopsis is a CRPR 1B.1 species and is listed as rare under the CESA. The California Native Plant Protection Act directs the California Fish and Game Commission to designate plants as rare and endangered and generally prohibits take of endangered or rare native plants. Plants with a CRPR of 1B are rare throughout their range with the majority of them endemic to California. Most of the plants that are ranked 1B have declined significantly over the last century. All of the plants with a CRPR of 1B meet the criteria of CESA.

Although no other special-status plants were detected during special-status plant surveys in 2018, suitable habitat for a number of special-status plants is potentially present in the un-surveyed portions of the North, Middle, and South reaches, and presence of these species cannot be ruled out. Special-status plants that could be present in the unsurveyed portions of the project area include Suisun marsh aster, delta tule pea, soft bird's beak (*Chloropyron molle* ssp. *molle*; federally-listed as endangered/CRPR 1B.2), Mason's lilaeopsis, Bolander's water hemlock (*Cicuta maculata* var. *bolanderi*; CRPR 2B.1), delta mudwort (*Limosella australis*; CRPR 2B.1), Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*; CRPR 1B.1), pappose tarplant (*Centromadia parryi* ssp. *parryii*; CRPR 1B.2), Marin knotweed (*Polygonum marinense*;

⁵¹ Wood Biological Consulting and ESA, 2019. Lower Walnut Creek Restoration Project Rare Plant Survey Report. February 2019.

CRPR 3.1), San Joaquin spearscale (*Exriplex joaquiniana*; CRPR 1B.2), Santa Cruz tarplant (*Holocarpha macradenia*; federally-listed as threatened/CRPR 1B.1), Contra Costa goldfields (*Lasthenia conjugens*; federally-listed as endangered/CRPR 1B.1) and long-styled sand spurrey (*Spergularia macrotheca* var. *longistyla*; CRPR 1B.2).

Construction Impacts

Construction activities associated with the restoration project, public access and recreational facilities, and vegetation management are summarized under *Construction Impacts* under a.1. *Western Pond Turtle* analysis, above.

Implementation of the project, specifically components that require excavation of new tidal channels to connect the creek channel with currently non-tidal parts of the flood plain, could result in direct impacts to existing populations of Delta tule pea and Suisun marsh aster.

Potentially suitable habitat for Mason's lilaeopsis is fairly specific with regard to tidal range, soil exposure, and reduced density of tall marsh vegetation, so not all areas bordering channels are presently suitable. The Lower Walnut Creek Restoration Project Rare Plant Survey Report⁵² describes how small-scale disturbances along channel banks (i.e., bank slumping from either natural processes or from wake-generated waves) may play a role in creating new sites for establishment of this species. Therefore, special-status plant locations previously identified should be considered temporary, particularly if project implementation does not occur for several years. Implementation of the project components that require excavation of new tidal channels could result in significant impacts to new populations of Mason's lilaeopsis that may establish prior to construction.

Further, Preliminary designs of the public access and recreational facilities include a trail extending east-west to a wildlife viewing area near a new channel that will be excavated west of Lower Walnut Creek. This trail would be in the vicinity of several known occurrences of Suisun marsh aster and delta tule pea. Earthwork associated with building the trail could result in direct removal or trampling of special-status plants. Therefore, construction could result in **potentially significant impacts** to special-status plant species.

Operational/Long-term Impacts

Ongoing maintenance activities, public access and recreational facilities, and habitat restoration and conversions are summarized under *Operational/Long-term Impacts* under a.1 *Western Pond Turtle* analysis, above.

Ongoing Maintenance

Levee inspections and maintenance are not expected to impact special-status plants since there is no suitable habitat for special-status plants on the levees and there would be **no impact**.

⁵² Wood Biological Consulting and ESA, 2019. Lower Walnut Creek Restoration Project Rare Plant Survey Report. February, 2019.

Public Access and Recreational Facilities

The proposed trail west of Lower Walnut Creek would be in the vicinity of several known occurrences of Suisun marsh aster and delta tule pea. Because the trail would be 8 feet wide and 10 to 30 feet above sea level in elevation, and because there are no trails or other features north or south that would encourage short-cutting through creation of “bootleg trails,” there is a low probability that hikers will trample or otherwise disturb special-status plants, resulting in a **less-than-significant impact**.

Habitat Restoration and Conversion

Restoration of tidal marshes is expected to be beneficial for special-status plant species due to the overall increase in wetland habitat, which provides habitat for tidal marsh special-status plants Suisun marsh aster, Delta tule pea, soft bird’s beak, and increased tidal channels which provide habitat for Mason’s lilaeopsis.

Impacts and Mitigation Measures

Impact BIO-5: The project would result in potential impacts on special-status plants.

In summary, temporary construction-related impacts would result in significant impacts on special-status plants, and if special-status plants are present in the areas that have not yet been surveyed, these have potential to be impacted indirectly through changes in site hydrology. However, implementation of **Mitigation Measure BIO-6** would reduce potential construction-related impacts to special-status plants and potential indirect impacts to special-status plants due to changes in hydrology to a less-than-significant level. This would be achieved by: conducting pre-construction special-status plant surveys; delineating and avoiding special-status plants within the project work limits by establishing a no-disturbance buffer, including fencing and signage, around the plant to protect it from construction-related activity; compensating for special-status plant impacts that cannot be avoided; and, reporting special-status plant occurrence to the CNDDB. With implementation of Mitigation Measures BIO-6, construction-related impacts would be less than significant. Operational and long-term effects of the project would be **less than significant**.

Mitigation Measure BIO-6: Special-Status Plant Protection

To ensure protection of special-status plants, the following measures will be implemented.

- Prior to the start of construction, a qualified biologist shall conduct a properly-timed special-status plant survey for Suisun marsh aster, delta tule pea, soft bird’s beak, Mason’s lilaeopsis, Bolander’s water hemlock, delta mudwort, Congdon’s tarplant, pappose tarplant, Marin knotweed, San Joaquin spearscale, Santa Cruz tarplant, Contra Costa goldfields and long-styled sand spurrey within the species’ suitable habitat within the un-surveyed portions within the project work limits. This includes portions of the State Lands Commission parcel and the Suisun Properties parcel in the North Reach, the Acme landfill parcel in the Middle Reach, and the Conco parcel in the South Reach. The survey will follow the CDFW *Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities* (CDFW, 2018b). If special-status plant species occur within the project work limits, then the biologist will establish an adequate buffer area for

each plant population to exclude activities that directly remove or alter the habitat of, or result in indirect adverse impacts on, the special-status plant species. A qualified biologist will oversee installation of a temporary, plastic mesh-type construction fence (Tensor Polygrid or equivalent) at least 4 feet (1.2 meters) tall around any established buffer areas to prevent encroachment by construction vehicles and personnel. The qualified biologist will determine the exact location of the fencing. The fencing will be strung tightly on posts set at maximum intervals of 10 feet (3 meters) and will be checked and maintained weekly until all construction is complete. The buffer zone established by the fencing will be marked by a sign stating:

- “This is habitat of [list rare plant(s)], and must not be disturbed. This species is protected by [the ESA of 1973, as amended/CESA/California Native Plant Protection Act].”
- No construction activity, including grading, shall be allowed until condition number 3 is satisfied.
- If direct impacts cannot be avoided, the District shall prepare a plan for minimizing the impacts by one or more of the following methods: 1) salvage and replant plants at the same location following construction; 2) salvage and relocate the plants to a suitable off-site location with long-term assurance of site protection; 3) collect seeds or other propagules for reintroduction at the site or elsewhere; or 4) payment of fees in lieu of preservation of individual plants, to be used for conservation efforts elsewhere.
- If indirect impacts to special-status plants due to restoration-related introduction of tidal hydrology to non-tidal areas cannot be avoided, the District shall prepare a plan for minimizing the impacts by one or more of the following methods: 1) if the special-status plant population is likely to survive the hydrologic modification (based on an assessment by the District’s biologist), monitor the at-risk special-status plant population over 5 years after the hydrologic modification, along with a reference population, to verify that there have been no adverse indirect impacts to the population. If at any point within the 5-years of monitoring, the population is determined to be at risk from project impacts based on monitoring results, then implement (2); 2) if the special-status plant population is not likely to survive the hydrologic modification, then: 1) salvage and relocate the plants to a suitable location on-site; or 2) salvage and relocate the plants to a suitable off-site location with long-term assurance of site protection; or 3) collect seeds or other propagules for reintroduction at the site or elsewhere; or, 4) payment of fees in lieu of preservation of individual plants, to be used for conservation efforts elsewhere.
- The success criterion for any seeded, planted, and/or relocated plants shall be full replacement at a 1:1 ratio after five years. Monitoring surveys of the seeded, planted, or transplanted individuals shall be conducted for a minimum of five years, to ensure that the success criterion can be achieved at year 5. If it appears the success criterion would not be met after five years, contingency measures may be applied. Such measures shall include, but not be limited to: additional seeding and planting; altering or implementing weed management activities; or, introducing or altering other management activities.

- Any special-status plant species observed during surveys will be reported to the USFWS and CDFW and submitted to the CNDDDB.

Special-status Fish Species

Impacts to fish species from project construction and/or project operation are not expected to occur or would be very small and would fall within less than significant levels. Because all listed fish species considered in this document share the same aquatic habitat, potential impacts discussed below should be considered equally relevant for all fish species.

Construction Impacts

Construction activities associated with the restoration project, public access and recreational facilities, and vegetation management are summarized under *Construction Impacts* under a.1. *Western Pond Turtle* analysis, above.

The Project will require a limited amount of in-water, and water-adjacent, construction work to facilitate the connection of the tidal channel network to the lower Walnut Channel. While work will be conducted at a low tide, and utilizing a silt curtain, construction activities may result in the short-term, temporary disturbance and resuspension of benthic sediments. Increases in suspended sediments can impact aquatic organisms by reducing dissolved oxygen levels and light transmission. Additionally, when sediments resettle there is the potential to smother aquatic habitats and organisms. Changes in light transmission have the potential to limit photosynthesis and reduce foraging abilities for organisms that rely on visual signals for feeding (e.g., salmonids and several species of birds; Anchor 2003). Substantially depressed oxygen levels (i.e., below 5.0 mg/l) may cause respiratory stress to aquatic life, and levels below 3.0 mg/l may cause mortality.

The suspension of sediment during construction has the potential to release constituents of concern within the water column. Once released, these constituents have the potential to degrade water quality and present a potential exposure pathway to aquatic organisms. Organic contaminants, such as polycyclic aromatic hydrocarbons or PAHs are often bound to the finer silt and clay fractions of sediments. Metals, such as lead, are often more closely associated with the heavier and larger sediment fraction, but depending on the metal, can be associated with the fines as well. While the particulates are in suspension, the contaminants become more available to biota and can become dissolved into the water itself.

Increased turbidity levels associated with in-water construction activities (e.g., breach construction) would be minor, relatively short-lived, and generally localized to the immediate area of construction. Following construction, sediments would disperse and background levels would be restored within hours of disturbance. In addition, normal circulation and strong currents within Lower Walnut Creek would rapidly circulate and disperse water temporarily affected by construction activities. Turbidity plumes would disperse within a matter of hours, and the particulate concentrations would be diluted to levels that would pose a less-than-significant threat to water quality or aquatic wildlife.

The project will also result in the net creation of tidal channel habitat (see Table 1 in Chapter 1, Project Description). In order to provide access to this habitat, breaches will need to be excavated to connect the interior tidal channel network to lower Walnut Creek, and the Delta as whole.

Breach construction will result in temporary and permanent alterations to the existing benthic habitat. This could temporarily reduce the diversity and productivity of benthic habitat in the immediate vicinity. Recovery of benthic infaunal and epifaunal communities following disturbance is controlled by many physical and ecological factors, including: the areal extent of disturbance; construction methods; the temporal occurrence of the disturbance relative to natural recruitment; the species composition of adjacent undisturbed sediments; the sediment composition after disturbance; and other factors. A review indicates that benthic communities living in fine mobile deposits, such as occur in most estuaries, are characterized by large populations of a diversity of species that are well adapted to rapid recolonization of deposits that are subject to frequent disturbance.⁵³ Recolonization of disturbed areas usually by opportunistic species characterized by the early stages of secondary succession, and is followed by an increased diversity of species that are longer-lived and slower growing as the succession progresses. Removal of sediment and resulting disturbed habitat effects are considered temporary as the benthic community is expected to recover or re-colonize over a short period of time.

Breaching would occur during the LTMS in-water work window, and during low tide, to avoid and minimize temporary adverse effects on delta and longfin smelt. The negative effect on aquatic life from these project components is likely to be minimal and offset by the significant net increase in benthic habitat through the enhancement of the existing tidal channel network. This impact is considered **less than significant**.

Operational/Long-term Impacts

Ongoing maintenance activities, public access and recreational facilities, and habitat restoration and conversions are summarized under *Operational/Long-term Impacts* under Impact a.1 *Western Pond Turtle* analysis, above.

Ongoing Maintenance

Levee inspections and maintenance are not expected to impact special-status fish since this work will occur on the levees and not directly within the aquatic environment. Implementation of the District's standard RMA BMPs will ensure no runoff, siltation, or accidental discharge occurs during routine levee maintenance. Thus, the proposed levee inspection and maintenance would not have the potential to significantly impact aquatic habitats.

Public Access and Recreational Facilities

Public access and recreational facility construction will not occur within aquatic habitat with the exception of installation of piles and a floating dock, if that option is selected. Additionally, increases in kayaking and other modes of aquatic recreation is not expected to cause additional impacts to aquatic species. These activities are likely to occur at low densities and, as no increase

⁵³ Newell, R.C., Seiderer, L.J., and Hitchcock, D.R., 1998. The impact of dredging work in coastal waters: a review of the sensitivity to disturbance and subsequent recovery of biological resources on the sea bed. *Oceanography and Marine Biology: An Annual Review*, 36:127–178.

in motorized vessel traffic is expected to occur, cause only limited disturbance to the aquatic environment. Thus, **no impact** to aquatic species is expected occur.

Habitat Restoration and Conversion

Recent documentation on the populations of pelagic fish within the Delta and Suisun Marsh continue to show a significant decline in abundance, placing the continued viability of many populations in serious jeopardy.⁵⁴ As such, restoration or enhancement projects with the potential to benefit either species are of paramount importance. Implementation of the project will immediately create tidal channel habitat for all listed aquatic species. Additionally, the construction of marsh ponds and sandy alkaline wetlands will facilitate conditions in which aquatic productivity and export to the surrounding area increases. Both of these benefits may aid with the recovery of both native delta fish populations.

Impacts and Mitigation Measures

Impact BIO-6: The project would result in potential impacts on special-status fish.

In summary, construction-related impacts on special-status fish would be potentially significant. However, implementation of **Mitigation Measure BIO-7: Construction Work Window**, **Mitigation Measure BIO-8: Protect Water Quality for Fish Habitat** and **Mitigation Measure BIO-9: Fish and Marine Mammal Protection During Pile Driving** would reduce the impact of project construction on special-status fish to less-than-significant by restricting the timing of in-water work to periods in which special-status aquatic species are unlikely to be present, and by ensuring the water quality effects of in-water work are no threat to aquatic species and occur at less than significant levels. With implementation of Mitigation Measures BIO-7, BIO-8, and BIO-9, construction-related impacts would be less than significant. Operational and long-term effects of the project would be **less than significant**.

Mitigation Measure BIO-7: Construction Work Window for Special-Status Fish

To minimize or avoid the loss of individual special-status fish species, in water work shall be limited to September 1 – November 30. If in water work cannot be avoided during this period, measures outlined in Mitigation Measures BIO-8 and BIO-9 shall also be implemented.

Mitigation Measure BIO-8: Protect Water Quality for Fish Habitat

Prior to the start of construction of the tidal connector channels, the District shall isolate the work area from Lower Walnut and Pacheco Creeks using a silt curtain with a floating boom installed at the confluence of the new tidal channels and the creeks. Installation of the silt curtain shall contain turbidity and sediment resulting from construction activity, exclude fish from access to the active construction area, and allow water to pass between the connector channels and the creeks with the tides. The curtain shall span the width of the connector channel and shall be at least 6 feet tall to maintain a fish barrier at high tide. The curtain will consist of permeable filter fabric supported by a line of floats on the

⁵⁴ La Luz, F. and R. Baxter, 2015. *2014 Status and Trends Report for Pelagic Fishes of the Upper San Francisco Estuary*. Interagency Ecological Program for the San Francisco Estuary, IEP Newsletter, volume 28, number 2.

water surface and a line of weights on the channel bottom. The curtain shall be monitored and maintained regularly.

Mitigation Measure BIO-9: Fish and Marine Mammal Protection During Pile Driving

Prior to the start of any in-water construction that would require pile driving, the project sponsor shall prepare a National Marine Fisheries Service (NMFS)-approved sound attenuation monitoring plan to protect fish and marine mammals, and the approved plan shall be implemented during construction. This plan shall provide detail on the sound attenuation system, detail methods used to monitor and verify sound levels during pile driving activities (if required based on projected in-water noise levels), and describe best management practices to reduce impact pile-driving in the aquatic environment to an intensity level less than 183 dB (sound exposure level, SEL) impulse noise level for fish at a distance of 33 feet, and 160 dB (root mean square pressure level, RMS) impulse noise level or 120 dB (RMS) continuous noise level for marine mammals at a distance of 1,640 feet. The plan shall incorporate, but not be limited to, the following best management practices:

- All in-water construction shall be conducted within the established environmental work window between June 1 and November 30, designed to avoid potential impacts to fish species.
- To the extent feasible vibratory pile drivers shall be used for the installation of all support piles. Vibratory pile driving shall be conducted following the U.S. Army Corps of Engineers “Proposed Procedures for Permitting Projects that will Not Adversely Affect Selected Listed Species in California.” USFWS and NMFS completed Section 7 consultation on this document, which establishes general procedures for minimizing impacts to natural resources associated with projects in or adjacent to jurisdictional waters.
- A soft start technique to impact hammer pile driving shall be implemented, at the start of each work day or after a break in impact hammer driving of 30 minutes or more, to give fish and marine mammals an opportunity to vacate the area.
- If during the use of an impact hammer, established NMFS pile driving thresholds are exceeded, a bubble curtain or other sound attenuation method as described in the NMFS-approved sound attenuation monitoring plan shall be utilized to reduce sound levels below the criteria described above. If NMFS sound level criteria are still exceeded with the use of attenuation methods, a NMFS-approved biological monitor shall be available to conduct surveys before and during pile driving to inspect the work zone and adjacent waters for marine mammals. The monitor shall be present as specified by the NMFS during impact pile driving and ensure that:
 - The safety zones established in the sound monitoring plan for the protection of marine mammals are maintained.
 - Work activities are halted when a marine mammal enters a safety zone and resumed only after the animal has been gone from the area for a minimum of 15 minutes.

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

Sensitive natural communities are designated by various resource agencies, such as CDFW, or in local policies and regulations, and are generally considered to have important functions or values for wildlife and/or are recognized as declining in extent or distribution, and are considered threatened enough to warrant some level of protection. CDFW tracks communities it believes to be of conservation concern through its *California Sensitive Natural Community List*.⁵⁵ These communities are typically considered special-status for the purposes of CEQA analysis.⁵⁶

Sensitive plant communities identified by CDFW on their *California Sensitive Natural Community List* are summarized in **Table 15** relative to the natural communities described and mapped in the Habitat Assessment. Only those Natural Communities with a rarity ranking of 1 to 3, as well as communities considered sensitive as marked with a ‘Y’ on the *California Sensitive Natural Community List*, are considered sensitive and are listed here.

In addition to the communities listed in Table 15, two other communities were considered for potential impacts. First, sago pondweed (*Stuckenia pectinata*) was observed during botanical surveys near the mouth of Walnut Creek and Pacheco Creek. Although this plant has no status as a rare or listed species, “submerged aquatic vegetation” is considered a sensitive natural community with a global and state 3 ranking. Additionally, Submerged Aquatic Vegetation (SAV) is a “special aquatic site” covered under the Clean Water Act Section 404 guidelines, which also are spelled out in the CFR Part 230, Subpart E, Subsection 230.43.⁵⁷ Patches of SAV are somewhat ephemeral, and can change location from year to year.

Secondly, eelgrass (*Zostera marina*) is a native marine vascular plant indigenous to the soft-bottom bays and estuaries of the Northern Hemisphere. It has been afforded special management considerations by CDFW, USFWS, NMFS, USEPA, and BCDC and for the purposes of this analysis is considered a sensitive natural community. The species is found from middle Baja California and the Sea of Cortez to northern Alaska along the west coast of North America, and is common in healthy, shallow bays and estuaries. The depth to which this species can grow is a function of light penetration. At greater depths, light is reduced to a level below which photosynthesis is unable to meet the metabolic demands of the plant to sustain net growth.

⁵⁵ California Department of Fish and Wildlife, 2018. List of Sensitive Natural Communities. <https://www.wildlife.ca.gov/Data/VegCAMP/Natural-Communities#sensitive%20natural%20communities>. Accessed December 20, 2018.

⁵⁶ California Department of Fish and Game, 2009. Natural Communities. <https://www.wildlife.ca.gov/Data/VegCAMP/Natural-Communities>. Accessed June 5, 2019.

⁵⁷ Legal Information Institute, 2018. 40 CFR Part 230, Subpart E – Potential Impacts on Special Aquatic Sites, Section 230.43 Vegetated Shallows. <https://www.law.cornell.edu/cfr/text/40/part-230/subpart-E>. Accessed December 20, 2018.

TABLE 15
SENSITIVE NATURAL COMMUNITIES WITHIN THE PROJECT AREA RELATIVE TO NATURAL COMMUNITIES
IDENTIFIED IN THE HABITAT ASSESSMENT

Natural Communities Identified in Habitat Assessment	Vegetation Types Present	CDFW California Natural Community	Natural Community Alliance(s) ^a	State Rarity Ranking ^b
Tidal brackish marsh – low-marsh zone	California bulrush (<i>Schoenoplectus californicus</i>), common bulrush (<i>S. acutus</i>), broad-leaf cattail (<i>Typha latifolia</i>), and non-native species common reed (<i>Phragmites australis</i>)	Hardstem and California bulrush marshes	<i>Schoenoplectus californicus</i> - <i>Schoenoplectus acutus</i> <i>Schoenoplectus californicus</i> – <i>Typha latifolia</i>	GU, S3S4
Tidal brackish marsh – mid-marsh zone	bulrush (<i>Bolboschoenus</i> spp.) and common reed, pickleweed (<i>Salicornia pacifica</i>), and non-native species perennial pepperweed and fat-hen (<i>Atriplex prostrata</i>)	Salt marsh bulrush marshes	<i>Bolboschoenus maritimus</i> <i>Bolboschoenus maritimus</i> - <i>Sarcocornia pacifica</i>	G4, S3
Tidal brackish marsh – high-marsh zone	Dominated by pickleweed and invasive perennial pepperweed. Also salt grass (<i>Distichlis spicata</i>), alkali heath (<i>Frankenia salina</i>), and gumplant (<i>Grindelia stricta</i>).	Pickleweed mats	<i>Sarcocornia pacifica</i> – <i>Distichlis spicata</i>	G4, S3
Muted tidal marsh	pickleweed, fat-hen, and bulrush	Pickleweed mats	<i>Sarcocornia pacifica</i> – <i>Atriplex prostrata</i>	G4, S3
Pickleweed marsh	Dominated by pickleweed. Also alkali heath, and non-natives fat-hen, perennial pepperweed, brass buttons (<i>Cotula coronopifolia</i>), and rabbitsfoot grass (<i>Polypogon monspeliensis</i>).	Pickleweed mats	<i>Sarcocornia pacifica</i> - <i>Frankenia salina</i>	G4, S3
Creeping wildrye	Dominated by creeping wildrye (<i>Elymus triticoides</i>)	N/A	<i>Leymus triticoides</i>	Unranked, but noted as 'Y' for Sensitive

SOURCES:

^a Sawyer, J., T. Keeler-Wolf, J. M. Evens. 2009. A Manual of California Vegetation. Available: <http://vegetation.cnps.org/>.

^b California Department of Fish and Wildlife. 2018. California Sensitive Natural Communities. Last Updated October 15, 2018. Available: <https://www.wildlife.ca.gov/Data/VegCAMP/Natural-Communities>.

Comprehensive eelgrass surveys of the San Francisco Bay-Delta have been conducted in 1987, 2003, 2009, and 2014. The 1987 survey reported a total of 316 acres of eelgrass beds in San Francisco Bay-Delta.⁵⁸ The 2009 and 2014 surveys, which employed both high resolution acoustic mapping and helicopter aerial imagery, reported 3,707 and 2,790 acres of eelgrass beds, respectively present in San Francisco Bay-Delta.

⁵⁸ Merkel & Associates. 2014. San Francisco Eelgrass Inventory; October-November 2014. Prepared for the California Department of Transportation and NOAA National Marine Fisheries Service. November 2014.

During the 2014 survey effort a series of small (< 0.1 acres), disjointed patches of eelgrass were observed along the Suisun Bay shoreline adjacent to Lower Walnut Creek.⁵⁹ No eelgrass was observed in this location during previous survey years, and its current status is unknown. Eelgrass presence within Suisun Bay likely fluctuates annually based on water salinity. No impact on eelgrass communities are expected to result from project implementation, as any eelgrass within the vicinity would occur outside of the project area.

Construction Impacts

Construction activities associated with the restoration project, public access and recreational facilities, and vegetation management are summarized under *Construction Impacts* under a.1. *Western Pond Turtle* analysis, above.

The project would include the implementation of construction activities within sensitive natural communities in the project area. Construction activities to support restoration would include mass grading using heavy equipment within sensitive natural communities such as pickleweed marsh, tidal marsh, and creeping wildrye within the North, Middle, and South Reaches. Construction associated with public access and recreational infrastructure would occur in existing upland habitat. Recreational infrastructure-related construction activities that could impact sensitive natural communities include clearing and grubbing, and grading and fill used to construct trails and wildlife viewing platforms in the North Reach. However, these facilities would be constructed to avoid sensitive natural communities such as creeping wildrye. Vegetation management would include removal of creeping wildrye for the purpose of collection, propagation and re-vegetation post-restoration and would result in no net loss of creeping wildrye. As described in the Chapter 1, Project Description, graded areas will be planted as soon as possible after construction to stabilize the newly graded soil while also being timed with late fall/early winter rain events. This would minimize adverse impacts from erosion on sensitive natural communities within the construction areas. Additionally, the project would comply with SWPPP and erosion control requirements to reduce or eliminate the offsite migration of pollutants and sediment to sensitive natural communities. Indirect impacts to sensitive natural communities could also occur if invasive species are introduced or spread throughout the site by equipment or if construction activities extend into sensitive natural communities outside of the work area and disturb those areas with construction equipment. The project would implement vegetation management, which would reduce the concentration of invasive non-native plant species, and propagate native upland species.

The net creation of sensitive natural communities (i.e., non-tidal pickleweed, tidal brackish marsh and tidal pickleweed marsh) is summarized under the Habitat Restoration and Conversion section below.

No construction activities would occur within the current locations of Sago pondweed (i.e., near the mouths of Lower Walnut Creek and Pacheco Creek); however, submerged aquatic vegetation can be somewhat ephemeral, changing locations over time. Direct impacts could result if a floating dock and pile supports are installed in a location where Sago pondweed is located.

⁵⁹ Merkel & Associates. 2014. San Francisco Eelgrass Inventory; October-November 2014. Prepared for the California Department of Transportation and NOAA National Marine Fisheries Service. November 2014.

Breeching levees along Lower Walnut Creek and Pacheco Creek upstream of Sago pondweed may indirectly impact this community by temporarily increasing suspended sediments that may cover the pondweed. Therefore, construction would result in a **potentially significant** impact.

Operational/Long-term Impacts

Ongoing maintenance activities, public access and recreational facilities, and habitat restoration and conversions are summarized under *Operational/Long-term Impacts* under a.1. *Western Pond Turtle* analysis, above.

Ongoing Maintenance

Levee inspections and maintenance would occur on the levees, which do not occur in sensitive natural communities, but may occur adjacent to submerged aquatic vegetation (e.g., sago pondweed); therefore, bank repairs may have potential to cause soils to enter adjacent waters. However, this would be offset by the long-term benefit of stabilizing the banks and preventing future sedimentation. Maintenance activities in jurisdictional areas will follow BMPs outlined in the District's RMA with CDFW. In both jurisdictional and non-jurisdictional areas, standard BMPs to avoid erosion and accidental releases into adjacent waterways will be implemented including, but not limited to, use of wattles or silt fencing and covering stockpiles. Ongoing maintenance activities are expected to have a **less-than-significant impact** on sensitive natural communities.

Public Access and Recreational Facilities

Preliminary designs of the public access and recreational facilities indicate that hiking trails and wildlife viewing points would be constructed in what are currently upland habitats. Post-restoration, as tidal action is restored to the project area, an estimated 0.35 miles of the trails would be in the vicinity of sensitive natural communities, such as tidal wetland and channels. However, the project would include elevated trails, 8 feet wide and 10 to 30 feet above sea level, and bridges that span tidal channels, allowing hikers to avoid sensitive natural habitats, and wildlife viewing points in the vicinity of tidal marsh would have taller guardrails, solid fencing and educational signage to discourage the public from straying off of trails.

A proposed trail running east-west to a wildlife viewing area would be near a new channel that would be excavated west of Lower Walnut Creek as part of the restoration project. This trail would be in the vicinity of tidal marsh once post-restoration tidal action converts upland grassland into tidal marsh. Because the trail would be 8-feet wide and 10- to 30-feet above sea level, and because there are no trails or other features north or south of the trail that would encourage short-cutting through creation of "bootleg trails", there is a low probability that hikers would trample or disturb sensitive natural communities. Therefore, impacts would be **less than significant**.

Habitat Restoration and Conversion

Vegetation management activities would include collection, propagation and re-vegetation of creeping wildrye, resulting in no net loss of creeping wildrye habitat. Seasonal wetlands and lowland grasslands would be restored as a mosaic on the landscape, and would contain target vegetation (e.g. creeping wildrye, sedges, rushes, and forbs). The net creation of sensitive natural communities (i.e., non-tidal pickleweed, tidal brackish marsh and tidal pickleweed marsh) would

result from the project (see Table 1). Short-term loss and disturbance to sensitive natural communities would be offset by long-term increases in sensitive natural communities.

Impacts and Mitigation Measures

Impact BIO-7: The project would result in potential impacts on sensitive natural communities.

Based on the analysis presented above, implementation of **Mitigation Measure BIO-1: General Construction-related Mitigation Measures**, described under *Impact a)* above, **Mitigation Measure BIO-8: Protect Water Quality for Fish Habitat**, and the following **Mitigation Measure BIO-10: General Measures to Avoid and Minimize Impacts to Sensitive Natural Communities, Wetlands, and Waters**, **BIO-11: Develop and Implement a Restoration Monitoring and Adaptive Management Program** and **Mitigation Measure BIO-12: Protection of Submerged Aquatic Vegetation Fish Habitat** would reduce construction-related impacts to less than significant by ensuring that sensitive natural communities are delineated and, to the extent feasible, avoided; minimizing impacts by developing and implementing an erosion control plan and SWPPP; using a silt curtains to protect submerged aquatic vegetation; avoiding the introduction of non-native, invasive plant species; using only pesticides certified by the USEPA for use in/adjacent to aquatic environments, and monitoring the vegetation and geomorphology for adaptive management to meet the goals of the project. With implementation of the mitigation measures listed above, construction-related impacts would be less than significant. Operational and long-term effects of the project would be **less than significant**.

Mitigation Measure BIO-10: General Measures to Avoid and Minimize Impacts to Sensitive Natural Communities, Wetlands, and Waters

The District's construction contractor(s) shall implement the following general avoidance and minimization measures to protect sensitive natural communities, wetlands, and waters during construction:

- Work areas shall be delineated with stakes and flagging prior to construction to avoid sensitive natural resources outside of the project area. Any construction-related disturbance outside of these boundaries, including driving, parking, temporary access, sampling or testing, or storage of materials, shall be prohibited without explicit approval of the District and biologist.
- The introduction of exotic plant species shall be avoided through physical or chemical removal and prevention. Measures to prevent the introduction of exotic plants into the project site via vehicular sources shall include vehicle cleaning for vehicles coming to the site and leaving the site. Earthmoving equipment shall be cleaned prior to transport to the project area. Weed-free rice straw or other certified weed-free straw shall be used for erosion control.
- Construction equipment shall not be stored in sensitive natural communities, wetlands, or waters.
- Only herbicides to be used will be USEPA certified for use in/adjacent to aquatic environments.

Mitigation Measure BIO-11: Develop and Implement a Restoration Monitoring and Adaptive Management Program

The District will develop and submit a Monitoring and Adaptive Management Plan to be implemented during the monitoring period to assure desired outcomes. The plan will be submitted to the CDFW, Regional Water Quality Control Board, U.S. Army Corps of Engineers, and BCDC prior to the start of construction. Elements of this plan shall be based upon final project design and construction documents. The plan shall include description of protocols for monitoring vegetation and geomorphology to evaluate project performance, monitoring schedule, performance criteria and thresholds that would trigger adaptive management actions, and reporting. An annual report shall be prepared and provided to the above-listed regulatory agencies in each year that post-construction monitoring is conducted.

Mitigation Measure BIO-12: Protection of Submerged Aquatic Vegetation Fish Habitat

Prior to the start of construction or other habitat restoration and conversion activities, a USFWS-approved biologist shall conduct a pre-construction survey for submerged aquatic vegetation (SAV) (e.g., sago pondweed) at the shoreline of the North Reach. Locations of SAV shall be mapped in GIS, and the biologist shall establish an adequate buffer area to exclude activities that would directly remove or alter the habitat of, or result in indirect adverse impacts on, the SAV. Buffers shall be shown on maps and construction drawings to ensure avoidance. If construction work cannot avoid the SAV buffers, a biologist will be on-site during in-water work to ensure that the SAV is avoided. No construction activity, including grading, will be allowed until the above steps are completed. If direct impacts cannot be avoided, the District shall consult with the CDFW to devise a plan for minimizing the impacts by one or more of the following methods: 1) salvage and replant native SAV at the same location following construction; 2) salvage and relocate the native SAV to a suitable off-site location with long-term assurance of site protection; 3) collect seeds or other propagules of native SAV for reintroduction at the site or elsewhere; or 4) payment of fees in lieu of preservation of individual native SAV plants, to be used for conservation efforts elsewhere. In the event that non-native species of SAV are impacted during construction, impacts would be offset using native species such as sago pondweed (*Stuckenia pectinata*). Any native SAV observed during surveys will be reported to the USFWS and CDFW.

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*)

“Waters of the United States,” are defined in the Code of Federal Regulations (33 CFR 328.3[a]; 40 CFR 230.3[s]) as rivers, streams, mud flats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters. These waters fall under the jurisdiction of the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (CWA). Additionally, the Corp regulates navigable waters under Section 10 of the Rivers and Harbors Act (RHA). Navigable waters are defined as those waters that are subject to the ebb and flow of the tide or that are presently used, have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. The San Francisco Bay Regional Water Quality

Control Board (RWQCB) regulates CWA Section 404 waters and RHA Section 10 waters under Section 401 of the CWA. The RWQCB also regulates waters of the state under the Porter-Cologne Water Quality Control Act. Waters of the state are broadly defined as “any surface water or groundwater, including saline waters, within the boundaries of the state.”

A wetland delineation was conducted by ESA on January 5 and 6, and on April 28, 2017 within the majority of the project area. The delineation used the “Routine Determination Method” as described in the *1987 Corps of Engineers Wetland Delineation Manual*.⁶⁰ The 1987 Manual was used in conjunction with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*.⁶¹ For areas where the 1987 Manual and the Arid West Supplement differ, the Arid West Supplement was followed. Wetlands and waters were classified using commonly accepted habitat types. In areas outside the 2017 wetland delineation study area, but within the project area, past delineations completed for other projects that have been verified by USACE were used to map wetlands and waters. Wetland delineations completed by others includes the south section of the north reach and west section of the south reach.^{62,63} All wetlands and waters within the project area are shown in **Table 16**.

TABLE 16
POTENTIALLY JURISDICTIONAL WETLANDS AND
WATERS OF THE U.S. AND OF THE STATE IN THE PROJECT AREA

Feature Type	Area (acres)
Section 404 Waters	
Wetlands	
Tidal marsh	196.30
Pickleweed marsh	134.06
Seasonal wetland	1.33
Total Wetlands	331.69
Other Waters	
Tidal Channel	71.41
Pond	3.09
Scald	17.94
Total Other Waters	92.44
Total Area of Wetland and Other Waters Features	424.13

⁶⁰ Environmental Laboratory, Department of the Army, 1987. Corps of Engineers Wetland Delineation Manual (Technical Report Y-87-1). U.S. Army Corps of Engineers. Waterways Experimental Station. Vicksburg, Mississippi.

⁶¹ U.S. Army Corps of Engineers, 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-06-16. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

⁶² LSA, 2012. Tesoro Waterfront Road Pipelines, Martinez, Contra Costa County, California, Waters of the United States.

⁶³ Salix Consulting, Inc. 2015. Conco Development Martinez Preliminary Jurisdictional Determination February 5, 2016.

The wetlands and waters within the project area include 424.13 acres of potentially state and federally jurisdictional wetlands and other waters. Potentially jurisdictional features are provided in Table 16.

Construction Impacts

Construction activities associated with the restoration project, public access and recreational facilities, and vegetation management are summarized under *Construction Impacts* under a.1. *Western Pond Turtle* analysis, above.

The project would include the implementation of construction activities and vegetation management activities within potentially jurisdictional wetlands and waters in the project area. Graded areas would be planted as soon as possible after construction to stabilize the newly graded soil to minimize adverse impacts from erosion on potentially jurisdictional wetlands and waters. Additionally, adherence with the project's SWPPP would reduce or eliminate the migration of pollutants into adjacent wetlands and waters. Construction associated with public access and recreational infrastructure would occur in existing upland habitat. Recreational infrastructure-related construction activities that could impact sensitive natural communities include clearing and grubbing, and grading and fill used to construct trails and wildlife viewing platforms in the North Reach. However, these facilities would be constructed to avoid wetlands.

Breeching of the tidal channels along the Lower Walnut Creek and Pacheco Creek could indirectly impact waters within these creeks by increasing suspended sediments. Additionally, construction impacts to wetlands could occur if invasive species are spread by equipment or if construction activities extend into wetlands or waters outside of the work area and disturb those areas with construction equipment. These impacts would be **potentially significant**.

Operational/Long-term Impacts

Ongoing maintenance activities, public access and recreational facilities, and habitat restoration and conversions are summarized under *Operational/Long-term Impacts* under a.1. *Western Pond Turtle* analysis, above.

Ongoing Maintenance

Levee inspections and maintenance would occur on the levees, which do not occur in wetlands, but activities may occur adjacent to wetlands and bank repairs may have potential to cause soils to enter adjacent waters. Maintenance activities in jurisdictional areas would follow BMPs outlined in the District's RMA with CDFW. In both jurisdictional and non-jurisdictional areas, standard BMPs to avoid erosion and accidental releases into adjacent waterways would be implemented including, but not limited to, use of wattles or silt fencing and covering stockpiles. Ongoing maintenance activities are expected to have a **less-than-significant impact** on wetlands.

Public Access and Recreational Facilities

Preliminary designs of the public access and recreational facilities indicate that hiking trails and wildlife viewing points would be constructed in what are currently upland habitats.

A proposed a trail running east-west to a wildlife viewing area near a new channel that would be excavated west of Lower Walnut Creek as part of the restoration project. This trail would be in

the vicinity of tidal marsh once post-restoration tidal action converts upland grassland into tidal marsh. Because the trail would be 8 feet wide and 10 to 30 feet above sea level, and because there are no trails or other features north or south of the trail that would encourage short-cutting through creation of “bootleg trails,” there is a low probability that hikers would trample or disturb wetlands. Therefore, impacts would be **less than significant**.

Habitat Restoration, Public Access Features, and Conversion

Restoration would result in the conversion of existing non-tidal wetlands and waters to tidal wetlands and waters. A portion of this increase would be from the creation of these features from existing non-jurisdictional features, while the remainder would be from the change of non-tidal wetlands and waters to these tidal features from the restoration of wetland hydrology to the Project area. Overall, the project would directly restore and enhance approximately 130 acres of tidal wetland, 21 acres of non-tidal wetlands, 14 acres of tidal waters, and 4 acres of non-tidal waters. In addition, long-term habitat evolution due to sea-level rise and future benefits to existing adjacent habitats due to increased ecological connectivity and improved tidal hydrology within the next 50 years would benefit and enhance wetlands, waters, and upland areas adjacent to the project site, resulting in an estimated 100 acres of additionally enhanced habitat. Although there would be some conversion of non-tidal wetlands and waters to tidal and wetlands and waters, the project would result in an overall net increase in wetlands and waters and would increase the ecological function of the wetlands and waters on-site. Therefore, the project would have long-term benefits to the extent and function wetlands and waters and would result in **less-than-significant impacts** to wetlands and waters.

Impacts and Mitigation Measures

Impact BIO-8: The project would result in potential impacts on wetlands and other waters.

Based on the analysis presented above, construction-related activities would significantly impact wetlands and other waters. However, implementation of **Mitigation Measure BIO-1: General Construction-related Mitigation Measures** and **Mitigation Measure BIO-10: General Measures to Avoid and Minimize Impacts to Sensitive Natural Communities, Wetlands, and Waters**, described under *Impact a)* and *Impact b)* above, would reduce impacts to less than significant by isolating the in-water work area to isolate suspended sediments to the work area, restricting work activities to within the construction footprint, and by avoiding the introduction and spread of weeds.

Although the project would include grading and vegetation management activities within potentially jurisdictional wetlands and waters, and temporal loss of wetlands and waters during construction, these activities would support the goals of habitat restoration and would result in a net increase in wetlands and waters. The project would result in long-term benefits, and therefore the potential operational/long-term impact on wetlands and waters is **less than significant**.

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 with Mitigation Incorporated*)

The project area is located within the Pacific Flyway, which includes the entire San Francisco Estuary. While exact migratory corridors through the area are unknown and vary by species, birds typically follow coastlines, rivers, and mountain ranges in their migratory passages from wintering to breeding grounds and back again. In addition, special-status fish species may temporarily utilize the lower Walnut Creek channel as a movement corridor. However, their presence within the project area would only be temporary and would likely occur outside the window in which in-water construction is proposed. Native wildlife nursery sites primarily refer to individual nesting birds as well as colonial nesting birds; the former are known to be present within the project area.

Construction Impacts

Construction activities associated with the restoration project, public access and recreational facilities, and vegetation management are summarized under *Construction Impacts* under a.1. *Western Pond Turtle* analysis, above.

Native wildlife nursery sites include individual nesting birds, as well as heron, egret and cormorant rookeries. The project site has no known heron or egret rookeries, and no stands of vegetation (i.e., tall trees or shrubs) that would provide potential rookery sites; therefore, no direct impacts to rookeries are expected. Individual nesting birds could potentially nest on the project site and could be directly or indirectly impacted by the project construction, as described under *Impact a*), above. Implementation of Mitigation Measures BIO-1, BIO-3, and BIO-4 would reduce these impacts to less than significant, as described under *Impact a*). Therefore, impacts to terrestrial wildlife corridors resulting from project construction would be **less than significant** after incorporation of mitigation.

No impacts from aquatic construction activities on fish migration corridors are expected as a result of project implementation. All construction work that is expected to take place within the aquatic environment would occur within NMFS-approved work windows, when migratory fish presence is unlikely. However, construction-related water quality impacts could be potentially **significant** on migratory fish, if present during construction work.

Impacts and Mitigation Measures

Impact BIO-9: The project would result in potential construction-related impacts on movement of native resident or migratory fish species or established native resident or migratory wildlife corridors.

Construction-related impacts are not expected to significantly impact wildlife movement or wildlife corridors, but would result in potentially significant water quality impacts on migratory fish. However, implementation of **Mitigation Measure BIO7: Construction Work Window**, **Mitigation Measure BIO-8: Protect Water Quality for Fish Habitat**, described under *Impact a*), would ensure that construction would occur when migratory fish presence is unlikely and water

quality impacts associated with in-water construction would be confined to the immediate area of the activity and would reduce potential impacts on migratory fish corridors to **less than significant**.

Individual nesting birds could potentially nest on the project site and could be directly or indirectly impacted by the project construction, as described under *Impact a)*, above.

Implementation of **Mitigation Measure BIO-1: General Construction-related Mitigation Measures, Mitigation Measure BIO-3: Avoid and Minimize Impacts to Nesting Birds, Except Rails, and Mitigation Measure BIO-4: Avoid and Minimize Impacts to California Black Rail and Ridgway's Rail** would reduce these impacts to less than significant, as described under *Impact a)*. Therefore, impacts to terrestrial wildlife corridors resulting from project construction would be **less than significant** after incorporation of mitigation.

Operational/Long-term Impacts

Ongoing maintenance activities, public access and recreational facilities, and habitat restoration and conversions are summarized under *Operational/Long-term Impacts* under a.1. *Western Pond Turtle* analysis, above.

Ongoing Maintenance

Levee inspections and maintenance are not expected to impact wildlife corridors since this work would not interfere with the movement of terrestrial, avian, or aquatic species and would not impact nursery sites. Bank repairs may have potential to cause soils to enter adjacent waters; however, this would be offset by the long-term benefit of stabilizing the banks and preventing future sedimentation. Maintenance activities in jurisdictional areas would follow BMPs outlined in the District's RMA with CDFW. In both jurisdictional and non-jurisdictional areas, standard BMPs to avoid erosion and accidental releases into adjacent waterways would be implemented including, but not limited to, use of wattles or silt fencing and covering stockpiles. Therefore, ongoing maintenance activities would result in **less-than-significant impact** on wildlife corridors and nursery sites.

Public Access and Recreational Facilities

The project site is located within the Pacific Flyway along the southern shoreline of Suisun Bay. The waters of the Bay, including the wetland around Suisun Bay, provide valuable stopover habitat for migratory birds. Restoration would result in the creation of seasonal wetlands and tidal marsh ponds, which can provide resting and foraging habitat for migratory waterfowl and shorebirds. The North Reach public access plan includes a 3,600 square foot interpretive/education center that would be available on a limited basis for some nighttime events, for which it is assumed there would be internal lighting, and there would be low-level lighting in the parking lot and access paths immediately adjacent to the parking lot. The proposed structures, by providing a new nighttime light source, was evaluated for the risk of increasing nighttime bird collisions compared to existing conditions.

Many bird collisions are induced by artificial night lighting, particularly from large buildings, which can be especially problematic for migrating songbirds since many are nocturnal migrants.⁶⁴ Direct effects on migratory as well as resident birds moving through an area could include death or injury as the birds collide with lighted structures and other birds that are attracted to the light, as well as collisions with glass during the daytime, while indirect effects for migratory birds include delayed arrival at breeding or wintering grounds, and reduced energy stores necessary for migration, winter survival, or subsequent reproduction.⁶⁵

The project site is located in a generally industrial and urban setting and surrounded by many other light sources that raise ambient light levels at night. Development facilitated under the proposed project is expected to result in a minor increase in the amount of light and glare generated at the project site. Although the proposed project is located in proximity to San Francisco Bay, given the small size of the proposed building compared to the adjacent significant light sources, the proposed project does not provide a significant new source of light that would act as an attractant for nocturnal migrating birds, resulting in collisions and avian mortality. Therefore, based on the above analysis, impacts would be **less than significant**.

Habitat Restoration and Conversion

As described under *Operational/Long-term Impacts* under a.3. *California Black Rail and Ridgway's Rail*, the project would restore and enhance tidal channels and tidal wetland habitats and improve the ecological function of these habitat types in Lower Walnut Creek.

These ecological improvements would benefit fish migratory species. In particular, recent documentation on the populations of pelagic fish within the Delta and Suisun Marsh continue to show a significant decline in abundance, placing the continued viability of many populations in serious jeopardy. As such, restoration or enhancement projects with the potential to benefit native and migratory species are of paramount importance. In addition, the increase in tidal marsh habitat would benefit nursery (i.e., nesting) sites for individual nesting marsh species, such as Ridgway's rail and black rail.

The project would result in potential operational/long-term impacts on movement of native resident or migratory fish or wildlife species or established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

As presented in the previous operation/long-term impact discussions, upon completion, the project would benefit native and migratory wildlife species. Therefore, operation/long-term impacts on movement of native and migratory wildlife and wildlife corridors would be **less than significant**.

⁶⁴ Ogden, L.E., 1996. Collision Course: The Hazards of Lighted Structures and Windows to Migrating Birds, Special Report for the World Wildlife Fund Canada and the Fatal Light Awareness Program, September 1996. Available: www.flap.org. Accessed February 2, 2015.

⁶⁵ Gauthreaux, S.A., Belser, C.G., 2006. Effects of Artificial Night Lighting on Migrating Birds, In: Rich, C. and Longcore, T., Ecological Consequences of Night Lighting. Covelo, CA: Island Press, 2006.

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

Contra Costa County Tree Protection and Preservation Ordinance

The project area is within unincorporated Contra Costa County, which has a Tree Protection and Preservation Ordinance (Chapter 816-6) that protects trees that are adjacent to or part of a riparian, foothill woodland or oak savanna area, or part of a stand of four or more trees, measures twenty inches or larger in circumference, and is included in a list of indigenous trees in section 816-6.6004. In addition, Chapter 816-4.402 of the Ordinance Code protects heritage trees, defined as any tree or group of trees that meets any of the following criteria: seventy-two inches or more in circumference, having historical or ecological interest or significance, being dependent upon each other for health or survival, or being considered an outstanding specimen of its species as to such factors as location, size, age, rarity, shape, or health.

Contra Costa County General Plan 2005 - 2020⁶⁶

Chapter 8, Conservation Element, and Chapter 7, Public Facilities/Services Element, of the Contra Costa County General Plan (General Plan) outlines goals and policies developed for resource protection and flood control in the unincorporated County. One of the County's Overall Conservation Policies states that watersheds, natural waterways, and areas important for the maintenance of natural vegetation and wildlife populations shall be preserved and enhanced. The General Plan also includes the following specific goals: the preservation and restoration of the natural characteristics of the San Francisco Bay/Delta estuary and adjacent lands; the protection of rare, threatened and endangered species of fish, wildlife and plants, and significant plant communities; a significant net increase in wetland values and functions; maintain the ecology and hydrology of creeks and streams and provide an amenity to the public, while at the same time preventing flooding, erosion and danger to life and property; enhance opportunities for public accessibility and recreational use of creeks; and protect and enhance the natural resources associated with creeks and the Delta, and their riparian zones, without jeopardizing the public health, safety, and welfare. The General Plan also specifically recognizes the value of wetland areas, especially the salt marshes and tidelands of the bay and delta.

Construction Impacts

Construction activities associated with the restoration project, public access and recreational facilities, and vegetation management are summarized under *Construction Impacts* under a.1. *Western Pond Turtle* analysis, above.

As described in the previously in this section, field surveys have been conducted to identify the potential for sensitive biotic resources on the project area.

The project requires removal of one species of shrub/tree in the project area as part of vegetation management, a non-native saltcedar (*Tamarix ramosissima*), which the California Invasive Plant Council rates as a "high" threat to California's natural ecology.⁶⁷ This species does not meet the

⁶⁶ Contra Costa County Department of Conservation and Development, 2005. County of Contra Costa General Plan 2005 – 2020.

⁶⁷ California Invasive Plant Council. <https://www.cal-ipc.org/plants/inventory/>. Accessed December 10, 2018.

definitions of a protected or heritage tree under the Contra Costa County Tree Protection and Preservation Ordinance.⁶⁸

Construction activities would result in tidal marsh habitat restoration that would provide long-term benefits to several special-status species as described under *Impacts a)*, above, and mitigation measures described under *Impacts a)*, *b)* and *c)* would protect special-status species, sensitive natural communities, and protected wetlands and waters during construction. The project would be consistent with the General Plan goals and policies.

All construction activities would be consistent with the County's Tree Protection and Preservation Ordinance, as well as the goals and policies of the General Plan; therefore, impacts would be **less than significant**.

Operational/Long-term Impacts

Ongoing maintenance activities, public access and recreational facilities, and habitat restoration and conversions are summarized under *Operational/Long-term Impacts* under a.1. *Western Pond Turtle* analysis, above.

Ongoing Monitoring and Maintenance Activities

Impacts associated with ongoing monitoring and maintenance would be short duration (i.e., on the order of hours to days) and infrequent, and would be a continuation of comparable operations and maintenance activities currently implemented by the District on existing levees. Mitigation measures described under *Impacts a)*, *b)* and *c)* would protect special-status species, sensitive natural communities, and protected wetlands and waters. In addition, maintenance activities in jurisdictional areas would follow BMPs outlined in the District's RMA with CDFW. In both jurisdictional and non-jurisdictional areas, standard BMPs to avoid erosion and accidental releases into adjacent waterways would be implemented including, but not limited to, use of wattles or silt fencing and covering stockpiles. These practices are consistent with the goals and policies of the General Plan. Levee inspections and maintenance would not conflict with local policies or ordinance since this work would not occur in biologically rich areas or require removal of trees; furthermore, the work does not have the potential for impacting adjacent aquatic habitats. Ongoing monitoring and maintenance activities are expected to have a **less-than-significant impact**.

Public Access and Recreational Facilities

Chapter 9: Open Space Element of the General Plan acknowledge the value of the County providing major parks to serve the urbanized areas because they are essential to the physical and mental well-being of all segments of their populations, and because preservation of lands for outdoor recreation also assists in conservation of the county's unique natural, scenic, or cultural resources. The development of public access and recreation infrastructure would be consistent with the goals and policies of the General Plan, and there would be **no impact**.

⁶⁸ Contra Costa County Tree Protection and Preservation Ordinance (Chapter 816-6).

Habitat Restoration and Conversion

The project would restore and enhance wetlands and associated habitats and improve the ecological function and quantity, quality, and connectivity of these habitat types in Lower Walnut Creek, while improving flood control protection; these outcomes would be consistent with the goals and policies of the General Plan and there would be **no impact**.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? (*No Impact*)

Within Contra Costa County, there is an approved East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan,⁶⁹ however, the project area is not within the Plan inventory area. Therefore, the project would not conflict with the provisions of an adopted or approved local or regional conservation plan and there would be **no impact**.

⁶⁹ Jones and Stokes, 2006. East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan. http://www.co.contra-costa.ca.us/depart/cd/water/HCP/archive/final-hcp-rev/final_hcp_nccp.html. Accessed December 10, 2018.

2.2.5 Cultural Resources

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
V. CULTURAL RESOURCES — Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Discussion

Background

ESA staff completed a records search at the Northwest Information Center (NWIC) of the California Historical Resources Information System at Sonoma State University on September 15, 2015.⁷⁰ The purpose of the background research was to (1) determine whether known cultural resources have been recorded within the vicinity of the proposed project; (2) assess the likelihood for unrecorded cultural resources to be present based on historical references and the distribution of nearby sites; and (3) develop a context for the identification and preliminary evaluation of cultural resources.

Records at the NWIC indicate that 12 cultural resources studies have been completed within a ½-mile radius of the proposed project site. These studies include background research, pedestrian surveys, and a subsurface investigation. Three studies have been completed within the proposed project site, including subsurface archaeological testing along Walnut, Pacheco, and Grayson creeks.⁷¹ The subsurface testing included observation of 13 core samples (five within the proposed project site), each excavated to approximately 40 feet below ground surface. None of the samples contained evidence of cultural resources including midden soil, shell, bone, or other artifacts.

Results of the background research indicate that there are no previously identified cultural resources within the proposed project site. Six cultural resources, including four historic-era archaeological resources, a historic-era railroad segment, and one prehistoric site have been identified in the project vicinity (**Table 17**). University of California, Berkeley archaeologist, N.C. Nelson, originally recorded the nearest prehistoric resource, shell midden CA-CCO-249, during his survey of the San Francisco Bay Area in 1907–1908.⁷² This site is on the east side of Walnut Creek, outside of the project area. Subsequent survey efforts in more recent years have

⁷⁰ Northwest Information Center, File No. 15-0448 California Historical Resources Information System at Sonoma State University, Rohnert Park. On file at ESA, September 15, 2015.

⁷¹ Tremaine and Associates, Cultural Resources Subsurface Testing of Proposed Levee Improvements along Walnut, Grayson, and Pacheco Creeks, Contra Costa County, California. Prepared for Hultgren and Tillus. On file (S-67002), Northwest Information Center, 2009.

⁷² Nelson, N.C., Shellmounds of the San Francisco Bay Region in *American Archaeology and Ethnology*, Vol. 7, No. 4, University of California Publications, Berkeley, CA, 1909.

not relocated the site and no additional data is available. The site may have been destroyed during the course of earlier agricultural activities, and cultural constituents may have either been capped by later placement of fill or have been paved/built over. Additionally, the re-alignment of Pacheco Creek and subsequent maintenance activities may have contributed to obscuring or eliminating the site.

TABLE 17
CULTURAL RESOURCES RECORDED WITHIN ½-MILE OF THE PROPOSED PROJECT

Trinomial	Primary #	Site Type	Distance from Project
CA-CCO-249	P-07-000130	Prehistoric habitation site	250 feet east
CA-CCO-697H	P-07-000438	Historic-era farmstead	1,300 feet west
CA-CCO-732H	P-07-000806	Atchison, Topeka & Santa Fe Railroad	Adjacent to the south
---	P-07-002674	Historic-era refuse concentration and foundation	1,300 feet south
---	P-07-002675	Historic-era refuse concentration	150 feet southwest
---	P-07-002921	Historic-era refuse concentration	3,000 feet east

SOURCE: NWIC, 2015

The nearest historic-era archaeological site is an artifact concentration designated as P-07-002675. The site was recorded during monitoring for installation of a pipeline and consists of fragments of at least 45 bottles and jars. The objects are common components of other deposits associated with mid-twentieth century rural residences and because of the relatively late date of manufacture, as well as the nature of the objects themselves, the assemblage was recommended not historically significant.⁷³

Most of the project area was historically tidal marsh and is underlain by weak compressible clays and silts commonly referred to as bay mud. In general, areas within the historic marsh footprint that are now above natural marsh elevations have been subject to fill placement. In the late 1960s, the lowest four miles of Walnut and Pacheco creeks became part of a U.S. Army Corps of Engineers flood control project. Levees were constructed along the creek banks and the Walnut Creek channel was dredged to provide flood conveyance.

On November 14, 2017, an ESA archaeologist monitored a geotechnical boring in the South Reach portion of the proposed project site. The first 5 feet of the boring consisted of loose, dry, brown dirt. Below this, bay mud was encountered. This dark, wet, dense mud continued well below 18 feet. No cultural material was identified in the samples, bore hole, or in the area surrounding the sampling location.

ESA completed a cursory survey (walking transects no greater than 10 meters wide where feasible, observing from vantage points where access was limited) at both the South and North Reach of the proposed project site. No cultural resources were encountered during the survey. At the South Reach, ground visibility was very low, 5 to 10 percent, due to dense vegetation throughout the area. Vegetation included grasses, thistles, and pickleweed. All of the vegetation

⁷³ Price, Heather, Site Record for P-07-002675. Prepared by William Self Associates. On file, NWIC, 2004.

was low-lying, with only a few shrubs in the South Reach that were more than 2 feet high. Where visible, the soil was dry, light brown, and loose, similar to that in the first 5 feet of the bore. At various locations in the South Reach, boot scrapes were used to reveal the ground surface. During the survey, a few fragments of modern brick and concrete were identified, but no historic-era or Native American cultural material was encountered in the survey of the South Reach.

Tremaine and Associates⁷⁴ observed three core samples in the Middle Reach, each excavated to approximately 40 feet below ground surface. None of the samples contained evidence of cultural resources including midden soil, shell, bone, or other artifacts, and no cultural resources were observed on the surface in the Middle Reach proposed project site.

At the North Reach, including Option B, a cursory survey was conducted focusing in the northwestern section and the areas adjacent to the access route in the central area. During this survey, areas of greater ground visibility were more carefully inspected for cultural material. The vegetation of the North Reach is similar to that of the South Reach, with grasses, thistles, and pickleweed. The North Reach had a greater variety of the vegetation, than the South, with more low shrubs and ice plants. The soils, where visible, were composed mostly of sand with varying amounts of small pebbles. Ground visibility was overall greater than that of the South Reach, with 20 to 30 percent visibility. While some modern trash and concrete were identified, no historic-era or Native American cultural material was encountered in the survey of the North Reach.

There are no existing buildings or structures on the proposed project site. Most of the project site was historically tidal marsh and is underlain by weak compressible clays and silts commonly referred to as bay mud. In general, areas within the historic marsh footprint that are now above natural marsh elevations have been subject to fill placement. The proposed project site is underlain by marsh deposits of varying thicknesses.

a) Would the project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5? (*Less than Significant*)

CEQA Guidelines Section 15064.5 requires the lead agency to consider the effects of a project on historical resources. A historical resource is defined as any building, structure, site, or object listed in or determined to be eligible for listing in the California Register of Historical Resources (California Register), or determined by a lead agency to be significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, or cultural annals of California. The following discussion focuses on architectural and structural resources.

Archaeological resources, including those that are potentially historical resources according to CEQA Guidelines Section 15064.5, are addressed below under impact b).

The project vicinity has been greatly altered over past 50 years through the construction of the engineered Walnut Creek/Pacheco Creek channel, an extensive network of flood control levees, and several large landfills. Historic maps indicate the proposed project area was within marshland

⁷⁴ Tremaine and Associates, Cultural Resources Subsurface Testing of Proposed Levee Improvements along Walnut, Grayson, and Pacheco Creeks, Contra Costa County, California. Prepared for Hultgren and Tillus. On file (S-67002), NWIC, 2009.

until the mid-1960s when the creeks were channelized and the marsh filled in. The existing levees and other structures were constructed in the mid- to late-1960s. In general, standard utilitarian features such as small earthen levees do not meet the criteria for consideration of eligibility in the California or National Registers unless it is demonstrated that the features are significant as a prime example of their type or constructed by a significant engineer in California history. Research has not indicated that the levees were integral to the history and development of the area and they are not recommended eligible under California Register criterion 1. Research has also not indicated that the levees were constructed by a significant group or engineer, nor are they a prime example of their type; they are not recommended eligible under California Register criteria 2 or 3. In addition, the levees would not provide information that is important to history and they are not recommended eligible under criterion 4. Therefore, the existing levees are not recommended as historical resources for the purposes of CEQA and no further consideration is necessary for the proposed project.

As a result of a records search, background research, and a site survey it was confirmed that no historical resources are present on the proposed project site.⁷⁵ As such, there are no architectural or structural resources on the proposed project site that qualify as historical resources, as defined in CEQA Guidelines Section 15064.5 and impacts would be **less than significant**.

b) Would the project cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5? (*Less than Significant with Mitigation Incorporated*)

CEQA Guidelines Section 15064.5 requires the lead agency to consider the effects of a project on archaeological resources. A significant impact would occur if a project would cause a substantial adverse change to an archaeological resource through physical demolition, destruction, relocation, or alteration of the resource. As a result of a records search, background research, and a site survey, it was determined that no archaeological resources are present on the proposed project site. Based on the survey results and environmental context, there is a low potential that unknown archaeological resources could be discovered during project implementation.⁷⁶

In the unlikely event that a previously unrecorded archaeological resource is identified during project ground disturbing activities and were found to qualify as an historical resource or a unique archaeological resource, any impacts to the resource resulting from the project could be **potentially significant**.

Impacts and Mitigation Measures

Impact CUL-1: The project would result in potential impacts on archaeological resources.

Based on the analysis presented above, implementation of **Mitigation Measure CUL-1: Inadvertent Discovery of Archaeological Resources or Tribal Cultural Resources** would

⁷⁵ ESA, *Lower Walnut Creek Restoration Project North, Middle, and South Reach Contra Costa County, Cultural Resources Survey Report*. Prepared for Contra Costa County Flood Control and Water Conservation District, August 2018.

⁷⁶ ESA, *Lower Walnut Creek Restoration Project North, Middle, and South Reach Contra Costa County, Cultural Resources Survey Report*. Prepared for Contra Costa County Flood Control and Water Conservation District, August 2018.

reduce potentially significant impacts to **less than significant with mitigation incorporated**. This mitigation would ensure that work halt in the vicinity of a find until a qualified archaeologist can make an assessment and provide additional recommendations if necessary, including contacting Native American tribes.

Mitigation Measure CUL-1: Cultural Resources Training and Inadvertent Discovery of Archaeological Resources or Tribal Cultural Resources

Prior to authorization to proceed, a Secretary of the Interior-qualified archaeologist will conduct a training program for all construction and field workers involved in site disturbance. On-site personnel shall attend a mandatory pre-project training that will outline the general archaeological sensitivity of the area and the procedures to follow in the event an archaeological resource and/or human remains are inadvertently discovered.

If prehistoric or historic-era archaeological resources or tribal cultural resources are encountered by construction personnel during project implementation, all construction activities within 100 feet shall halt and the contractor shall notify the Contra Costa County Flood Control & Water Conservation District (District). Prehistoric archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil (“midden”) containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); battered stone tools, such as hammerstones and pitted stones. Historic-era materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse.

The District shall retain a Secretary of the Interior-qualified archaeologist to inspect the findings within 24 hours of discovery. If it is determined that the project could damage a historical resource as defined by CEQA, construction shall cease in an area determined by the archaeologist until a mitigation plan has been prepared, approved by the District, and implemented to the satisfaction of the archaeologist (and Native American representative if the resource is prehistoric). In consultation with the District, the archaeologist (and Native American representative if the resources is prehistoric) shall determine when construction can commence.

The mitigation plan shall recommend preservation in place, as a preference, or, if preservation in place is not feasible, data recovery through excavation. If preservation in place is feasible, this may be accomplished through one of the following means: (1) modifying the construction plan to avoid the resource; (2) incorporating the resource within open space; (3) capping and covering the resource before building appropriate facilities on the resource site; or (4) deeding resource site into a permanent conservation easement. If preservation in place is not feasible, a qualified archaeologist shall prepare and implement a detailed treatment plan to recover the scientifically consequential information from and about the resource, which shall be reviewed and approved by the District (and Native American representative) prior to any excavation at the resource. Treatment for most resources would consist of (but would not necessarily be not limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the significant resource to be impacted by the project. The treatment plan shall include provisions for analysis of data in a regional context, reporting of results within a timely

manner, curation of artifacts and data at an approved facility, and dissemination of reports to local and state repositories, libraries, and interested professionals.

c) Would the project disturb any human remains, including those interred outside of formal cemeteries? (*Less than Significant with Mitigation Incorporated*)

The records search and background research determined that no human remains are known to exist in the proposed project site. Therefore, the proposed project is not anticipated to impact human remains, including those interred outside of formal cemeteries.

While unlikely, if any previously unknown human remains were encountered during ground disturbing activities, any impacts to the human remains resulting from the proposed project could be **potentially significant**.

Impacts and Mitigation Measures

Impact CUL-2: The project would result in potential impacts on human remains.

Based on the analysis presented above, implementation of **Mitigation Measure CUL-2: Inadvertent Discovery of Human Remains** would reduce potentially significant impacts to **less than significant with mitigation incorporated**. This measure shall comply with applicable State laws, including Section 7050.5 of the Health and Safety Code. This would require work to halt in the vicinity of a find and immediate notification of the County coroner. If the coroner determines the human remains are Native American, they would notify the California State Native American Heritage Commission (NAHC), who shall appoint a Most Likely Descendant (MLD) (PRC Section 5097.98).

Mitigation Measure CUL-2: Inadvertent Discovery of Human Remains.

If human remains are encountered by construction personnel during project implementation, all construction activities within 100 feet shall halt and the contractor shall notify the District. The District shall contact the Contra Costa County Coroner. The Native American Heritage Commission (NAHC) will be contacted within 24 hours if the Coroner determines that the remains are Native American. The NAHC will then identify the person or persons it believes to be the most likely descendant from the deceased Native American, who in turn would make recommendations to the District for the appropriate means of treating the human remains and any associated funerary objects.

2.2.6 Energy

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
VI. Energy — Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion

Consistent with Public Resources Code Section 21100(b)(3), this impact analysis evaluates the potential for the project to result in a substantial increase in energy demand and wasteful use of energy during project construction and operation and maintenance. The impact analysis is informed by Appendix G of the CEQA Guidelines. The potential impacts are analyzed based on an evaluation of whether construction energy use estimates for the project would be considered excessive, wasteful, or inefficient. Operational energy use would be negligible once the project is complete because of the limited use of energy for the public access and recreation facilities and maintenance activities.

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

The analysis in this section utilizes the energy input assumptions used to complete the analyses in Section 2.2.3, Air Quality, and Section 2.2.8, Greenhouse Gas Emissions. Because the California Emissions Estimator Model (CalEEMod) program, used for those analyses, does not quantify the fuel volume or type for construction-related sources, additional calculations were completed and are summarized below.

Project Construction

Construction of the project would result in fuel consumption from the use of construction tools and equipment, truck trips to haul material, and vehicle trips generated from construction workers commuting to and from the site. Project construction is expected to consume a total of approximately 125,657 gallons of diesel fuel and 7,534 gallons of gasoline fuel from construction equipment and vendors, hauling, water truck trips, and commuting construction workers.

Construction activities and corresponding fuel energy consumption would be temporary and localized, as the use of diesel fuel and heavy-duty equipment would not be a long-term condition of the project. In addition, there are no unusual project characteristics that would cause the use of construction equipment or haul vehicles that would be less energy efficient compared with other similar construction sites in other parts of the State. In conclusion, construction-related fuel consumption by the project would not result in inefficient, wasteful, or unnecessary energy use compared with other construction sites in the region. The impact on energy resources during the construction phase of the project would be **less than significant**.

Project Operation

Once construction is complete, the source of operational emissions are the mobile source emissions from transportation to the Pacheco marsh and its interpretive facility building(s) and energy consumption from operations of the interpretive center. Fuel consumption from visitor travel would be approximately 3,724 gallons of gasoline and 33 gallons of diesel, annually. Energy consumption for the interpretive/educational building would be approximately 33,040 kWh of electricity and 105,520 thousand British Thermal Units (kBtu) of natural gas, annually.

Public fuel usage due to visiting the Pacheco marsh would not vary from comparable facilities in other parts of the State and would have fuel efficiency measures implemented as required by state law and discussed in impact b) below. The majority of operational activity occurs on weekends as weekday activity is anticipated to be minimal. Public visits to the Pacheco marsh are the majority of energy impacts and are derived from the consumption of transportation fuels. Because the project's operational impacts on energy resources are primarily driven by limited transportation activity, energy impacts would be **less than significant**.

b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency? (*Less than Significant*)

The transportation sector is a major end-user of energy in California, accounting for approximately 39 percent of total statewide energy consumption in 2014.⁷⁷ In addition, energy is consumed in connection with construction and maintenance of transportation infrastructure, such as streets, highways, freeways, rail lines, and airport runways. California's 30 million vehicles consume more than 16 billion gallons of gasoline and more than 3 billion gallons of diesel each year, making California the second largest consumer of gasoline in the world.⁷⁸

With respect to transportation energy, existing energy standards are promulgated through the regulation of fuel refineries and products, such as the Low Carbon Fuel Standard (LCFS), which mandates a 10-percent reduction in the non-biogenic carbon content of vehicle fuels by 2020. Additionally, there are other regulatory program with emissions and fuel efficiency standards established by USEPA and CARB such as Pavley II/LEV III from California's Advanced Clean Cars Program and the Heavy-Duty (Tractor-Trailer) GHG Regulation. CARB has set a goal of 4.2 million Zero Emissions Vehicles (ZEV) on the road by the year 2030.⁷⁹ Further, construction sites will need to comply with State requirements designed to minimize idling and associated emissions, which also minimizes use of fuel. Specifically, idling of commercial vehicles and off-road equipment would be limited to five minutes in accordance with the Commercial Motor Vehicle Idling Regulation and the Off-Road Regulation.⁸⁰ In conclusion, the proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency and impacts would be **less than significant**.

⁷⁷ U.S. Energy Information Administration. 2016. California State Profile and Energy Estimates: Consumption by Sector. Available: <http://www.eia.gov/state/?sid=CA#tabs-2>. Accessed March 2019.

⁷⁸ California Energy Commission. 2016. Summary of California Vehicle and Transportation Energy. Available: http://www.energy.ca.gov/almanac/transportation_data/summary.html#vehicles. Accessed March 2019.

⁷⁹ California Air Resources Board, 2016, *Mobile Source Strategy*, May 2016. Available: <https://www.arb.ca.gov/planning/sip/2016sip/2016mobsrc.htm>. Accessed March 2019.

⁸⁰ California Code of Regulations, 2005. Title 13, Chapter 10, 2485, updated through 2014.

2.2.7 Geology and Soils

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
VII. GEOLOGY AND SOILS — Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to Division of Mines and Geology Special Publication 42.)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

The greater San Francisco Bay Area is located in an area of high seismic activity due to its tectonic setting. Surface rupture can occur when the ground surface is displaced due to fault movement at the earth's surface during seismic events. Such hazards are generally assumed to occur in the vicinity of an active fault trace as they represent an existing plane of weakness. Active faults in the region include the Concord-Green Valley Fault, which runs along the eastern side of the project site, and the Hayward Fault, 13 miles west of the site. While fault rupture has not occurred in the project vicinity, the above-noted Concord-Green Valley Fault Zone poses a risk of surface rupturing.⁸¹ The Concord-Green Valley Fault has an estimated slip rate of two to

⁸¹ California Geological Survey, 2001. Official Map of Alquist-Priolo Earthquake Fault Zones. <http://gis.abag.ca.gov/website/Hazards/?hlyr=apZones>.

eight millimeters/year,⁸² and the USGS estimates a 16% probability that the Concord-Green Valley Fault will experience an earthquake of magnitude 6.7 or greater by the year 2043.⁸³ The State of California, through the Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) prohibits the development of structures for human occupancy across active fault traces without an adequate geotechnical study to demonstrate the hazard is not present.⁸⁴ Under the Alquist-Priolo Act, the California Geological Survey (CGS, formerly the California Division of Mines and Geology) establishes zones on either side of an active fault that delineates areas considered most susceptible to surface fault rupture. These zones are referred to as fault rupture hazard zones and are shown on official maps published by the CGS. The closest active fault to the project area mapped under the Alquist-Priolo Act is the Concord-Green Valley fault which is oriented northwest-southeast and runs along the eastern side of the project site.⁸⁵ In addition, the project is located approximately 13 miles east of the Hayward Fault, well outside of the respective fault rupture hazard zone for the Hayward Fault.

Liquefaction is a phenomenon where saturated subsurface soils lose strength because of increased pore pressure and exhibit properties of a liquid rather than those of a solid. In general, the soils most susceptible to liquefaction are clean, loose, uniformly graded, saturated and fine-grained, and occur close to the ground surface, usually at depths of less than 50 feet. Liquefaction risk maps for Contra Costa County show that soils in the project site have a moderate risk for liquefaction, with a stretch of very high susceptibility soil south of Waterfront Road.⁸⁶

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

Due to the location of an active fault zone along the eastern side of the project, the project has the potential to expose people to property loss or injury/loss of life as a result of fault rupture. The proposed interpretive center may be located in the southwest corner of the North Reach next to

⁸² U.S. Geological Survey. 1999. Earthquake probabilities in the San Francisco bay region: 2000 to 2030? a summary of findings. U.S. Geological Survey Open-File Report 99-517. Available: <http://geopubs.wr.usgs.gov/open-file/of99-517/>.

⁸³ Aagaard, B.T., Blair, J.L., Boatwright, J., Garcia, S.H., Harris, R.A., Michael, A.J., Schwartz, D.P., and DiLeo, J.S. 2016. Earthquake outlook for the San Francisco Bay region 2014±2043 (ver. 1.1, August 2016): U.S. Geological Survey Fact Sheet 2016±3020, 6 p., <http://dx.doi.org/10.3133/fs20163020>.

⁸⁴ The Alquist-Priolo Act designates zones that are most likely to experience fault rupture, although surface fault rupture is not necessarily restricted to those specifically zoned areas. The zones are defined by the California Geological Survey (CGS). An active fault is defined by the State of California as a fault that has had surface displacement within Holocene time (approximately the last 11,000 years). A potentially active fault is defined as a fault that has shown evidence of surface displacement during the Quaternary (last 1.6 million years), unless direct geologic evidence demonstrates inactivity for all of the Holocene or longer. This definition does not, of course, mean that faults lacking evidence of surface displacement are necessarily inactive. Sufficiently active is also used to describe a fault if there is some evidence that Holocene displacement occurred on one or more of its segments or branches. A structure for human occupancy is one that is intended for supporting or sheltering any use or occupancy, which is expected to have a human occupancy rate of more than 2,000 person hours per year (Hart, 1997).

⁸⁵ California Division of Mines and Geology, 1992. The Concord fault, Contra Costa County, California. Released September 30, 1992.

⁸⁶ Association of Bay Area Governments, 2005. Liquefaction Susceptibility Map. Source: USGS Open-File Reports 00-444 and 2006-1037. Available: <http://resilience.abag.ca.gov/earthquakes/#LIQUEFACTION>.

Waterfront Road (see Figure 13). However, this location is just west and outside of the Alquist-Priolo fault zone for the Concord-Green Valley fault. Risks due to seismic shaking and seismic-induced ground failures are discussed in Impacts a.ii) and a.iii) further below. The project would increase visitation to the site due to an expanded recreational trail, some of which would be within the fault zone. However, the use of trails would not expose people to significant risk associated with fault rupture because the project would not include structures on the trail that could increase risk or injury. As discussed in Chapter 1, Project Description, a portion of USBR's Shortcut Pipeline and a portion of CCWD's Recycled Water Pipeline would be re-routed, including vertically, to go up and over the levee core. The re-routed pipelines will be constructed in similar geologic conditions and will not directly or indirectly cause potential substantial adverse impacts due to fault rupture.

Although project construction would include the short-term presence of construction workers in a fault rupture zone, the temporary nature of construction, as well as the lack of structures within the fault zone, would not result in a significant risk to workers. In addition, the project does not include the injection or extraction of groundwater or oil and therefore would not exacerbate the occurrence of fault rupture. Additionally, the construction equipment and associated activities are unlikely to be at risk of damage or to cause injury from the fault rupture. Therefore, the risk of damage to property or injury/loss of life to people as a result of fault rupture is considered **less than significant**.

a.ii) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking? (*Less than Significant*)

Seismic activity in the project area is dominated by the Concord-Green Valley Fault. The Association of Bay Area Governments (ABAG) developed Earthquake Shaking Hazard Maps, which predict the potential for ground shaking during major earthquakes on the active faults in the Bay Area. The proposed project is located in an area with high earthquake shaking potential, rated as 'Violent' shaking severity on the Modified Mercalli Intensity scale for a Magnitude 6.8 earthquake on the Concord-Green Valley fault.⁸⁷ Predicting seismic events is not possible, nor is providing mitigation that can entirely reduce the potential for injury and damage that can occur during a seismic event.

The restoration and enhancement of marsh habitats would not require protection from seismic shaking because no structures would be constructed, other than the interpretive center described further below. As discussed in Chapter 1, Project Description, the Shortcut Pipeline and Recycled Water Pipeline would be re-routed vertically to go up and over the levee core. This re-routing to a surface crossing would occur along the same alignment and would not change the pipelines exposure to seismic shaking from existing conditions. The re-routed pipelines would be designed and constructed in a manner to withstand seismic shaking.

The interpretive center is the only structure proposed for the project that would place people inside a structure. Strong seismic shaking could damage the structure, resulting in risks to people.

⁸⁷ Association of Bay Area Governments, 2003. Shaking Scenarios Map. Based on US Geological Survey. Available: <http://gis.abag.ca.gov/website/Hazards/?hlyr=haywardSouthNorth>.

Because the interpretive center would have people for up to 8 or more hours a day, the design of the structure would be required to comply with the California Building Code (CBC). The CBC and local building ordinances would require that the structural elements of the interpretive center would undergo appropriate design-level geotechnical evaluations prior to final design and construction. The geotechnical investigation would include any necessary recommendations for soils remediation and/or foundation systems necessary to reduce seismic-related hazards to less than significant. Implementing the regulatory requirements in the CBC and local ordinances, and ensuring that buildings and structures are constructed in compliance with the law is the responsibility of the project engineers and building officials.

The CBC describes required standards for the construction, alteration, movement, replacement, location, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California. The standards include earthquake design requirements that determine the seismic design category and then describe the structural design requirements. The geotechnical engineer, as a registered professional with the State of California, is required to comply with the CBC and local codes while applying standard engineering practice and the appropriate standard of care for the particular region in California. The California Professional Engineers Act (Building and Professions Code Sections 6700–6799), and the Codes of Professional Conduct, as administered by the California Board of Professional Engineers and Land Surveyors, provides the basis for regulating and enforcing engineering practice in California. The local building officials are typically with the local jurisdiction and are responsible for inspections and ensuring CBC and local code compliance prior to approval of the building permit. As discussed above, the geotechnical investigations would include recommendations to address geotechnical issues, including seismic shaking and seismic-induced ground failures, such as liquefaction and lateral spreading. With compliance with the regulatory requirements and the implementation of geotechnical design recommendations, impacts relative to seismic shaking and seismically induced ground failure would be **less than significant**.

a.iii) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction? (*Less than Significant*)

Seismic shaking can also trigger seismic-induced ground-failures caused by liquefaction. While seismic-induced liquefaction may damage trails and restored habitat areas, the damage would not result in risks to people, and the damaged trails and habitat could be easily repaired. The re-routing of the Shortcut Pipeline and Recycled Water Pipeline to go vertically up and over the levee core would not change the exposure of either of the pipelines to liquefaction from existing conditions. The interpretive center would be the only proposed structure that would have people inside that could be injured if liquefaction caused structural damage or collapse. However, as discussed above in Impact a.ii), the interpretive center would be constructed in accordance with the current version of the CBC that includes designing the structure to resist damage from liquefaction. With compliance with the regulatory requirements and the implementation of geotechnical design recommendations, impacts relative to seismic-induced ground failure such as liquefaction be **less than significant**.

a.iv) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides? (Less than Significant)

Landslides generally consist of any type of ground movement that occurs primarily due to gravity acting on an over-steepened slope and can occur due to excessive precipitation, man-made activities, or induced by seismic activity. Areas that are more prone to landslides include old landslides, the bases or tops of steep or filled slopes, and drainage hollows. The project site is in an alluvial plain, formed where Walnut Creek meets Suisun Bay. The relatively flat topography of this area makes landslides unlikely in the project area; landslide risk maps show no risk areas in the project sites. The closest area with landslide risk is just west of the edge of the Southern Reach near Pacheco Creek. The wetlands restoration would not create slopes susceptible to landsliding. Therefore, the proposed project would not increase the exposure of people or associated structures to increased risk of loss, injury, or death at the project site due to seismically-induced landslides and impacts would be **less than significant**.

b) Would the project result in substantial soil erosion or the loss of topsoil? (Less than Significant)

Construction of the proposed project would have the potential to result in soil erosion during excavation, grading, trenching, and soil stockpiling. Because the overall footprint of construction activities would exceed one acre, the proposed project would be required to comply with the NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction and Land Disturbance Activities (Order 2009-0009-DWQ, NPDES No. CAS000002; as amended by Orders 2010-0014-DWQ and 2012-006-DWQ) (Construction General Permit) and the local stormwater ordinances. **Mitigation Measure BIO-1** includes a summary of the requirements of the NPDES Construction General Permit. These state and local requirements were developed to ensure that stormwater is managed and erosion is controlled on construction sites.

The Construction General Permit requires preparation and implementation of a SWPPP, which requires applications of BMPs to control runoff and runoff from construction work sites. The BMPs would include, but would not be limited to, physical barriers to prevent erosion and sedimentation, construction of sedimentation basins, limitations on work periods during storm events, use of infiltration swales, protection of stockpiled materials, and a variety of other measures that would substantially reduce or prevent erosion from occurring during construction. Compliance with existing regulations would result in less-than-significant impacts associated with soil erosion during construction. Checklist Item 2.2.10, Hydrology and Water Quality, provides additional details.

In addition, the overall result of project operation and maintenance would result in slowing Walnut Creek flows, which would reduce scour and erosion. Finally, the proposed project is a net zero import-export project; all topsoil would be reused onsite. Therefore, impacts would be **less than significant**.

c) Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse? (*Less than Significant*)

As discussed above in Impacts a.iii and a.iv, impacts relative to liquefaction, lateral spreading (a ground failure associated with liquefaction), and landslides would be less than significant. Subsidence and collapse are ground failures that can occur as a result of groundwater or oil extraction. The proposed project does not include the extraction of groundwater or oil and would not otherwise create soil that is unstable. Therefore, impacts would be **less than significant**.

d) Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property? (*No Impact*)

Soils on the site include Joice Muck and Omni Silty Clay soils,⁸⁸ both of which are expansive soils. Expansive soils are susceptible to expansion and contraction if subjected to wetting and drying. The change in volume can damage structures. The presence of expansive soils would not prevent the restoration of tidal habitat. While expansive soils may cause cracks in trails, the cracks would be a minor nuisance that would be easily repaired with minor maintenance, assuming the cracks were large enough to become an issue. The re-routing of the Shortcut Pipeline and Recycled Water Pipeline would occur in similar geologic conditions and would not change the pipelines exposure to expansive soils from existing conditions. Finally, the interpretive center would be the only structure constructed for the project that could experience damage from expansive soils. However, as discussed above in Impact a.ii) the interpretive center would be constructed in accordance with the current version of the CBC that includes designing the structure to resist damage from expansive soils. With compliance with the regulatory requirements and the implementation of geotechnical design recommendations, impacts relative to expansive soils would be **less than significant**.

e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water? (*No Impact*)

Septic or wastewater disposal systems are not part of the project; therefore, there would be **no impact**.

f) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? (*No Impact*)

Paleontological resources are the fossilized evidence of past life found in the geologic record. Despite the tremendous volume of sedimentary rock deposits preserved worldwide, and the 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.

⁸⁸ Contra Costa County, General Soil Map, 1976.

Rock formations that are considered of paleontological sensitivity are those rock units that have yielded significant vertebrate or invertebrate fossil remains.⁸⁹ This includes, but is not limited to, sedimentary rock units that contain significant paleontological resources anywhere within its geographic extent. The proposed project site is underlain by artificial fill over Late Holocene-age bay mud. These types of geologic deposits are too young (i.e., less than 5,000 years old) to have fossilized the remains of organisms, or to have preserved vertebrate fossils. While the bay mud may contain a variety of marine invertebrate remains and organic matter (mollusks, clams, foraminifera, microorganisms, etc.), such remains would not have been buried long enough to become fossilized, are likely to commonly exist in other bay mud deposits around the Bay Area, and would not be considered significant or unique. For these reasons, in accordance with Society of Vertebrate Paleontology standards, the younger Holocene deposits that would be disturbed for this project would have no paleontological sensitivity. Therefore, the project would have **no impact** on unique paleontological resources.

⁸⁹ Society of Vertebrate Paleontology. 2010. *Assessment and mitigation of adverse impacts to nonrenewable paleontologic resources: standard guidelines*, Society of Vertebrate Paleontology News Bulletin.

2.2.8 Greenhouse Gas Emissions

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
VIII. GREENHOUSE GAS EMISSIONS —				
Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion

The most recently adopted plan to address Greenhouse Gas (GHG) issues for the Bay Area is the 2017 CAP.⁹⁰ The 2017 CAP provides a regional strategy to protect the climate by transitioning the region to a post-carbon economy needed to achieve greenhouse gas (GHG) reduction targets for 2030 and 2050; and providing a regional climate protection strategy that will put the Bay Area on a pathway to achieve those GHG reduction targets. The 2017 CAP includes a wide range of control measures to reduce emissions of methane and other “super-GHGs”⁹¹ that are potent climate pollutants in the near-term; and to decrease emissions of carbon dioxide by reducing fossil fuel combustion.⁹²

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

Construction activities that would be associated with the project would include site preparation; below ground work such as excavation, trenching, and pipe installation; revegetation and access road improvements; and building and trail construction. Construction activities would occur over a period of more than three years, between May 2020, and December 2023. The majority of the project-related GHG emissions would be generated on-site due to the use of heavy-duty off-road equipment and a smaller amount of emissions would be generated off-site from trucks transporting equipment and material to the site. The BAAQMD currently has no formal significance threshold for GHG emissions from construction activities as discussed below.

The project public access, including an interpretive center with restrooms, a parking/staging area, a trail network, and overlooks, is considered an operational non-stationary source by the District. In the 2017 BAAQMD CEQA Guidelines recommend an operational significance threshold of 1,100 metric tons per year of CO₂e.⁹³ BAAQMD has not adopted significance thresholds for

⁹⁰ Bay Area Air Quality Management District, 2017. Spare the Air: Cool the Climate – Final 2017 Clean Air Plan, adopted April 19.

⁹¹ “Super-GHGs” are climate pollutants that have a powerful ability to contribute to global warming such as methane, black carbon, and fluorinated gases.

⁹² Bay Area Air Quality Management District, 2017. Spare the Air: Cool the Climate – Final 2017 Clean Air Plan, adopted April 19.

⁹³ Bay Area Air Quality Management District, 2017. Spare the Air: Cool the Climate – Final 2017 Clean Air Plan, adopted April 19.

construction-related GHGs; however, it requires that the lead agency disclose those emissions and make a determination of impacts in relation to meeting AB 32 reduction goals. For construction-related GHGs, other air districts (e.g., South Coast Air Quality Management District) have recommended that total emissions from construction be amortized over 30 years, representing the lifetime of the project, and added to operational emissions and then compared to the operations significance threshold.⁹⁴

GHG emissions from construction activities were estimated using the CalEEMod emissions model with the same assumptions as discussed in the Air Quality analysis. The results of the CalEEMod run indicate that the project would generate a total of approximately 1,527 metric tons of CO₂e over the total construction period. Amortized over an estimated project life of 30 years, the annual GHG emissions from project construction would be 51 metric tons of CO₂e. The indirect emissions associated from public access amenities and operations were calculated using CalEEMod with a city park sized at 11.7 acres and an operational year of 2023. The resulting operational emissions would be at 557 metric tons of CO₂e per year for project. Refer to Appendix A for all assumptions used to estimate project-related GHG emissions.

The sum of project construction and operational GHG emissions would be approximately 608 metric tons CO₂e per year. The project would be well below the 1,100 metric tons CO₂e per year significance threshold. Therefore, the project would not generate GHG emissions that may have a significant impact on the environment. This impact would be **less than significant**.

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

The project would be located within the jurisdictions of Contra Costa County (i.e., southern portion of the North Reach and all of the Middle Reach and South Reach) and City of Martinez (i.e., northern portion of the North Reach). The Contra Costa County General Plan (General Plan) addresses reduction of GHG emissions within the unincorporated areas of Contra Costa County through a series of 36 local programs and 23 recommended policy measures related to transportation, land use, building energy, water, waste, and green infrastructure. The General Plan, approved in December 2015, would enable the County to reduce its community-wide GHG emissions by 15 percent by the year 2020.⁹⁵

The project's emissions of CO₂e represent a negligible amount when compared to the total annual GHG emissions generated for the entire County. Furthermore, the project GHG emissions from construction would be a one-time occurrence and would not continually contribute to the County's annual emissions, nor would it hinder the County's progress towards its reduction targets. GHG emissions from the operations of the public access amenities and public travel associated its usage and maintenance would be limited to approximately 557 metric tons CO₂e emissions per year. Therefore, operational emissions would not result in the project conflicting

⁹⁴ South Coast Air Quality Management District, 2008. Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans, December 5, 2008.

⁹⁵ Contra Costa County, Climate Action Plan, December 15, 2015.

with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. This impact would be **less than significant**.

With regard to consistency with the applicable air district plan, the BAAQMD's 2017 Clean Air Plan (2017 CAP) contains 85 control measures aimed at reducing air pollution in the Bay Area. The 2017 CAP does not contain any measures specific to public park buildings or facilities and, therefore, no inconsistency with the 2017 CAP is identified. This impact would be **less than significant**.

2.2.9 Hazards and Hazardous Materials

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
IX. HAZARDS AND HAZARDOUS MATERIALS —				
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion

Environmental Setting

Overview

The study area for hazards and hazardous materials impacts analysis includes the project site, adjacent staging and laydown areas, and Waterfront Road from which equipment and workers would be transported to the work sites. The project area consists of the North Reach, Middle Reach, South Reach, and the Pacheco Reach, as shown on Figure 1. There are no existing buildings or structures on the proposed project site. Some earthen levees and berms are present along the east sides of the North Reach, Middle Reach, South Reach; along Waterfront Road, which passes between the North and Middle Reaches, and along some of Pacheco Creek. The levees along Walnut Creek were constructed by the U.S. Army Corps of Engineers for flood control. Walnut Creek and Pacheco Creek are the primary waterways in the project area, which have slow slack flows and marsh on their fringes. Most of the project site was historically tidal marsh and is underlain by weak compressible clays and silts commonly referred to as bay mud. In general, areas within the historic marsh footprint that are now above natural marsh elevations

have been subject to fill placement. The project site is generally characterized by flat marsh areas adjacent to the creeks, lowland grasslands, and earthen levees.

Landfills, Utilities, and Soil

The North Reach is a flat, nearly treeless expanse of marsh and grasslands and includes the least disturbed marsh vegetation. There are several east-west pipelines traversing the North Reach, including several aboveground oil pipelines that run parallel to Waterfront Road, crossing through the southern edge of the North Reach. Additionally, the Contra Costa County Sanitation District outfall pipe, which runs in a north-south direction through the site, is underground, but is covered by a gravel road approximately 30 feet wide. Figure 2 shows the locations of the various utilities in the North Reach area.

The Middle and South Reaches are more disturbed, in part due to the former Acme Landfill, bounded by the North and Middle Reaches, the former Baker Landfill, bounded by the South Reach and Pacheco Creek, and the former IT-Vine Hill waste disposal ponds, located just west of the southern portion of the Middle Reach (see Figure 2). The former landfills and waste disposal ponds are listed hazardous materials sites as per Government Code Section 65962.5. These waste disposal facilities are closed and capped. The post-closure requirements include visually inspecting the land fill caps and monitoring groundwater quality by sampling wells around the perimeter of the landfill cells. No excavation is proposed or allowed into the landfill caps over the closed landfill cells, and access to all landfill monitoring wells must be maintained. The lowest portions of the Acme landfill cap could be inundated (but not eroded) for brief periods and would not require a new setback levee to provide flood protection. The existing private landfill perimeter access road would be improved to support landfill monitoring and access for District maintenance. New drainage swales would be constructed on the upslope side of the improved perimeter access route to direct stormwater runoff from the landfill into existing non-tidal basins to the north and south of the Middle Reach project area.

The Martinez Gas Line (a 10-inch diameter carbon steel natural gas pipeline) owned and operated by Calpine and the Coalinga-Avon Pipeline (a 20-inch concrete coated carbon steel crude oil pipeline) and the Martinez-Shell Point Platformer Off-Gas Line (a 4-inch steel natural gas pipeline) owned and operated by Shell Chemical Company are located within the South Reach (see Figure 2). The Martinez Gas Line and the Martinez-Shell Point Platformer Off-Gas Line are located in a 10-foot wide easement identified as belonging to Shell Chemical Company and the Coalinga-Avon Pipeline and located in a 20-foot wide easement identified as belonging to Tidewater Oil Company.

The Shortcut Pipeline, a 48-inch diameter cement-mortar-lined and coated steel water supply pipeline is owned by the USBR but is maintained and operated by CCWD, and it traverses the project site in a 40-foot wide easement running from southeast to northwest located roughly in the middle of the South Reach (see Figures 2 and 6). The Shortcut Pipeline crosses under Walnut Creek and the existing levees along the creek. The CCWD 20-inch Recycled Water Pipeline is located within the South Reach in a 10-foot wide easement running east-west located north of the Shortcut

Pipeline. The Recycled Water Pipeline connects to a storage tank on Vine Hill and runs under Pacheco Creek and Walnut Creek towards the Marathon Refinery, but is not currently in use.⁹⁶

As shown on Figure 2, several closed landfill cells and waste disposal ponds are located adjacent to the west sides of the proposed Middle and South Reach work areas. To research potential soil quality issues related to the former operation of landfills and waste disposal ponds, ESA consolidated available soil quality data from five soil testing investigations into the Soil Quality Assessment provided in **Appendix C**. The testing results indicated some sample locations that exceeded guidelines for a few chemical compounds. Most of the exceedances are for metals; wetland areas are known to accumulate metals. As shown on Soil Quality Assessment Figures 1 and 2 in Appendix C, the locations of samples with chemical concentrations that exceed guideline and background levels are located within proposed cut and fill areas in no particular pattern.

Landfills, Utilities, and Groundwater

Being located adjacent to Suisun Bay, Lower Walnut Creek, and Pacheco Creek, the depth to groundwater at the project site is shallow, with the lower elevation portions of the project area undergoing periodic inundation, especially during high tides and significant rain events.

Consequently, the grading activities may encounter groundwater. Information on groundwater quality came from the Acme Landfill Monitoring Report.⁹⁷ Groundwater monitoring wells are located around the Acme Landfill to monitor for any landfill leachate reaching the groundwater, but they monitor for other pollutants as well; pollutants that are being monitored which are of interest to the project are 1,2-dichloroethane, carbon disulfide, tert-butyl alcohol, and tetrahydrofuran.

Monitoring data from 10 wells that are located within 50 feet of the project boundary was reviewed to determine if any of the existing groundwater was polluted. The report concludes that leachate is not migrating from the landfill cells to beyond the monitoring wells. In general, there are no pollutants of concern at levels that exceed thresholds in the surrounding groundwater.

During pipeline location surveys, the District conducted groundwater sampling in two potholes used during the survey. The sample locations were within the backfill of the existing Shortcut and Recycled Water Pipelines. The results revealed the presence of TPH as diesel (1,900 and 5,700 ug/L) and TPH as motor oil (1,800 and 2,400 ug/L).⁹⁸ TPH as gasoline and the fuel components of benzene, toluene, ethylbenzene, and xylenes (BTEX) were not detected. The detected levels exceed the effluent limitations in the RWQCB's *General Waste Discharge Requirements for Discharge or Reclamation of Extracted and Treated Groundwater* (RWQCB Order No. R2-2017-0048, NPDES Permit No. CAG912002), which prohibits the untreated discharge of dewatering fluid with more than 50 ug/L of TPH as diesel and 100 ug/L TPH as motor oil.

⁹⁶ Paul Detjens and Chris Hentz, personal communication, 2017.

⁹⁷ RMC Geoscience, Inc., 2018. Acme Landfill East and South Parcels – 2018 Summer-Fall Semiannual Water Quality Monitoring Report. Prepared for Acme Fill Corporation.

⁹⁸ Ninyo & Moore, 2019. Water Quality Assessment Report, Lower Walnut Creek, Vine Hill, California. Prepared for FirstCarbon Solutions for Contra Costa County.

Proximity to Airports and Schools

The nearest airport is Buchanan Field; the northernmost portion of the airport is located about 2 miles south of the project area. There are no schools located within 0.25 miles.

Proximity to Wildfire Hazards Zones

Portions of the Middle, South, and Pacheco Reaches are located within moderate to high fire hazards severity zones.^{99,100}

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

Construction Impacts

During the construction phase, construction equipment would use fuels, oils, and lubricants, which are all commonly used in construction. The routine use or an accidental spill of hazardous materials could result in inadvertent releases, which could adversely affect construction workers and the environment.

Construction activities would be required to comply with numerous hazardous materials regulations designed to ensure that hazardous materials are transported, used, stored, and disposed of in a safe manner to protect worker safety, and to reduce the potential for a release of construction-related fuels or other hazardous materials into the environment, including stormwater and downstream receiving water bodies. Contractors would be required to prepare and implement hazardous materials business plans (HMBPs) as per the California Hazardous Materials Release Response Plan and Inventory Law of 1985 that requires that hazardous materials used for construction would be used properly and stored in appropriate containers with secondary containment to contain a potential release. The California Fire Code would also require measures for the safe storage and handling of hazardous materials.

Because the project work area is larger than 1 acre, the project proponent and its construction contractor(s) would be required to prepare a Stormwater Pollution Prevention Plan (SWPPP) for construction activities according to the National Pollutant Discharge Elimination System (NPDES) Construction General Permit requirements (SWRCB Order 2009-0009-DWQ). The SWPPP would list the hazardous materials (including petroleum products) proposed for use during construction; describe spill prevention measures, equipment inspections, equipment and fuel storage; protocols for responding immediately to spills; and describe BMPs for controlling site runoff.

In addition, the transportation of hazardous materials would be regulated by the United States Department of Transportation (USDOT), California Department of Transportation (Caltrans), and the California Highway Patrol (CHP). Together, federal and state agencies determine driver-training requirements, load labeling procedures, and container specifications designed to minimize the risk of accidental release.

⁹⁹ California Department of Forestry and Fire Protection, 2007, Draft Fire Hazard Severity Zones in LRA, September 19.

¹⁰⁰ California Department of Forestry and Fire Protection, 2007, Draft Fire Hazard Severity Zones in SRA, November 7.

Finally, in the event of a spill that releases hazardous materials at the project component sites, a coordinated response would occur at the federal, state, and local levels. The Contra Costa County Fire Protection District is the local hazardous materials response team. In the event of a hazardous materials spill, the police and fire departments would be simultaneously notified and sent to the scene to respond and assess the situation.

The required compliance with the numerous laws and regulations discussed above that govern the transportation, use, handling, and disposal of hazardous materials would limit the potential for creation of hazardous conditions due to the use or accidental release of hazardous materials, and, therefore, the impact would be **less than significant**.

Operational Impacts

Once constructed, the project area would function as restored natural habitat and would not require the use of hazardous materials. Therefore, there would be **no impact**.

b) Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? (*Less than Significant*)

Construction Impacts

During the construction phase, construction equipment would use fuels, oils, and lubricants, which are all commonly used in construction. The routine use or an accidental spill of hazardous materials could result in inadvertent releases, which could adversely affect construction workers and the environment.

Construction activities would be required to comply with numerous hazardous materials regulations designed to ensure that hazardous materials are transported, used, stored, and disposed of in a safe manner to protect worker safety, and to reduce the potential for a release of construction-related fuels or other hazardous materials into the environment, including stormwater and downstream receiving water bodies. Contractors would be required to prepare and implement hazardous materials business plans (HMBPs) as per the California Hazardous Materials Release Response Plan and Inventory Law of 1985 that requires that hazardous materials used for construction would be used properly and stored in appropriate containers with secondary containment to contain a potential release. The California Fire Code would also require measures for the safe storage and handling of hazardous materials.

Because the project work area is larger than 1 acre, the project proponent and its construction contractor(s) would be required to prepare a Stormwater Pollution Prevention Plan (SWPPP) for construction activities according to the National Pollutant Discharge Elimination System (NPDES) Construction General Permit requirements (SWRCB Order 2009-0009-DWQ). The SWPPP would list the hazardous materials (including petroleum products) proposed for use during construction; describe spill prevention measures, equipment inspections, equipment and fuel storage; protocols for responding immediately to spills; and describe BMPs for controlling site runoff.

In addition, the transportation of hazardous materials would be regulated by the United States Department of Transportation (USDOT), California Department of Transportation (Caltrans), and

the California Highway Patrol (CHP). Together, federal and state agencies determine driver-training requirements, load labeling procedures, and container specifications designed to minimize the risk of accidental release.

Finally, in the event of a spill that releases hazardous materials at the project component sites, a coordinated response would occur at the federal, state, and local levels. The Contra Costa County Fire Protection District is the local hazardous materials response team. In the event of a hazardous materials spill, the police and fire departments would be simultaneously notified and sent to the scene to respond and assess the situation.

The required compliance with the numerous laws and regulations discussed above that govern the transportation, use, handling, and disposal of hazardous materials would limit the potential for creation of hazardous conditions due to the use or accidental release of hazardous materials, and, therefore, the impact would be **less than significant**.

Operational Impacts

Once constructed, the project area would function as restored natural habitat and would not require the use of hazardous materials. Therefore, there would be **no impact**.

c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? (*No Impact*)

There are no schools within 0.25 miles of the project area. Therefore, there would be **no impact**.

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

The project site is located on and adjacent to hazardous materials sites that are listed on Government Code Section 65962.5, also known as the Cortese List. As discussed above in the Setting, the soil testing results indicated some sample locations that exceeded guidelines and background levels for a few chemicals, including cadmium, cobalt, mercury, selenium, zinc, and petroleum hydrocarbons. Most of the exceedances are for metals; wetland areas are known to accumulate metals. The locations of samples with chemical concentrations that exceed guideline and background levels are located within both cut and fill areas in no particular pattern.

However, the number of samples with concentrations that exceed background and guidance levels relative to the total number of samples collected and analyzed indicates a relatively low rate of exceedances, largely ten percent or less of the total number of samples. This indicates that while anthropomorphic (human) activities have likely slightly increased the concentrations of a few metals to above background or guidance levels in a few locations, the overall dataset shows the large majority of soil has metals concentrations that are below background and guidance levels.

It is important to note that the proposed project is a net zero import-export project, meaning that soil will be moved around but not removed from the site. Thus, the reworking of onsite soil within the project area would result in reducing the concentrations of the smaller number of

samples with concentration exceedances to below guidance and background levels. More importantly, the soil excavated from the cut areas would be placed on fill areas increasing the elevation at those locations. This would result in relocating soil, including some soil with exceedances, to higher elevation locations outside of and above the areas to be periodically flooded by tidal action. By reducing the exposure of some soil to tidal action, the project would also result in reducing the potential for tidal water to mobilize metals, thereby leaving the metals onsite and reducing their ability to migrate offsite.

The reworking of soil on this site in a manner that results in a net zero import-export of soil also avoids consuming the capacity of offsite landfills with material that, while slightly above some background and guidance levels for a few samples, is well below hazardous waste levels. For example, the hazardous waste level (Total Threshold Limit Concentration) for selenium is 100 mg/kg, well above the maximum reported onsite concentration of 3.1 mg/kg. In other words, the few soil samples with concentrations above background or guidance levels are not hazardous waste.

Finally, given the relatively low number of and sporadic distribution of guidance level exceedances in soil, the risk to the visiting public would also be low. The proposed design of the trails would prevent exposure of the public to onsite soil because the trails are proposed to be constructed of 4 inches of decomposed granite on top of 6 inches of aggregate base (sand/gravel mix). The 10-inch thick trails would isolate the few soil exceedances from the public.

During the construction activities, construction workers could be in contact with the soil. However, the chemicals detected above guidance levels are relatively immobile. Unlike volatile compounds such as gasoline, the detected chemicals would not present a respiratory hazard. The exposure route, if any, would be dermal (touch) or ingestion (eat). During construction activities, construction workers that may directly or indirectly be exposed to onsite soil or groundwater would perform work in accordance with the California Occupational Safety and Health Administration (Cal OSHA) regulations. All site construction activities associated with exposure to onsite soil or groundwater would be required to be conducted in compliance with a site-specific Health and Safety Plan (HASP) prepared by the contractors to protect workers and the environment from site contaminants. The site-specific HASP would be prepared according to Title 8, California Code of Regulations, Section 5192 and Title 29 CFR 1910.120 and would include provisions for personal protective equipment to be worn by workers during site redevelopment activities. The District would be required to provide this Soil Quality Assessment report to the contractors to inform the preparation of their HASP.

Consequently, the Soil Quality Assessment concluded that the onsite soils are suitable for reuse for the proposed project and the impact would be **less than significant**.

As discussed above in the Setting, shallow groundwater at the northeast and southeast corners of the Conco property had petroleum hydrocarbons in the diesel and motor oil range. The sample locations were within the backfill of the existing pipelines that cross east to west across the South Reach. Although these two locations are not specifically identified on the Cortese List, the locations are next to a closed landfill cell. In any case, excavation activities within this area

should anticipate potentially encountering groundwater with petroleum hydrocarbons. This location will require dewatering to re-route the existing Shortcut pipeline. Depending on the chemical concentrations, the dewatering fluids may need to be disposed of at a licensed facility permitted to accept the waste. This would be considered a **potentially significant** impact.

Impacts and Mitigation Measures

Impact HAZ-1: The project would result in potential impacts exposure of public and workers to hazardous materials.

Based on the analysis presented above, implementation of **Mitigation Measure HAZ-1: Prepare and Implement a Hazardous Materials Dewatering and Management Plan** would reduce impacts to **less than significant with mitigation incorporated**. This mitigation measure would establish procedures analyzing the chemical concentrations in dewatering fluids and ensuring the dewatering fluids are disposed of in accordance with all applicable federal and state laws.

Mitigation Measure HAZ-1: Prepare and Implement a Hazardous Materials Dewatering and Management Plan

The project proponent or its contractor(s) shall develop and implement a Hazardous Materials Dewatering and Management Plan establishing procedures to manage potentially contaminated fluids encountered as part of the construction of the project to minimize potential impacts to the public or environment from hazardous materials. The Plan shall identify proper protocols to test and handle potentially hazardous materials. The Plan shall identify potential licensed disposal facilities and their acceptance criteria; the chemicals to be analyzed to comply with those acceptance criteria, which shall include at a minimum TPH as gasoline, diesel, and motor oil, and BTEX compounds. The Plan shall identify the proper protocols for the following three dewatering fluid disposal options:

- Groundwater with petroleum hydrocarbons could be discharged to the CCCSD under their Special Discharge Permit, providing the contaminant concentrations are within the Special Discharge Permit acceptance criteria and coverage under this permit is acquired prior to the discharge. The detected levels of diesel and motor oil were within the acceptance criteria of 10,000 ug/L diesel or motor oil range petroleum hydrocarbons acceptance criteria of the Central Contra Costa Sanitary District (CCCSD) Special Discharge Permit (Special Limitations for Groundwater Remediation Projects).
- Groundwater with petroleum hydrocarbons could be pumped into trucks or portable storage containers and transported to an offsite licensed disposal facility permitted to accept the waste.
- Groundwater with petroleum hydrocarbons could be treated onsite under the RWQCB's *General Waste Discharge Requirements for Discharge or Reclamation of Extracted and Treated Groundwater* (RWQCB Order No. R2-2017-0048, NPDES Permit No. CAG912002). The pumped groundwater would be pumped into a settling tank to drop the sediments out of solution, and pumped through a treatment system (e.g., granular activated carbon [GAC] to decrease the concentration of TPH as diesel to less than 50 ug/L and TPH as motor oil to less than 100 ug/L. The effluent would be

analytically tested to verify that treatment has achieved the effluent limitations. Upon successful treatment, the water could be discharged to the ground.

- e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area? (*No Impact*)**

The proposed project is located approximately 2 miles north of the Buchanan Airport. However, no structures would be constructed that could interfere with height restrictions on structures near airports. Therefore, there would be **no impact**.

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

Construction Impacts

The majority of construction activities would occur within the habitat area to be restored and not on public roads. Waterfront Road would be used for access but would not require closure or restriction of any lanes. Therefore, the impact would be **less than significant**.

Operational Impacts

Once constructed, the project area would not require the use of Waterfront Road. Therefore, there would be **no impact**.

- g) Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires? (*Less than Significant*)**

Construction Impacts

As discussed in the Environmental Setting, portions of the Middle, South, and Pacheco Reaches are located within moderate to high fire hazard severity zones. The use of mechanized equipment during construction could cause a wildfire if spark arresting equipment is not installed on hot surfaces such as mufflers. However, the California Vehicle Code, Section 38366, requires spark-arresting equipment on vehicles that travel off-road. This code applies to the program because the vehicles that work in off road areas would be required to have spark-arresting equipment to reduce the risk of wildfires. Therefore, the impact would be **less than significant**.

Operational Impacts

Once constructed, the project area would not require the use of off-road mechanized equipment. Therefore, there would be **no impact**.

2.2.10 Hydrology and Water Quality

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

Discussion

Environmental Setting

Walnut Creek's watershed is approximately 146 square miles and occupies 20% of Contra Costa County. 340,000 people live within the watershed and major cities entirely within the watershed include Walnut Creek, Pleasant Hill, Lafayette, and Danville.¹⁰¹ The creek drains Mount Diablo to the east and the Briones Hills and Las Trampas Ridge to the west, joining Suisun Bay to the north. Pacheco Creek is a 3.4-mile-long creek, which flows into Walnut Creek about two miles north of Suisun Bay, and is a minor tributary, draining approximately 2 square miles.

The watershed exhibits a Mediterranean climate of warm, dry summers and mild, wet winters. Mean annual precipitation ranges from approximately 28 inches in the Las Trampas Regional Wilderness to 15 inches near the project area.¹⁰²

¹⁰¹ <https://www.ccrd.org/walnut-creek-watershed.html>.

¹⁰² Contra Costa County, 1977. CCCo Mean Seasonal Isoyet Map. <http://www.co.contra-costa.ca.us/DocumentCenter/View/770/CCCo-Isohyet-Map-Low-Color?bidId=>.

Walnut Creek flows at a rate of 82 cubic feet per second (CFS) on average, with slack flows¹⁰³ in the project area, but during a 100-year flood event, Walnut Creek conveys approximately 25,600 CFS.¹⁰⁴ The watershed is highly developed, with approximately 30% of the watershed made up of impervious surfaces such as roads, homes, and parking lots.¹⁰⁵ This high level of development, combined with the size of the watershed, made flooding a chronic issue in the 1950's. In 1965, to alleviate flooding problems, the lower 22 miles of Walnut Creek and the lower reaches of major tributaries were converted to flood control channels.¹⁰⁶ Though this reduced the flooding problems, it removed much of the riparian habitat along Walnut Creek. A 2004 survey of Lower Walnut Creek identified two immature willows and one piece of large woody debris along four miles of channel between Highway 4 and Monument boulevard, indicative of severely degraded riparian habitat.¹⁰⁷

Despite these changes, lower Walnut Creek still retains tidal and coastal habitats in varying degrees of quality. The project area includes over 400 acres of tidal marsh, tidal waters, non-tidal wetlands, as well as transitional and upland habitat. See Chapter 1, Project Description for more details on habitat and Figure 3, Existing Habitat Types.

Surface Water Hydrology: Drainage and Flooding

The levees along the west bank of Walnut Creek and along Pacheco Creek are owned and maintained by the District, with efforts targeted to protect the most sensitive infrastructure while minimizing impacts to existing habitats. The elevation of these levees varies. Hydraulic modeling performed by the District indicates that levees to the west of Walnut Creek overtop in an approximately 1-in-40 annual chance exceedance flood event.¹⁰⁸

Lower Walnut Creek is exposed to elevated water levels from both tidal and fluvial sources. High tide waters in Suisun Bay can propagate upstream along the Walnut Creek Channel, while fluvial flooding occurs due to high flows conveyed by the Walnut Creek and Pacheco Creek channels. The current effective FEMA Flood Hazard Zones for the Project area (September 29, 2015) consolidates previous mapping, and indicates the entire Project area from Walnut Creek westward, and the area east of the Walnut Creek channel downstream of Waterfront Road, including the Andeavor water treatment pond, is mapped within the 100-year floodplain. Most areas along the east bank of the creek between Waterfront Road and Highway 4 are mapped outside the 100-year floodplain. Recent hydraulic analysis conducted by the USACE and the District suggests that the FEMA map likely overestimates the extent of flooding in several areas. In particular, given the high elevation of the Acme and IT Baker landfills, it is unlikely that those areas would be inundated during a 100-year flood event. In addition, the FEMA map does not

¹⁰³ Slack Flow: Tidally influenced flows with limited movement upstream or downstream.

¹⁰⁴ <https://www.ccrd.org/walnut-creek-watershed.html>.

¹⁰⁵ https://www.ccrd.org/uploads/9/5/9/2/95923390/walnutcr_watershed_inventory_web.pdf.

¹⁰⁶ https://www.sfei.org/sites/default/files/biblio_files/Walnut%20Creek%20Vision%20SFEI%20112716%20medres.pdf.

¹⁰⁷ https://www.ccrd.org/uploads/9/5/9/2/95923390/walnutcr_watershed_inventory_web.pdf.

¹⁰⁸ Contra Costa County Flood Control & Water Conservation District. 2010. Lower Walnut Creek Restoration 1% (100-year) Floodplain – Existing Conditions. Draft Poster, Dec 2010.

appear to reflect recent improvements made to the flood control levees adjacent to the CCCSD parcels.¹⁰⁹

Preliminary fluvial flood analysis conducted by the USACE and showed a more limited extent of the 100-year flood plain, however this analysis was never advanced beyond draft level. This analysis also did not consider coastal/tidal flooding, and consequently underestimates the extent of inundation near the mouth of Walnut Creek. The FEMA map indicates that the coastal/tidal flood elevation may exceed the fluvial flood elevation for the region from Suisun Bay to approximately 1,000 feet upstream of Waterfront Road.

Maintaining a 100-year level of flood protection currently requires expensive and environmentally destructive large-scale dredging to protect relatively flood-tolerant land uses. For the proposed project, the District seeks to provide *appropriate* levels of flood protection that are suited to the existing land uses and are also in line with ongoing natural geomorphic processes. This includes protecting the services provided by existing infrastructure (e.g., power lines, railroads, water lines) and maintaining access to infrastructure and adjacent private property. Open space areas may not require maintenance or improvement of flood protection levels.

Groundwater Quality

Being located adjacent to Suisun Bay, Lower Walnut Creek, and Pacheco Creek, the depth to groundwater at the project site is shallow, with the lower elevation portions of the project area undergoing periodic inundation, especially during high tides and significant rain events. Consequently, the grading activities may encounter groundwater. Information on groundwater quality is described in more detail in Section 2.2.9, Hazards and Hazardous Materials, and came from the Acme Landfill Monitoring Report and groundwater sampling conducted by the District.¹¹⁰ The report concludes that leachate is not migrating from the landfill cells to beyond the monitoring wells. In general, there are no pollutants of concern at levels that exceed thresholds in the surrounding groundwater.

As discussed above in Section 2.2.9, *Hazards and Hazardous Materials*, groundwater sampling detected levels of diesel and motor oil in groundwater at concentration that exceed the RWQCB's *General Waste Discharge Requirements for Discharge or Reclamation of Extracted and Treated Groundwater* (RWQCB Order No. R2-2017-0048, NPDES Permit No. CAG912002), which prohibits the untreated discharge of dewatering fluid with more than 50 ug/L of TPH as diesel and 100 ug/L TPH as motor oil.

Surface Water Quality

The quality of surface water in Walnut and Pacheco Creeks is primarily a function of land uses in the project area and tidal influences. Urban development often results in the degradation of water quality due to the introduction of pollutants and erosion due to construction and development.

¹⁰⁹ Paul Detjens, pers. communication with ESA June, 2015.

¹¹⁰ RMC Geoscience, Inc., 2018. Acme Landfill East and South Parcels – 2018 Summer-Fall Semiannual Water Quality Monitoring Report. Prepared for Acme Fill Corporation.

Development and pervious pavement can result in increased runoff and higher velocities in creeks and streams. These changes can, in turn, cause erosion.

The pollutants of concern in Walnut and Pacheco Creeks are similar to those countywide.¹¹¹ The most significant are pesticide toxicity, trash, bacteria from animal excrement and homeless encampments along the creeks, oil and grease from leaky automobiles, metals from paints, vehicles, and building materials, PCB's, mercury from atmospheric deposition, sediment from construction sites and stream bank erosion, and nutrients.¹¹² The CCCWP's initial wet weather monitoring found pesticide toxicity in creeks primarily from diazinon. Toxicity from pesticides results from individual and commercial operations applying pesticides, even when applied exactly as instructed on the labeling. Stormwater program efforts led to legislation that phased out diazinon use. However, current monitoring is detecting toxicity from the next generation of pesticides (pyrethroids) in local waterways.

a) Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality? (Less than Significant with Mitigation Incorporated)

Construction Impacts

Project construction would require excavation, grading, earthmoving, backfilling, and compaction, which could impact water quality. Construction and ground disturbance activities associated with the project would occur adjacent to and on the floodplain of Walnut Creek and Pacheco Creek; water quality impacts, including turbidity impacts, could be significant in the immediate vicinity of construction activities. In addition, construction activities would require use of hazardous materials such as fuels and oils, which, if not managed appropriately, could become mobilized by runoff and contribute to non-point source pollution and degradation of water quality.

Project construction would involve disturbance of more than one acre of land and is thus subject to the requirements of the NPDES Construction General Permit (SWRCB Order 2009-0009-DWQ.) As a result, the project proponent would be required to implement a SWPPP to prevent discharge of sediment or pollutants from the construction site. **Mitigation Measure BIO-1** includes a summary of the requirements of the NPDES Construction General Permit. Compliance with this permit, as well as **Mitigation Measure HAZ-1** which would minimize potential for release of hazardous materials encountered in groundwater (described in Section 2.2.9, *Hazards and Hazardous Materials*), would reduce this impact to a **less than significant with mitigation incorporated**.

In addition, dewatering conducted for the construction to route pipelines over the levee is anticipated to pump groundwater with TPH as diesel and motor oil above effluent limitations promulgated in the RWQCB's *General Waste Discharge Requirements for Discharge or Reclamation of Extracted and Treated Groundwater* (RWQCB Order No. R2-2017-0048, NPDES

¹¹¹ Restoration Design Group, 2013. Walnut Creek Watershed Inventory. Prepared for the Walnut Creek Watershed Council. Available: https://www.ccrd.org/uploads/9/5/9/2/95923390/walnutcr_watershed_inventory_web.pdf.

¹¹² Restoration Design Group, 2013. Walnut Creek Watershed Inventory. Prepared for the Walnut Creek Watershed Council. Available: https://www.ccrd.org/uploads/9/5/9/2/95923390/walnutcr_watershed_inventory_web.pdf.

Permit No. CAG912002), as discussed above in Section 2.2.9, *Hazards and Hazardous Materials*. As a result, the project proponent would be required to properly manage the contaminated groundwater. **Mitigation Measure HAZ-1** describes three options for managing the contaminated groundwater that would comply with RWQCB effluent limitations.

Operational Impacts

Project operation would have no negative water quality impacts; the expanded and restored coastal habitat would have similar impacts on water quality to existing conditions. Under existing conditions, water quality impacts include natural erosion and siltation impacts which occur high precipitation events within the Walnut Creek watershed. Implementation of operations, maintenance, and adaptive management measures described in Chapter 1, Project Description would ensure minimization and repair of areas of potential erosion. Maintenance activities would also follow BMPs outlined in the District's RMA with CDFW. Therefore, impacts would be **less than significant**.

b) Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin? (*Less than Significant*)

Construction Impacts

Project construction would not use or deplete groundwater supplies or interfere with groundwater recharge. Though some minor dewatering may occur during excavation near the CCWD pipelines, this would be a limited volume only during the short-term and temporary construction period, and the amount of water which would be properly disposed of, either on or off-site. For impacts related to potentially contaminated groundwater, please see Section 2.2.9, *Hazards and Hazardous Materials*. Impacts from construction would be **less than significant**.

Operational Impacts

No groundwater supplies would be used for the project and no element of the project would interfere with the process of groundwater recharge, except for the footprint of the recreational features that include the parking lot and interpretive center. This small footprint in comparison to the much larger watershed which replenished groundwater through percolation, would result in a minor area of imperviousness and would have a negligible effect on groundwater recharge. Minor dewatering activities would temporarily remove groundwater, but the water would be recharged if it meets water quality standards. Because the project wouldn't substantially deplete groundwater or substantially interfere with groundwater recharge, the project would have a **less-than-significant impact** on groundwater resources.

c.i) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or off-site? (*Less than Significant*)

Construction Impacts

The project would alter the existing drainage pattern of the project area, both during construction and as part of the project's operation. However, the implementation of the SWPPP would ensure that any construction-related erosion or siltation impacts would be **less than significant**.

Operational Impacts

The project would alter the existing drainage pattern of the project area through altering levees and expanding tidal channel networks to connect the project area to natural hydrological processes (see Figure 4). Setting levees back, lowering them, and breaching them would allow land that is currently disconnected from the creek and tides to be reconnected to them hydrologically, both through the tidal channels that would be excavated as part of the project and through the exposure to potential flooding. These alterations would take place across the entire project area, but in particular in the Middle Reach (see Figures 8 and 9).

Though the drainage pattern would be altered, the new regime would reduce impacts from erosion and siltation. Under current conditions, during flooding events, the levees constrain flows to the main channel of Walnut Creek, increasing erosion and siltation in the main channel. The project was designed to include adjusted channel sizes that would reflect a state of equilibrium. Setting back the levees would expand the floodplain, allowing waters to spread out across the floodplain, slowing the flow, which reduces erosion from scour, and spread silt across the floodplain and not in the channel, which is environmentally beneficial. In addition, maintenance activities would follow BMPs outlined in the District's RMA with CDFW, including controlling erosion.

Hydraulic modeling¹¹³ demonstrated that the proposed project would have a negligible impact on peak water surface elevations for future conditions with approximately five feet of sea-level rise. Therefore, impacts resulting in erosion or siltation on- or off-site from increased flows would be **less than significant**.

c.ii, iv) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite; impede or redirect flood flows? (*Less than Significant*)

Construction Impacts

Project construction would result in the exposure of soil across large areas of the project sites. However, as described previously, a SWPPP would be implemented to prevent runoff of soils and volumes of surface runoff would not substantially increase. Construction activities would not be conducted during flood events and the project would not impede or redirects flood flows. Grading and changes in slopes in areas of the project site would be designed to improve the various habitats and flood flows through the project site. Further, in addition to implementing the SWPPP, vegetation would be planted as soon as possible to establish cover and reduce surface runoff from newly graded areas. Therefore, project construction would result in **less-than-significant impacts**.

¹¹³ ESA, 2018. Lower Walnut Creek Hydraulic Modeling – Final Memorandum.

Operational Impacts

The original hydraulic model for Walnut Creek was developed by the USACE in collaboration with Contra Costa County.^{114,115,116} During the planning phase of this current Project, ESA evaluated existing conditions, conducted a geomorphic assessment and developed a collection of model scenarios to evaluate various flood and ecological flow conditions relevant for the proposed project design.^{117,118,119,120} ESA also conducted additional hydraulic modeling to support the Lower Walnut Creek Project, including an updated evaluation of the 100-year flood plain extent based on current site conditions, and an evaluation of the potential future flood plain extent with sea level rise and estimated geomorphic change in the channel and adjacent marsh. The modeling determined the inundation extents for the 100-year fluvial flood under existing conditions, and potential future conditions with +2 feet of sea level rise.

Flood modeling shows that the project would contribute to a near-term small rise in water in Grayson Creek upstream of the project area during the 100-year flood.¹²¹ However, this increase would not lead to additional flooding impacts. Parts of the project area would experience flooding during the 100-year flood that would be less than 0.2 feet above the existing water levels. This raised level would be contained within the existing channels and would not inundate any new land.

For nuisance flooding (e.g., king tide flooding, 2-year and 10-year flood events), the project would not result in any flooding above existing levels. The project would include tidal channels that drain through a newly constructed tidal channel into Suisun Marsh. Though flooding would continue to occur in certain areas, the modeling shows that this is currently occurring under existing conditions (see Figure 24). Therefore, operation and maintenance of the project would not substantially raise flood flows or redirect or impede flood flows and impacts would be **less than significant**.

¹¹⁴ US Army Corps of Engineers. "Lower Walnut Creek General Reevaluation Report Hydrology Appendix". Report first published October 2006, revised June 2008.

¹¹⁵ US Army Corps of Engineers. "Lower Walnut Creek Hydrography Input for HEC-6T Hydrology Appendix". Report, March 1, 2011.

¹¹⁶ US Army Corps of Engineers. "Draft Hydraulic Modeling Documentation". Lower Walnut Creek Restoration – Lower Walnut Creek General Reevaluation Report. Draft Report. May 13, 2013.

¹¹⁷ Environmental Science Associates. "Lower Walnut Creek Restoration Project Feasibility Study". Report prepared for Contra Costa County Flood Control and Water Conservation District, March 10, 2017.

¹¹⁸ Environmental Science Associates. "Lower Walnut Creek Restoration Project Geomorphic Assessment". Memorandum prepared for Contra Costa County Flood Control and Water Conservation District. March, 2017

¹¹⁹ Environmental Science Associates. "Lower Walnut Creek Hydraulic Modeling". Memorandum prepared for Contra Costa County Flood Control and Water Conservation District. July 5, 2018.

¹²⁰ Environmental Science Associates. "Lower Walnut Creek Hydraulic Modeling". Memorandum prepared for Contra Costa County Flood Control and Water Conservation District. July 5, 2018.

¹²¹ Restoration Design Group, 2013. Walnut Creek Watershed Inventory. Prepared for the Walnut Creek Watershed Council. Available: https://www.ccrd.org/uploads/9/5/9/2/95923390/walnutcr_watershed_inventory_web.pdf.

c.iii) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff? (*Less than Significant*)

Construction Impacts

The project would not contribute runoff water that would exceed a stormwater drainage system's capacity during construction. Implementation of BMPs identified in the SWPPP would reduce stormwater runoff and pollution from entering local drainages and waterways. Impacts would be **less than significant**.

Operational Impacts

Operation of the project would not contribute runoff water to existing stormwater drainage systems. Runoff water would remain on the project site and drain to Walnut Creek, not to any stormwater drainage system. In addition, maintenance activities would follow BMPs outlined in the District's RMA with CDFW, including controlling erosion. The project would not be a significant source of polluted runoff. Therefore, impacts would be **less than significant**.

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

Construction Impacts

Construction of the project would be required to comply with numerous hazardous materials regulations designed to ensure that hazardous materials are transported, used, stored, and disposed of in a safe manner to protect worker safety, and to reduce the potential for a release of construction-related fuels or other hazardous materials into the environment, including stormwater and downstream receiving water bodies. See Section 2.2.9 Hazards and Hazardous Materials for more detail on how the project would properly protect potential pollutants from flood hazards. Further, the project is not located in tsunami or seiche inundation zones and construction would not be done during flooding. Therefore, project construction impacts would be **less than significant**.

Operational Impacts

Operation of the project would not involve any pollutants kept or used on-site; therefore, the project would have no impact related to risk or release of pollutants due to project inundation by flooding. Tsunami risks for the Bay Area were mapped by CalEMA and the project area is not at risk for tsunamis. In addition, the site is not in a seiche zone. Therefore, the project would have **no impacts** during operation.

e) Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan? (*Less than Significant with Mitigation Incorporated*)

Construction Impacts

Project construction would require excavation, grading, earthmoving, backfilling, and compaction, which could impact water quality. Construction and ground disturbance activities

associated with the project would occur adjacent to and on the floodplain of Walnut Creek and Pacheco Creek; water quality impacts, including turbidity impacts, could be significant in the immediate vicinity of construction activities. In addition, construction activities would require use of hazardous materials such as fuels and oils, which, if not managed appropriately, could become mobilized by runoff and contribute to non-point source pollution and degradation of water quality.

Project construction would involve disturbance of more than one acre of land and is thus subject to the requirements of the NPDES Construction General Permit (SWRCB Order 2009-0009-DWQ.) As a result, the project proponent would be required to implement a SWPPP to prevent discharge of sediment or pollutants from the construction site. **Mitigation Measure BIO-1** includes a summary of the requirements of the NPDES Construction General Permit. Compliance with this permit, as well as **Mitigation Measure HAZ-1** which would minimize potential for release of hazardous materials encountered in groundwater (described in Section 2.2.9, *Hazards and Hazardous Materials*), would reduce this impact to a **less than significant with mitigation incorporated**.

In addition, dewatering conducted for the construction to route pipelines over the levee is anticipated to pump groundwater with TPH as diesel and motor oil above effluent limitations promulgated in the RWQCB's *General Waste Discharge Requirements for Discharge or Reclamation of Extracted and Treated Groundwater* (RWQCB Order No. R2-2017-0048, NPDES Permit No. CAG912002), as discussed above in Section 2.2.9, *Hazards and Hazardous Materials*. As a result, the project proponent would be required to properly manage the contaminated groundwater. **Mitigation Measure HAZ-1** describes three options for managing the contaminated groundwater that would comply with RWQCB effluent limitations.

Operational Impacts

Project operation would have no negative water quality impacts; the expanded and restored coastal habitat would have similar impacts on water quality to existing conditions. Under existing conditions, water quality impacts include natural erosion and siltation impacts which occur high precipitation events within the Walnut Creek watershed. Implementation of operations, maintenance, and adaptive management measures described in Chapter 1, Project Description would ensure minimization and repair of areas of potential erosion. Maintenance activities would also follow BMPs outlined in the District's RMA with CDFW. Therefore, impacts would be **less than significant**.

2.2.11 Land Use and Planning

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
XI. LAND USE AND PLANNING —				
Would the project:				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion

The project area's land use is designated "Open Space" (OS) by the Contra Costa County 2020 General Plan and "Open Space/Conservation Use Land" by the Martinez General Plan, the project area and the vicinity to the south and west is currently zoned by Contra Costa County as Heavy Industrial (H-I).¹²²⁻¹²³ The areas of the North Reach within the city limits of Martinez are zoned "Open Space" (OS) in the northern parcel and "Environmental Conservation District/Heavy Industrial" (ECD-H-I) in the southwestern parcel of the North Reach.¹²⁴ Permitted uses in H-I designated areas include heavy industrial manufacturing uses of all kinds. Permitted uses in OS designated areas include agricultural uses and park and recreational uses. Permitted uses in ECD-H-I designated areas include agricultural, residential (one single family dwelling on sites up to 20 acres), and recreational (parks and recreational facilities), as well as conditionally permitted uses that are comparable to those in industrial zones.¹²⁵ Adjacent Contra Costa County land uses include OS, Parks and Recreation (PR), Water (WA), and some H-I, with adjacent City of Martinez land uses as OS, ECD-H-I, and H-I.

a) Would the project physically divide an established community? (No Impact)

The proposed project would involve enhancements and restoration of tidal wetlands within unincorporated Contra Costa County. As shown on Figure 2, the land uses adjacent to and included in the project area include heavy industrial (Acme Landfill, Conco Incorporated) and Open Space (State Lands Commission). There are no adjacent residential land uses. While the proposed project would set back levees in order to restore and enhance wetlands, which would increase the amount of land within the floodplain of Walnut Creek, as shown on Figure 2, it would not divide any community – the creeks and marshes are existing physical divisions which keep nearby communities separate. Therefore, the project would not divide any established communities, nor would it occur within an established community. Project construction and

¹²² Contra Costa County, 2019. Contra Costa County Zoning Ordinance. Available: https://library.municode.com/ca/contracosta-county/codes/ordinance_code?nodeId=TIT8ZO. Accessed July 1, 2019.

¹²³ City of Martinez, 2010. *Martinez General Plan*. Available: <http://www.cityofmartinez.org/civicax/filebank/blobdload.aspx?BlobID=17257>. Accessed July 19, 2019.

¹²⁴ City of Martinez, 2018. City of Martinez Zoning Map. Available: <http://www.cityofmartinez.org/civicax/filebank/blobdload.aspx?BlobID=17160>. Accessed July 19, 2019.

¹²⁵ City of Martinez, 2018. Martinez, California – Code of Ordinances – Title 22 – Zoning. Available: https://library.municode.com/ca/martinez/codes/code_of_ordinances?nodeId=CD_ORD_TIT22ZO. Accessed July 19, 2019.

operation would, therefore, result in **no impact** related to physically dividing an established community.

b) Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect? (No Impact)

The project would not be consistent with the current zoning described above. However, the project site is publicly owned and a future zoning change will occur to better match the General Plan 2020 and Martinez General Plan designations and to accommodate the proposed restoration project. Though the project conflicts with the existing zoning, this conflict would not cause a significant environmental impact with existing General Plan policies for land use or zoning code regulations adopted for the purpose of avoiding or mitigating environmental effects. However, even though the project is located mostly on open space areas and consistent with the intent with the land uses as designated by the General Plan, including the recreational part of the project (e.g., recreational, trails, viewing locations, boat launching, etc.) within the North Reach, the zoning designation for the North Reach is H-I. Section 84-58.404 of the County Code states that in H-I zones, recreational elements are conditionally permitted, and therefore, the project would require a land use permit application. A land use permit would be submitted for consideration at the time the project sponsor (EBRPD or JMLT) is ready to submit the plans for the recreational part of the proposed project.

Additionally, the project would conflict with the 2012 San Francisco Bay Plan Maps (Bay Plan Maps). The North Reach is currently designated by the Bay Plan Maps as “Water-Related Industry.”¹²⁶ In order for the BCDC to issue a permit for restoration of the project site to tidal marsh, the Bay Plan Map designation for the project area needs to be updated and designated as “Tidal Marsh” and “Waterfront Park.” In accordance with the California Code of Regulations, Title 14 Section 11000, the proposed land use change requires an amendment to the Bay Plan. However, the amendment would not result in a significant environment impact because the purpose of the project is to restore natural conditions in the project area. If water-related industrial use of the project site were to occur, significant environmental impacts could result by degrading existing and adjacent habitats at the site. Thus, implementing the project would result in beneficial environmental effects compared to the current land use map designation. Therefore, impacts would be **less than significant**.

¹²⁶ San Francisco Bay Conservation and Development Commission, Amended 2006, San Francisco Bay Plan – Plan Map 2. Available: https://bcdcc.ca.gov/pdf/bayplan/Plan_Map_2.pdf.

2.2.12 Mineral Resources

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
XII. MINERAL RESOURCES — Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

The Contra Costa County General Plan maps and identifies locally important mineral resources throughout the county.¹²⁷ Important mineral resources include clay, diabase, and domengine sandstone. These resources are located primarily in three areas – clay near Port Costa, west of Martinez; diabase in the hills northwest of Mount Diablo; and domengine sandstone located on the western edge of Byron. No mineral resources are identified in or near the project site.

a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state? (No Impact)

There are no mines, mineral plants or geothermal wells located at the project site.^{128,129} There are, however, several oil and gas wells in the vicinity of the project but not on the project site. These oil and gas wells are categorized as “Dry Wells” and, as such, the implementation of the project would not affect a known mineral resource. The proposed project is not located in an area known to contain minerals that would be of value to the region or residents of the state. Therefore, the proposed project would not result in the loss of availability of a known mineral resource that would be of value to the region; **no impact** would occur.

b) Would the project result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan? (No Impact)

Though the Contra Costa County General Plan identifies locally important mineral resources throughout the county, none are delineated in any local land use plans for the project area, including the Contra Costa County General Plan. Sand that is found in the North Reach is not naturally-occurring but was brought to the site. Therefore, the project would not result in the loss of availability of a locally important mineral resource recovery site; **no impact** would occur.

¹²⁷ Contra Costa County, 2004. Contra Costa County General Plan – Figure 8-4 Mineral Resource Areas.

¹²⁸ U.S. Geological Survey, 2013. Active Mines and Mineral Plants in the U.S. 2003, mrdata.usgs.gov/mineral-resources/active-mines.html, accessed September 17, 2018.

¹²⁹ California Department of Conservation, Division of Oil, Gas, and Geothermal Resources, 2018. DOGGR Online Mapping System, accessed September 17, 2018.

2.2.13 Noise

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
XIII. NOISE — Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Environmental Setting

Noise Terminology

Noise can be generally defined as unwanted sound. Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) which is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing and 120 dB to 140 dB corresponding to the threshold of pain.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). Frequency A-weighting follows an international standard methodology of frequency de-emphasis and is typically applied to community noise measurements.

When a new noise is introduced to an environment, human reaction can be predicted by comparing the new noise to the ambient noise level, which is the existing noise level comprised of all sources of noise in a given location. In general, the more a new noise exceeds the ambient

noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur.¹³⁰

- except in carefully controlled laboratory experiments, a change of 1-dB cannot be perceived;
- outside of the laboratory, a 3-dB change is considered a just-perceivable difference;
- a change in level of at least 5-dB is required before any noticeable change in human response would be expected; and
- a 10-dB change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response.

The perceived increases in noise levels shown above are applicable to both mobile and stationary noise sources. These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a non-linear fashion; hence, the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

Noise exposure is a measure of noise over a period of time. Noise level is a measure of noise at a given instant in time. Community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic and atmospheric conditions. What makes community noise constantly variable throughout a day, besides the slowly changing background noise, is the addition of short duration single event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual receptor. These successive additions of sound to the community noise environment vary the community noise level from instant to instant, requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts.

This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

- L_{dn}** a 24-hour day and night A-weighted noise exposure level, which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night (“penalizing” nighttime noises). Noise between 10:00 p.m. and 7:00 a.m. is weighted (penalized) by adding 10 dB to take into account the greater annoyance of nighttime noises.
- CNEL** the Community Noise Equivalent Level (CNEL); similar to L_{dn}, the CNEL adds a 5-dB “penalty” for the evening hours between 7:00 p.m. and 10:00 p.m. in addition to a 10-dB penalty between the hours of 10:00 p.m. and 7:00 a.m.

¹³⁰ California Department of Transportation, 2013. Technical Noise Supplement to the Traffic Noise Analysis Protocol. September 2013.

L_{eq}: the energy-equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The L_{eq} is the constant sound level, which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).

L_{max}: the instantaneous maximum noise level for a specified period of time.

Vibration Terminology

As described in the FTA's Transit Noise and Vibration Impact Manual, ground-borne vibration can be a serious concern for nearby neighbors, causing buildings to shake and rumbling sounds to be heard.¹³¹ In contrast to airborne noise, ground-borne vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of ground-borne vibration are trains, buses and heavy trucks on rough roads, and construction activities such as blasting, sheet pile-driving and operating heavy earth-moving equipment.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal, which is measured in inches per second. The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (Vdb) is commonly used to express RMS. The decibel notation acts to compress the range of numbers required to describe vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors for vibration assessment include structures (especially older masonry structures), people who spend a lot of time indoors (especially residents, students, the elderly and sick), and vibration sensitive equipment such as hospital analytical equipment and equipment used in computer chip manufacturing.

The effects of ground-borne vibration include movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls and rumbling sounds. In extreme cases, the vibration can cause damage to buildings. Building damage is not a factor for most projects, with the occasional exception of blasting and pile-driving during construction, which would not occur under the proposed project. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by only a small margin.

Sensitive Receptors

Human response to noise varies considerably from one individual to another. Effects of noise at various levels can include interference with sleep, concentration, and communication, and can cause physiological and psychological stress and hearing loss. Given these effects, some land uses are considered more sensitive to ambient noise levels than others. In general, residences, schools, hospitals, and nursing homes are considered to be the most sensitive to noise. Places

¹³¹ Federal Transit Administration, 2018. Transit Noise and Vibration Impact Manual. September 2018.

such as churches, libraries, and cemeteries, where people tend to pray, study, and/or contemplate are also sensitive to noise. Commercial and industrial uses are considered the least noise-sensitive.

Portions of the proposed project are located within an unincorporated area of Contra Costa County and some portions are located within the City of Martinez. The nearest sensitive receptors to the proposed project site are single-family residences located approximately 1,010 feet south of Pacheco Reach's most southern boundary. These single-family residences are located within Vine Hill, which is a census-designated place in Contra Costa County. Other noise sensitive receptors located in the vicinity of the proposed project are residences and schools; however, these sensitive receptors are located beyond 1,300 feet from the proposed project.

Existing Noise Setting

The noise environment surrounding the proposed project is influenced by vehicular traffic along I-680, freight traffic along the Burlington Northern Santa Fe (BNSF) rail line, use of industrial equipment and natural sounds (e.g., birds chirping, crickets). According to the Contra Costa County's 2005-2020 General Plan, the sensitive receptors on Blum Road and Explorer Way located within Vine Hill are exposed to vehicular traffic noise along I-680 ranging from 60 dBA L_{dn} to 70 dBA L_{dn} .¹³²

Regulatory Framework

County of Contra Costa General Plan

The following policies found in the County of Contra Costa 2005-2020 General Plan are relevant to the proposed project:¹³³

Policy 11-8: Construction activities shall be concentrated during the hours of the day that are not noise-sensitive for adjacent land uses and should be commissioned to occur during normal work hours of the day to provide relative quiet during the more sensitive evening and early morning periods.

Figure 25 shows the General Plan land use compatibilities relative to the community noise environments as a comparison to the use of other noise compatibilities used in the analysis of noise impacts on sensitive receptors below.

County of Contra Costa Municipal Code

Contra Costa County's Municipal Code does not contain quantitative standards for regulating noise from construction equipment. However, Section 716-8.1004 of the County Code addresses hours of operation for excavation and grading activities. If operations under the permit are within 500 feet of residential or commercial occupancies, except as otherwise provided by conditions of approval for the project, grading operations shall be limited to weekdays and to the hours, between 7:30 a.m. and 5:30 p.m., except that maintenance and service work on equipment may be performed at any time.

¹³² County of Contra Costa, 2005. Contra Costa County General Plan. January 18, 2005.

¹³³ County of Contra Costa, 2005. Contra Costa County General Plan. January 18, 2005.

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE					
	L_{dn} OR CNEL, dB					
	55	60	65	70	75	80
RESIDENTIAL - LOW DENSITY SINGLE FAMILY, DUPLEX, MOBILE HOMES						
RESIDENTIAL - MULTI FAMILY						
TRANSIENT LODGING - MOTELS, HOTELS						
SCHOOLS, LIBRARIES, CHURCHES, HOSPITALS, NURSING HOMES						
AUDITORIUMS, CONCERT HALLS, AMPHITHEATRES						
SPORTS ARENA, OUTDOOR SPECTATOR SPORTS						
PLAYGROUNDS, NEIGHBOURHOOD PARKS						
GOLF COURSES, RIDING STABLES, WATER RECREATION, CEMETARIES						
OFFICE BUILDINGS, BUSINESS, COMMERCIAL AND PROFESSIONAL						
INDUSTRIAL, MANUFACTURING, UTILITIES, AGRICULTURE						



NORMALLY ACCEPTABLE

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



CONDITIONALLY ACCEPTABLE

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.



NORMALLY UNACCEPTABLE

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.



CLEARLY UNACCEPTABLE

New construction or development clearly should not be undertaken.

For lands within 3 miles of Buchanan Field and the East Contra Costa County Airports noise compatibility shall be adjusted to those of the ALUC which are roughly 5 CNEL lower than shown on this table.

Figure 25
Contra Costa General Plan
Land Use Compatibility for Community Noise Environments

City of Martinez General Plan

The City of Martinez's General Plan 2035 does not contain any goals or policies relevant to the proposed project.

City of Martinez Municipal Code

According to Section 8.34.030(B) of the City of Martinez Municipal Code, construction activities (e.g., demolition, excavation, erection, alteration or repair activities) is not allowed before 7:00 a.m., or after 7:00 p.m. daily (except Saturday, Sunday, and State, Federal or Local Holidays, when the prohibited time shall be before 9:00 a.m. and after 5:00 p.m.).

Discussion

a) **Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? (*Less than Significant*)**

The proposed project is located within the jurisdictions of Contra Costa County (i.e., southern portion of the North Reach and all of the Middle Reach and South Reach) and City of Martinez (i.e., northern portion of the North Reach). The nearest sensitive receptor to the proposed project is located approximately 1,010 feet south of the South Reach's southern boundary.

Construction Impacts

As discussed above, both the County of Contra Costa and City of Martinez establish allowable construction hours within their respective general plans and municipal codes. Proposed project construction activities, within all three reaches, are proposed to occur from 7:00 a.m. to 6:00 p.m., Monday through Friday. Work may occur on weekends and outside of these hours. Work conducted outside of these hours would require prior approval by the District and the Resident Engineer will be onsite to address any noise issues. Since the nearest sensitive receptor to the proposed project is located further than 500 feet from the proposed project, the proposed project would be consistent with Section 716-8.1004 of the County of Contra Costa Municipal Code, which restricts hours of grading to between 7:30 a.m. and 5:30 p.m. when within 500 feet of residential or commercial occupancies.

Policy 11-8 of the Contra Costa County 2005-2020 General Plan does not contain defined hours for what it considers "daytime" and "normal" working hours; therefore, for this analysis normal working hours are considered to be those identified in Section 8.34.030 of the City of Martinez Municipal Code (i.e., 7:00 a.m. to 7:00 p.m. Monday through Friday, and 9:00 a.m. to 5:00 p.m. on Saturdays. Work on Sundays and holidays would require prior approval by the District and the Resident Engineer will be onsite to address any noise issues. Since construction activities are expected to occur within the allowed construction hours provided in Section 8.34.030 of the City of Martinez Municipal Code, the construction of the proposed project would not generate a substantial increase in noise levels in excess of standards established in the local general plan or noise ordinance. This would be a **less-than-significant impact**.

Although there would be no long-term operational noise sources following construction, the construction of the proposed project could result in a substantial temporary increase in ambient noise levels in the proposed project vicinity above levels existing without the proposed project.

Construction noise levels at and near the proposed project would fluctuate depending on the type, number, and duration of use of various pieces of construction equipment. Given the low level of construction-related vehicle trips associated with hauling and commuting workers, these trips would not be expected to raise ambient noise levels along haul routes. **Table 18** shows typical noise levels produced by various types of construction equipment that would operate during the construction of the proposed project.

TABLE 18
REFERENCE CONSTRUCTION EQUIPMENT NOISE LEVELS – (50 FEET FROM SOURCE)

Type of Equipment	L _{max} , dBA	Hourly L _{eq} , dBA/Percent Used ¹
South Reach		
Mower	84	80/40
Scraper	85	81/40
Bulldozer	85	81/40
Dump Truck	84	80/40
Water Truck	84	80/40
Rotary Ditcher	84	80/40
Front Loader	80	76/40
Compactor	80	73/20
Bobcat	80	76/40
Grader	85	81/40
Excavator	85	81/40
Middle Reach		
Mower	84	80/40
Scraper	85	81/40
Bulldozer	85	81/40
Dump Truck	84	80/40
Water Truck	84	80/40
Rotary Ditcher	84	80/40
Front Loader	80	76/40
Compactor	80	73/20
Bobcat	80	76/40
Grader	85	81/40
Excavator	85	81/40
North Reach		
Mower	84	80/40
Scraper	85	81/40
Bulldozer	85	81/40
Dump Truck	84	80/40
Water Truck	84	80/40
Rotary Ditcher	84	80/40
Front Loader	80	76/40

TABLE 18 (CONTINUED)
REFERENCE CONSTRUCTION EQUIPMENT NOISE LEVELS – (50 FEET FROM SOURCE)

Type of Equipment	L _{max} , dBA	Hourly L _{eq} , dBA/Percent Used ¹
North Reach (cont.)		
Compactor	80	73/20
Bobcat	80	76/40
Grader	85	81/40
Excavator	85	81/40
Portable Pumps	77	74/50
Paver	85	82/50
Roller	85	78/20
Forklift	85	78/20
Tractor	84	80/40
Crane	85	77/16
Pile Driver (impact)	95	88/20
Concrete Mixer Truck	85	81/40

NOTE:

¹ "Percent used" were obtained from the FHWA Roadway Construction Noise Model User's Guide.

SOURCE: FHWA, 2006.

The operation of each piece of equipment within the three reaches would not be constant throughout the day, as equipment would be turned off when not in use. Over a typical workday, the equipment would be operating at different locations and all the equipment would not operate concurrently at the same location of the proposed project. To quantify construction-related noise exposure that would occur at the nearest sensitive receptors, it was assumed that the two loudest pieces of construction equipment would operate at the closest location of the proposed project to the nearest off-site sensitive receptors. **Table 19** presents the highest L_{eq} noise levels that sensitive receptors could be exposed to at each of the construction sites.

TABLE 19
SUMMARY OF ESTIMATE NOISE LEVELS AT SENSITIVE RECEPTORS DURING
PROPOSED PROJECT CONSTRUCTION

Reach ¹	Distance to Nearest Sensitive Receptor (feet)	Two Loudest Pieces of Construction Equipment	Combined Noise level from 50 feet (dBA L _{eq}) ²	Attenuated Noise Level (dBA L _{eq}) ³	Exceed 90 dBA Leq (yes or no)?
South	1,010	Grader, Excavator	84	53	No
Middle	2,290	Grader, Excavator	84	42	No
North	3,970	Pile Driver, Excavator	89	42	No

NOTES:

¹ Pacheco Reach has no construction activities.² Reference construction equipment noise levels were obtained from Caltrans' Roadway Construction Noise Level (RCNM).³ Assumed an attenuation rate of 7.5 dB per doubling of distance (i.e., soft site), to account for intervening terrain and structures.

SOURCE: Federal Highway Administration, 2006. FHWA Roadway Construction Noise Model User's Guide. January 2006.

The County of Contra Costa and City of Martinez do not contain noise level standards that are applicable to short-term construction activities in their respective general plans and municipal codes. Although there are no applicable local policies or standards available to judge the significance of short-term daytime construction noise levels, the FTA's *Transit Noise and Vibration Impact Manual* has identified a daytime 1-hour L_{eq} level of 90 dBA as a noise level where adverse community reaction could occur at residential land uses for general assessment of construction noise.¹³⁴ These assessment criteria used here to assess whether construction-related noise levels would cause a substantial temporary or periodic increase in ambient noise levels at sensitive receptor locations. As shown in Table 19, onsite construction activities at each of the reaches would not expose the nearest sensitive receptor to noise levels that would exceed the 90 dBA L_{eq} threshold or those of the County General Plan noise compatibility in Figure 25, and therefore would not result in a significant impact. The temporary increase in ambient noise levels would cause a **less-than-significant impact**.

Operation Impacts

Once all construction activities are completed, the proposed project would not create any new permanent noise sources (e.g., pumps, generators). Therefore, operation and maintenance of the proposed project would not generate a substantial increase in noise levels in excess of standards established in the local general plan or noise ordinance. This would result in **no impact** from project operations and maintenance.

b) Would the project result in generation of excessive groundborne vibration or groundborne noise levels? (*Less than Significant*)

Since the operation of the proposed project would not include any activities that generate significant levels of vibration, it is not anticipated that the operation of the proposed project would expose the nearest sensitive receptor or structure to vibration levels that would result in human annoyance or building damage. Therefore, only vibration impacts from onsite construction activities are evaluated.

For adverse human reaction, the analysis applies the “strongly perceptible” threshold of 0.9 inch/second PPV for transient sources.¹³⁵ A threshold of 0.3 inch/second PPV is used to assess damage risk for all other buildings.¹³⁶ There are no historic structures in the vicinity of proposed project that could be adversely affected by project construction-related vibration.

The potential use of a bulldozer during the construction of the proposed would be expected to generate the highest vibration levels during construction. According to the FTA *Transit Noise and Vibration Impact Assessment*, bulldozers typically generate vibration levels of 0.089 inch/second PPV at a distance of 25 feet.¹³⁷ There are single-family residences located 1,010 feet south of the Pacheco Reach's most southern boundary. These single-family residences would be exposed to a

¹³⁴ Federal Transit Administration, 2018. *Transit Noise and Vibration Impact Manual*. September 2018.

¹³⁵ California Department of Transportation, 2013. *Transportation and Construction Vibration Guidance Manual*. September 2013.

¹³⁶ California Department of Transportation, 2013. *Transportation and Construction Vibration Guidance Manual*. September 2013.

¹³⁷ Federal Transit Administration, 2018. *Transit Noise and Vibration Impact Manual*. September 2018.

vibration level of less than 0.0004 inch/second PPV, well below the applied human annoyance and building damage threshold. Consequently, existing sensitive receptors and structures near the proposed project would not be affected by substantial groundborne vibration during project construction and this impact would be considered **less than significant**.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? (*No Impact*)

The proposed project is located approximately 2 miles north of the Buchanan Field Airport. According to the Contra Costa County Airport Land Use Compatibility Plan, the proposed project is located approximately 0.17 miles north of the airport's 55 dBA CNEL noise contour. Since the proposed project would not locate new uses (e.g., residential, commercial, retail) near the Buchanan Field Airport, the proposed project would not expose people residing or working in the proposed project area to excessive noise levels. **No impact** would occur.

2.2.14 Population and Housing

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
XIV. POPULATION AND HOUSING — Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Discussion

- a) Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)? (No Impact)**

The proposed project does not propose changes to land uses that would result in new residences or businesses, nor would it extend roads or other infrastructure. The expanded floodplain would not result in increased flood protection such that new areas could be developed. During the approximately 3.5-year construction period, it is estimated that 45 construction workers would be employed. Given the site's proximity to several population centers, it is expected that regional labor would meet the construction workforce requirements. Therefore, the proposed project would have **no impact** related to growth inducement.

- b) Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere? (No Impacts)**

The project would restore and enhance natural habitats in an area with no residences and would not displace existing people or housing. No people would be displaced due to the project. No housing would need to be constructed due to displacement of existing housing. Therefore, **no impact** would occur.

2.2.15 Public Services

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
XV. PUBLIC SERVICES — Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered government 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 following public services:				
i) Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
v) Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion

Fire protection and general rescue services in the unincorporated areas of Contra Costa County are provided by the Contra Costa County Fire Protection District (CCCYPD),^{138,139} In total, CCCYPD operates 23 fire stations, serving a population of 600,000 people across a 304 square-mile area. In particular, the industrial businesses in the project vicinity are served by CCCYPD. In the event of a fire emergency, Fire Station 9 in Pacheco and Fire Station 12 in Martinez would respond.¹⁴⁰

The project site is served by the Contra Costa County Office of the Sheriff. The nearest County Sheriff's office is Muir Station at 1980 Muir Road in the City of Martinez, approximately 1.5 miles south of the project site, which serves the project area and other unincorporated area in the northern middle part of the county.¹⁴¹

a.i) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection? (Less than Significant)

Because construction activities would be short-term and temporary and would involve a workforce of approximately 45 construction workers on any given day, these workers would

¹³⁸ Contra Costa County Fire Protection District, 2018. <https://www.cccfpd.org/about-cccfpd.php>. Accessed September 18, 2018.

¹³⁹ California Department of Forestry and Fire Protection, 2018. http://www.fire.ca.gov/fire_prevention/fhsz_maps_contracosta. Accessed September 18, 2018.

¹⁴⁰ NEP Fire Services, 2018. *United Professional Firefighters of Contra Costa Map*. <https://batchgeo.com/map/2041c9ec625cc4f8779b42c4710507ab>. Accessed September 18, 2018.

¹⁴¹ Contra Costa County Office of the Sheriff, 2018. http://www.cocosheriff.org/bureaus/field_operations/patrol/muir.htm. Accessed September 18, 2018.

either already live in nearby communities or would not relocate to the nearby communities for the construction work. Therefore, project construction would not significantly increase demand for fire protection services throughout the project vicinity due to population growth, and would not change any uses on the site. For these reasons, the project would not be expected to substantially affect CCCFPD's ability to maintain service ratios, response times, other performance objectives, such that new or physically altered facilities would be required. For these reasons, the project's impact with respect to the provision of fire service would be **less than significant**.

a.ii) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for police protection? (*Less than Significant*)

For the reasons provided in response to question a.i), above, the project would not be expected to substantially affect the Contra Costa County Sheriff's Office's ability to maintain service ratios, response times, other performance objectives, such that new or physically altered facilities would be required. For these reasons, the project's impact with respect to the provision of police protection facilities would be **less than significant**.

a.iii) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for schools? (*No Impact*)

The proposed project would result in a small temporary increase of construction worker employees in the project area. The construction workers would most likely be from nearby communities, and would not require new or modification of existing school facilities. There would be **no impact** to schools.

a.iv) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for parks? (*Less than Significant*)

The nearest park or recreational area is the Waterbird Regional Preserve, located less than a mile west of the project site. For the reasons described in response to question a.i), above, the project would not result in increased population such that there would be additional demand for parks facilities during or after construction. Additionally, the project would increase the available public access on-site. Impacts related to increasing public access are addressed in other sections of this document, particularly in Section 2.2.16, Recreation. Therefore, the project would have a **less-than-significant impact** related to the need for new or physically altered parks and recreational facilities.

a.v) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for other public facilities? (*Less than Significant*)

The proposed project would not involve new permanent employees and, therefore, it is not expected to increase the use of other public facilities such as libraries or hospitals. Therefore, the project's impact would be **less than significant**.

2.2.16 Recreation

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
XVI. RECREATION:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Discussion

The proposed project would entail enhancement and restoration of coastal marsh habitat along Walnut and Pacheco Creeks. Nearby existing parks and trails include the Iron Horse Regional Trail, a Class 1 paved multi-use trail, the northernmost end of which is approximately 1.5 miles south from the project limits at Marsh Drive just south of Highway 4, the Waterbird Regional Preserve, approximately 1,000 feet southwest from the North Reach of the project.

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

Construction Impacts

During project construction, no closure of the Iron Horse Regional Trail would be required; the trail does not cross any haul routes and is not located near project construction staging or work areas. During project construction of the Middle Reach, Waterbird Way would be used as a haul route for transporting fill to other project areas, which is the only access point to the parking area for Waterbird Regional Preserve. Waterbird Way would not be closed during the maximum two construction seasons in which the Middle Reach would be constructed.

Nevertheless, the presence of construction activities may compel some would-be users to visit other nearby parks in the area, such as Radke Martinez Regional Shoreline Park and Waterfront Park, among many others. However, given that the Waterbird Regional Preserve would remain open during construction, any such displacement would not result in substantial increases in receiving park users such that the parks would experience physical deterioration. The project would expand recreational access in the North Reach, likely decreasing the use of other recreational facilities; therefore, the project would have a **less than significant** short-term and temporary impact on neighborhood or regional parks and recreational facilities.

Operational Impacts

Though the project would expand trails on the project site (see summary of project features in Table 1 in Chapter 1, *Project Description*) and would prepare the site to be connected to potential expansions of existing trails (specifically the future Great California Delta Trail, Iron Horse Regional Trail, and the San Francisco Bay Trail) as shown on Figure 4 in Chapter 1, *Project Description*, the project would not connect these trails under jurisdiction of the EBRPD. This lack

of connection means that there would be no additional trail users and, therefore, project operations would have a **less-than-significant impact** on degradation of recreational facilities.

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? (*Less than Significant with Mitigation Incorporated*)

As discussed elsewhere in other sections of this document, the proposed project includes recreational facilities, some of which may have impacts on the environment. The specific types of impacts, and mitigation measures identified to minimize or avoid significant impacts, are discussed in the other resource sections of this document corresponding to the affected topic area (e.g., Section 2.2.2, Air Quality; Section 2.2.4, Biological Resources; Section 2.2.13, Noise; and Section 2.2.17, Transportation). Please refer to those sections for specific discussions of potential physical adverse effects on the environment and their respective resource-specific mitigations. Therefore, the proposed project would result in **less-than-significant impacts with mitigation**.

2.2.17 Transportation

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
XVII. TRANSPORTATION —				
Would the project:				
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion

Environmental Setting

The project site is located in unincorporated Contra Costa County approximately 3 miles east of the City of Martinez, along the lowest 2.5 miles of Walnut Creek and 1.5 miles of Pacheco Creek (see Figure 1). Site access, haul routes and staging areas are shown in Figure 13 and Figure 14. Regional construction access to the South Reach will be provided from I-680 via State Route 4 (SR 4) at the Pacheco Boulevard on- and off-ramps. Blum Road, Imhoff Drive, and Waterbird Way would be used for local access between the freeway on- and off-ramps and the project site. Construction access to the Middle Reach would include Waterbird Way and Acme landfill access roads. Construction access to the North Reach will be provided from I-680 via Waterfront Road.

Highways

I-680 is a four- to ten-lane interstate highway running north and south between U.S. 101 in San Jose and I-80 in Fairfield. It carries an average daily traffic (ADT) volume of approximately 138,000 vehicles on ten travel lanes (five in each direction) in the project area.¹⁴² SR 4 is a two- to six-lane state highway running east and west between San Pablo Avenue in Hercules and SR 89 in the Sierra Nevada. It carries an ADT volume of approximately 88,000 vehicles on four travel lanes (two in each direction) in the project area.

Arterial Roadways

Pacheco Boulevard is a four-lane north-south arterial roadway with a designated bike lane in the northbound direction in the project area. It serves industrial, retail, and residential land uses, and provides access to the South Reach. County Connection Route 19 and 99X, which connect Martinez to the Bay Area Rapid Transit (BART) Concord Station, travel along Pacheco Boulevard. Waterfront Road is a two-lane east-west arterial roadway in the project area. It serves industrial land uses along the Suisun Bay waterfront and provides access to the North and Middle Reaches.

¹⁴² California Department of Transportation, 2017. 2016 Traffic Volumes on California State Highways. Published in 2017. Available: http://www.dot.ca.gov/trafficops/census/docs/2016_aadt_volumes.pdf.

Collector Roadways

Blum Road is a two-lane north-south collector roadway with on-street parking on both sides near Pacheco Boulevard. Blum Road provides access to residential and industrial lane uses. The intersection of Pacheco Boulevard and Blum Road includes the westbound SR-4 on- and off-ramp terminals. Imhoff Drive is a two-lane east-west collector roadway that provides access to County services and industrial land uses. Waterbird Way is a 1.2 –mile two-lane east-west collector roadway that connects Waterfront Road to the Republic Services waste disposal/transfer site.

Transit, Bicycle, and Pedestrian Facilities

County Connection, the public transit service provider in central Contra Cost County, does not operate any fixed-route transit service in the project area.¹⁴³

There is currently no public roadway, bicycle, or pedestrian access through the project area except for Waterfront Road; however regional trail network plans have proposed several potential future trail connections passing through or near the project area, including the extension of the existing Iron Horse Trail to the project site and a future trail connector from the project site to the San Francisco Bay Trail. EBRPD has prepared a preliminary feasibility study of potential Iron Horse Trail alignments through the project reaches, which would include a public access trail along the flood control levee on the South Reach.¹⁴⁴

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

South Reach

As stated in Chapter 1, Project Description, the South Reach would be designed to facilitate the implementation of future public access improvements, including the extension of the Iron Horse Trail along the new setback levee, construction of a pedestrian crossing over the BNSF railroad, and construction of a pedestrian bridge over Pacheco Creek. However, these components would not be built as part of the project, only considered and designed for future implementation. Furthermore, the proposed 30-foot wide levee crown would be adequate to support a two-way Caltrans Class I bikeway (11.6-foot minimum width required) and the levee profile and crest cross slopes would be within Americans with Disabilities Act (ADA) tolerances. The District would continue to work with the EBRPD to refine plans for future public access through the project site.

North Reach

As noted in Section 1.2.4, North Reach, the District is partnering with the JMLT to develop public access plans for the North Reach. Public access in the North Reach includes an interpretive center with a restroom, parking/staging area, a trail network with interpretive signage, and overlooks at the north end of the site. The District would continue to work with the JMLT to refine plans for future public access in the North Reach.

¹⁴³ County Connection, 2018. System Map Weekday Routes. 2018. Available: https://countyconnection.com/wp-content/themes/countyconnection/schedules/CCCTA_Weekday.pdf.

¹⁴⁴ Contra Costa County Flood Control and Water Conservation District, 2017. *Lower Walnut Creek Restoration Project – Project Study Report*. December 2017.

Middle Reach

No public bicycle or pedestrian access would be provided through the Middle Reach.

Construction Impacts

As presented in Table 1 and described in Chapter 1, Project Description, the proposed project would restore and enhance tidal wetlands along the southern shore of Suisun Bay upstream along Walnut Creek and its tributary, Pacheco Creek. Construction activities would involve site preparation, earthwork, access improvements, construction of new facilities, and revegetation on the project site. Direct traffic impacts from construction of the project would be short-term and temporary. The duration of impacts related to short-term disruption of traffic flow and potential increased congestion generated by construction vehicles would be limited to the period of time needed to complete construction of the project components.

Construction activities that would generate off-site traffic would include the delivery of construction vehicles and equipment to the project site, the daily arrival and departure of construction workers, the delivery of materials throughout the construction period. Construction equipment would be delivered to and removed from the project site in phases for the different construction activities. Estimated maximum daily truck and worker trips for the proposed project by construction phase are provided below in **Table 20**. Construction seasons are described in Section 1.2.6, Project Construction.

TABLE 20
MAXIMUM DAILY CONSTRUCTION VEHICLE TRIPS

Construction Phase	Truck Trips	Worker Trips	Total
North and South Reach Restoration	25	45	70
Middle Reach Restoration First Season	16	21	37
Middle Reach Restoration Second Season	16	26	42
Recreation – trails and associated components	5	18	23
Recreation – Interpretive Center	4	10	14

SOURCE: Placeworks, 2019.

As shown in Table 20, the estimated haul truck traffic would vary depending on the activity, but would peak at up to approximately 25 trucks per day during first and second construction seasons (estimated to be May 2021 to November 2022), which would yield up to approximately 50 daily one-way trips per day to and from the project site, which would likely be spread over the course of the 11-hour work day rather than occurring all at once.¹⁴⁵ The proposed project would construct all three reaches in an integrated manner that allows for balance of cut and fill between the reaches, except for the movement of some of the sand from the North Reach to the Marathon Refinery; therefore, most trucks associated with the transport of cut and fill material would only travel between the reaches rather than using regional transportation facilities.

¹⁴⁵ Hours of construction would generally occur between 7:00 a.m. to 6:00 p.m., Monday through Friday, with some exceptions pursuant to County of Contra Costa and City of Martinez requirements.

Construction of the North and South Reach restoration, which would take approximately nine months to complete and estimated to occur between May 2020 and January 2021, would require the largest number of construction workers. Up to 45 construction workers would be present on a peak day, and those workers would commute to and from the worksite primarily before or after peak traffic hours. Parking for worker vehicles and construction vehicles would be available in designated on-site staging areas within the project footprint.

Construction-generated traffic would be temporary, and therefore, would not result in any long-term degradation in operating conditions on any locally used roadways for the proposed project. The impact of construction-related traffic would be a temporary and result in intermittent reduction of the capacities of streets in the project area because of the slower movements and larger turning radii of construction trucks compared to passenger vehicles. Drivers could experience delays if they were traveling behind a heavy truck; however, as noted above, only 25 trucks per day are expected to travel to/from the project site during the peak of construction activities, and those truck trips would occur over the course of the 11-hour work day. Project construction-related traffic would not be substantial in relation to traffic flow conditions on I-680, SR 4, or local access roadways. The project trips would fall within the daily fluctuations of traffic volumes on I-680 and SR 4 (not perceptible to the average motorist), and so while the traffic generated by construction activities would be noticeable (i.e., would represent a higher percent increase in traffic volumes) on the local-serving roadways serving the construction site, the effect on traffic flow would be **less than significant**.

Operational Impacts

The primary source of vehicle trips generated by project operations would be the proposed public access facilities in the North Reach. In addition, routine observation and maintenance activities, which are described in Section 1.2.7, Operations, Maintenance, Monitoring and Management, would occasionally generate vehicle trips on project area roadways. As described in detail in Section 1.2.4, North Reach, public access plans for the North Reach include an interpretive center, restrooms, trails, and a vehicle parking area with striped parking for 50 vehicles as well as additional unstriped capacity for buses and overflow. Figure 12 illustrates the trails and other public access features.

These public access facilities are expected to attract approximately 13,000 visitors per year to the North Reach, with access from Waterfront Road. Visitors of the proposed public access facilities would by and large travel to the area on weekends and during off-peak hour times on weekdays, and would therefore not contribute noticeably to the weekday, peak period roadway congestion (the result of typical home-to-work and work-to-home commuting patterns) on regional roadways used to access the project site. Based on this annual visitation estimate, daily visitor trip generation for weekdays, Saturdays, and Sundays were calculated using CalEEMod (see Section 2.2.3, Air Quality). The results were as follows:

- Weekday: 9.65 trips
- Saturdays: 116.13 trips
- Sundays: 85.45 trips

Considering that most, if not all, of the ten weekday, 116 Saturday, and 85 Sunday visitors would be traveling to/from the project site in vehicles carrying more than one visitor (i.e., buses carrying school children, vehicles carrying families/friends), the number of vehicle trips generated by the proposed public access facilities on local roadways in the project area would likely be less than half of the visitor trip generation. Furthermore, the vehicle trips would be spread across the period that the facilities are open to the public, which has not yet been defined by the District, but would likely be at least eight daylight hours similar to the hours of operation of other similar recreational facilities. At a maximum, this would result in about 58 new daily one-way vehicle trips, which is less than the number of daily vehicle trips evaluated above in the discussion of construction impacts. Therefore, operation of the project would not noticeably increase the current traffic volumes on area roadways.

Based on the discussion above, the project would not conflict with any adopted policies, plans, or programs related to public transit or bicycle and pedestrian facilities, nor would it affect the safety of such services/facilities. Furthermore, the project would include provisions for a potential extension of the existing Iron Horse Trail to the project site and a future trail connector from the project site to the San Francisco Bay Trail. Therefore, impacts would be **less than significant**.

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

In accordance with Senate Bill (SB) 743, the new CEQA Guidelines section 15064.3, subdivision (b) was adopted in December 2018 by the California Natural Resources Agency. These revisions to the CEQA Guidelines criteria for determining the significance of transportation impacts are primarily focused on projects within transit priority areas, and shifts the focus from driver delay to reduction of greenhouse gas emissions, creation of multimodal networks, and promotion of a mix of land uses. Vehicle miles traveled, or VMT, is a measure of the total number of miles driven to or from a development and is sometimes expressed as an average per trip or per person.

The newly adopted guidance provides that a lead agency may elect to be governed by the provisions of this section immediately. Beginning on July 1, 2020, the provisions of this section shall apply statewide. The County is currently engaged in this process and has not yet formally adopted its updated transportation significance thresholds or its updated transportation impact analysis procedures. Since the regulations of SB 743 have not been finalized or adopted by the County, a qualitative analysis of traffic delay are the measures used in this document to determine the significance of transportation impacts (see impact discussion a, above). As such, no further analysis is required and impacts related to CEQA Guidelines section 15064.3, subdivision (b) would be **less than significant**.

c) Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? (*No Impact*)

The land uses adjacent to and included in the project area include heavy industrial (Acme Landfill, Conco Incorporated) and Open Space (State Lands Commission). Due to the industrial uses in the project area, this area is not inhabited by residents. As such, the temporary

introduction of construction equipment required to construct the project on roadways in and around the project site would be compatible with existing uses and would not pose a safety hazard. Furthermore, the project does not propose to make any changes to public roadways; internal access roadways developed as part of the project would be designed to comply with local adopted roadway standards. Therefore, **no impact** would occur.

d) Would the project result in inadequate emergency access? (*Less than Significant*)

The project would be located in a lightly developed area with multiple access roads allowing adequate egress/ingress to each of the three reaches in the event of an emergency. Additionally, as part of the project, internal access roadway improvements would occur. Therefore, the project would allow for adequate emergency access.

As described under impact discussion a), previously, increased project-related operational traffic would not cause a significant increase in congestion and would not significantly affect roadway operations. Furthermore, the project would not require closures of public roads, which could inhibit access by emergency vehicles. During construction of the project, heavy construction-related vehicles could interfere with emergency response to the site or emergency evacuation procedures in the event of an emergency (e.g., slowing vehicles traveling behind the truck). However, given that there are no businesses or emergency response stations and only a limited number of residences in the immediate vicinity of the project site, it is not likely that heavy construction-related traffic would result in inadequate emergency access. As such, the impact would be **less than significant**.

2.2.18 Tribal Cultural Resources

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
XVIII. TRIBAL CULTURAL RESOURCES — Would the project:				
Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Discussion

The description of existing cultural, archaeological, historical, and tribal cultural resources was included in the previous checklist item under cultural resources.

- a) 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 listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k) (*Less than Significant with Mitigation Incorporated*)**

Tribal cultural resources are: 1) sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are listed, or determined to be eligible for listing in the California Register, or local register of historical resources, as defined in PRC Section 5020.1(k); or, 2) a resource determined by the lead CEQA agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in PRC Section 5024.1(c). For a cultural landscape to be considered a tribal cultural resource, it must be geographically defined in terms of the size and scope of the landscape (PRC Section 21074[b]). Also, a historical resource, as defined in PRC Section 21084.1, unique archaeological resource, as defined in PRC Section 21083.2(g), or non-unique archaeological resource, as defined in PRC Section 21083.2(h), may also be a tribal cultural resource.

According to the requirements of PRC Section 21080.3.1(b), one tribe, the Wilton Rancheria, requested consultation regarding projects in Contra Costa County. The District sent a letter to

Wilton Rancheria with information about the proposed project that was confirmed delivered on June 15, 2018. No responses have been received to date.

Although at this time, no other tribes have contacted the District requesting notification, the District contacted the NAHC to request a search of the sacred lands file in relation to the proposed project site. On April 16, 2018, the NAHC responded that there are no sacred lands on file. However, inadvertent discovery of tribal cultural resources could result in a **significant impact**.

Impacts and Mitigation Measures

Impact TCR-1: The project could result in potential impacts on tribal cultural resources.

Based on the analysis presented above the District did not identify any tribal cultural resources listed or eligible for listing in the California Register, nor did they determine that any resources to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In the unlikely event that archaeological resources are identified during project implementation that are determined to be tribal cultural resources, implementation of Mitigation Measure CUL-1: Inadvertent Discovery of Archaeological Resources or Tribal Cultural Resources, outlined in the Cultural Resources section, would reduce potentially significant impacts to less than significant with mitigation incorporated. This mitigation would ensure that work halt in the vicinity of a find until a qualified archaeologist can make an assessment and provide additional recommendations if necessary, including contacting Native American tribes.

- b) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is a 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 Incorporated*)**

For the same reasons stated in the analysis of potential impacts on tribal cultural resources above in 'a', impacts would be potentially significant, but implementation of **Mitigation Measure CUL-1** would reduce impacts to **less than significant with mitigation incorporated**.

2.2.19 Utilities and Service Systems

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
XIX. UTILITIES AND SERVICE SYSTEMS —				
Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Have sufficient water supplies available to serve the project and responsibly foreseeable future development during normal, dry and multiple dry years?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion

- a) Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects? (*Less than Significant*)**

Construction Impacts

The project would restore coastal wetlands and expand coastal wetland habitat. Concurrent with the setback levee construction, the project would protect and modify the Shortcut Pipeline and Recycled Water Pipeline. Realignment of the Shortcut Pipeline would require the pipeline to be taken temporarily out of service. The allowable shut-down windows for the Shortcut Pipeline would be a maximum 4-week duration between April 15 to May 30 and/or between September 1 to October 15. Any shutdowns during these time periods would also require the pipeline to be returned to service within 24 hours. In order to facilitate the construction of the new levee and the realignment of the Shortcut pipeline within these timeframes, the pipeline would be shut down during the April 15 to May 30 window, the pipeline drained, and a temporary bypass installed, designed to support the fully operational capacity of the Shortcut Pipeline. The pipeline would then be returned to service using the temporary bypass. Then, construction of the new setback levee and demolition and replacement of the Shortcut and Recycled Water Pipelines would begin. Construction of the setback levee at the pipelines would include subgrade excavation, dewatering, placement of lightweight fill, placement of earth fill, and installation of the sheetpile cutoff wall. Following completion of the levee and installation of the new section of pipeline, the Shortcut Pipeline would be shut down during the September 1 to October 15 window, the pipeline drained,

the temporary bypass removed and the new pipeline connected. The replacement of the Recycled Water Pipeline would occur during the same time as the Shortcut Pipeline replacement following the same general sequence of work, with the exception that the Recycled Water Pipeline is inactive and would not need to be shutdown or drained. There would be no interruption in water supply service to CCWD customers during construction beyond the short-term period to install the bypass, as described above. In order to inspect and maintain their facilities, CCWD requires the use of roads on District and Conco property to access the Shortcut Pipeline and Recycled Water Pipeline. Access is granted through an easement from Conco and a license from the District. To maintain the existing level of access and to inspect and maintain the pipelines, the District's license would be modified and new easements obtained from Conco and the District by CCWD.

Temporary dewatering would require groundwater to be treated and discharged properly by the contractor in accordance with permit conditions by CCCSD. The volume of groundwater discharged would be short-term, temporary and would not be a substantial increase in volume treated by the CCCSD. Therefore, no new facilities would be required to treat this new source of wastewater. The project would be built adjacent to the CCCSD outfall pipeline in the North Reach. No relocation or modification to the CCCSD outfall pipeline would be required for the construction of the project.

The project would be built near and beneath existing PG&E overhead power lines. Power lines cross the site at three locations – an east-west line crossing Pacheco Creek and Walnut Creek in the South Reach; a north-south line crossing Pacheco Creek where the creek bends sharply in the South Reach and Middle Reach; and a roughly east-west line along the southern side of Waterfront Road. An additional power line outside of the project limits crosses Walnut Creek at a diagonal just south of the BNSF Railroad.

While construction work would not require the relocation of any power lines, construction would have the potential to damage power lines and expose construction workers to hazardous conditions, particularly through the use of vertical construction equipment such as cranes. To avoid this potential damage, construction workers would follow the Power Line Safety standards from the Department of Industrial Relations.¹⁴⁶ This includes:

- Identifying the work zone;
- Determine if any part of the equipment, load line or load (including rigging and lifting accessories), if operated up to the equipment's maximum working radius in the work zone, could get closer than 20 feet to a power line;
- Preventing encroachment/electrocution; and
- Providing training to operators and crew members

Therefore, construction impacts on the location of water, wastewater, or power utilities would be **less than significant**.

¹⁴⁶ Subchapter 4. Construction Safety Orders, Article 15. Cranes and Derricks in Construction. § 1612.1. Power Line Safety (Up to 350 kV) - Equipment Operations. Available: https://www.dir.ca.gov/title8/1612_1.html.

Operational Impacts

Project operation would include an interpretive center that would include restrooms. The restrooms would use a below ground concrete vault to store wastewater that would be emptied by a contractor on an as needed basis for delivery to the CCCSD for treatment. The contractor would be licensed and permitted by the CCCSD to dispose of wastewater at the wastewater treatment plant. Daily usage of the proposed interpretive center would result in an increase of a limited number of people during the weekdays and weekends, limited to the hours of operation of the recreational facilities. The increase in visitor use would result in a relatively minor increase in wastewater demand compared to the 40 million gallons of wastewater treated by CCCSD serving over 3,000 businesses and about 489,000 residents every day.¹⁴⁷ Therefore, the project would not result in an expansion, relocation, or construction of new water, wastewater treatment, or storm drainage facilities. Therefore, the project would have a **less-than-significant impact**.

b) Would the project have sufficient water supplies available to serve the project and responsibly foreseeable future development during normal, dry and multiple dry years? (*Less than Significant*)

Construction Impacts

Project construction would require water for dust control. Water for dust control would be provided by the construction contractor(s), but could be provided by water from dewatering provided it meets water quality permit conditions and aligns with the construction timeline. Otherwise, the construction contractor would buy water from available water sources near the project site and/or store water on the project site, as needed for dust suppression.

As part of Phase 1 of the project, new plants would be planted in the marsh and upland areas and invasive plants would be removed. Management would be required to remove invasive weeds and planting of new plants. Irrigation water would be required for the new plants in upland and transition zones. The water used would be by temporary drip irrigation, used only from April through October for the first three years or until plants have matured. Water supplies to serve the irrigation would be purchased by the landscaping contractor from local sources of water and stored onsite in tanks to be pumped through the irrigation system. Water supplies could come from recycled water purchased directly from the CCCSD to serve the project during the irrigation seasons. Therefore, impacts on water supplies would be **less than significant**.

Operational Impacts

Project operations would include potable water use on site at the interpretive center; however, no irrigation water would be needed for landscaping after establishment during the habitat restoration activities. In addition, water use would be limited to efficient drip irrigation of any areas requiring additional plantings through the operation and maintenance adaptive management plan from sources mentioned above under construction. Restrooms would be constructed over concrete vaults and would be maintained/emptied by a contractor as needed and would not need water service. No water connections would be required for the interpretive center. Drinking water for use at the interpretive center would be supplied by a water cooler with water jugs brought in by a vendor, as needed. Because of the limited daily use and hours of operation of the interpretive

¹⁴⁷ Central Contra Costa Sanitary District, 2018. Optimizations Report Summary FY 2017/18. Available: <https://www.centernalsan.org/plans-reports>. Accessed June 30, 2019.

center and limited occupational space, the use of the interpretive center would not result in a substantial increase in water demand and does not require a water supply assessment. For these reasons, the project would have sufficient water supplies available to serve the project and the impact would be **less than significant**.

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

Construction Impacts

As described previously in item 'a' above, the project would restore coastal wetlands and expand coastal wetland habitat. Concurrent with the setback levee construction, the project would protect and modify the Shortcut Pipeline and Recycled Water Pipeline. Realignment of the Shortcut Pipeline would require the pipeline to be taken temporarily out of service. Temporary dewatering would require groundwater to be treated and discharged properly by the contractor in accordance with permit conditions by CCCSD. The volume of groundwater discharged would be short-term, temporary and would not be a substantial increase in volume treated by the CCCSD. Therefore, no new facilities would be required to treat this new source of wastewater. The project would be built adjacent to the CCCSD outfall pipeline in the North Reach. No relocation or modification to the CCCSD outfall pipeline would be required for the construction of the project.

Therefore, construction impacts on the location of water, wastewater, or power utilities would be **less than significant**.

Operational Impacts

Project operation would include an interpretive center that would include restrooms. The restrooms would use a below ground concrete vault to store wastewater that would be emptied by a contractor on an as needed basis for delivery to the CCCSD for treatment. The contractor would be licensed and permitted by the CCCSD to dispose of wastewater at the wastewater treatment plant. Daily usage of the proposed interpretive center would result in an increase of a limited number of people during the weekdays and weekends, limited to the hours of operation of the recreational facilities. The increase in visitor use would result in a relatively minor increase in wastewater demand compared to the 40 million gallons of wastewater treated by CCCSD serving over 3,000 businesses and about 489,000 residents every day.¹⁴⁸ Therefore, the project would not require an expansion, relocation, or construction of new wastewater treatment facilities.

Therefore, the project would have a **less-than-significant impact**.

d) Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals? (*Less than Significant*)

Construction Impacts

To the extent practicable, the project would utilize excavated soil on site. However, in the event that some soil was discovered to be contaminated and could not be used for the project, this soil

¹⁴⁸ Central Contra Costa Sanitary District, 2018. Optimizations Report Summary FY 2017/18. Available: <https://www.centernalsan.org/plans-reports>. Accessed June 30, 2019.

would be disposed of at the Class II Acme landfill. The addition of potentially 100 cubic yards of miscellaneous debris would be negligible, and would not contribute substantially to landfill capacity reduction. The project would also comply with all applicable local, state, and federal regulations concerning solid waste, including the County's Construction and Demolition Debris Recovery Ordinance.¹⁴⁹ Therefore, the impact would be **less than significant**.

Operational Impacts

Project operations would generate solid waste from visitors and operation of the interpretive center that would be limited to the number of visitors and hours of operation. Therefore, solid waste generation would not be substantial compared to County-wide solid waste generation and impacts would be **less than significant**.

e) Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste? (*Less than Significant*)

Construction Impacts

To the extent practicable, the project would utilize excavated soil on site. However, in the event that some soil was discovered to be contaminated and could not be used for the project, this soil would be disposed of at the Class II Acme landfill. The addition of potentially 100 cubic yards of miscellaneous debris would be negligible, and would not contribute substantially to landfill capacity reduction. The project would also comply with all applicable local, state, and federal regulations concerning solid waste, including the County's Construction and Demolition Debris Recovery Ordinance.¹⁵⁰ Therefore, the impact would be **less than significant**.

Operational Impacts

Project operations would generate solid waste from visitors and operation of the interpretive center that would be limited to the number of visitors and hours of operation. Therefore, solid waste generation would not be substantial compared to County-wide solid waste generation and impacts would be **less than significant**.

¹⁴⁹ County of Contra Costa – Board of Supervisors, 2004. Ordinance No. 2004-16. Construction and Demolition Debris Recovery. Available: http://www.co.contra-costa.ca.us/depart/cd/recycle/c-n-d/Ordinance_5-20-04.pdf.

¹⁵⁰ County of Contra Costa – Board of Supervisors, 2004. Ordinance No. 2004-16. Construction and Demolition Debris Recovery. Available: http://www.co.contra-costa.ca.us/depart/cd/recycle/c-n-d/Ordinance_5-20-04.pdf.

2.2.20 Wildfire

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
XX. WILDFIRE — If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Discussion

Environmental Setting

Portions of the Middle, South, and Pacheco Reaches are located within moderate to high fire hazards severity zones.¹⁵¹⁻¹⁵² The strong winds coming from the Bay and Ocean can exacerbate fire hazards in the project area by increasing the speed and growth of any fires that do start. While the lack of trees and wet marsh vegetation would likely limit the severity of fire in the project area, the possibility of fire is still present due to the annual grasses that dry in the late spring and stay dry through the fall (May through October). Additionally, the presence of oil refinery infrastructure adjacent to the project site make fire potentially more dangerous due to the fuel source and exposure of people and property.

a) Would the project substantially impair an adopted emergency response plan or emergency evacuation plan? (*Less than Significant*)

Construction Impacts

The relevant adopted emergency response plan is the Contra Costa County Office of Emergency Services' Emergency Operations Plan.¹⁵³ The plan outlines responsibilities and roles in the event of an emergency. Project construction would not impair the emergency response plan because no roads or access to the project site would be blocked and all elements of the County's emergency

¹⁵¹ California Department of Forestry and Fire Protection, 2007, *Draft Fire Hazard Severity Zones in LRA*, January, 2009. Available: https://osfm.fire.ca.gov/media/6660/fhszl_map7.pdf.

¹⁵² California Department of Forestry and Fire Protection, 2007, *Draft Fire Hazard Severity Zones in SRA*, November, 2007. Available: https://osfm.fire.ca.gov/media/6662/fhszs_map7.pdf.

¹⁵³ Contra Costa County Office of Emergency Services, 2015. Emergency Operations Plan. Available: <http://www.cocosheriff.org/documents/ESD/CCC%20Emergency%20Operations%20Plan.pdf>.

response plan could proceed while the project is being constructed. Therefore, impacts would be **less than significant**.

Operational Impacts

Once constructed, the project area would not result in interruption or blocking access along local roadways and would not impair the adopted emergency response plan. Therefore, there would be **no impact**.

b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire? (*Less than Significant*)

Construction Impacts

The project site is a relatively flat, nearly treeless floodplain; the only site relief is from the levees that rise 10-15 feet above the floodplain and have slopes on either side. The area can experience strong winds traveling through the San Francisco Bay towards the Sacramento Delta. These conditions contribute to the potential for high fire danger on the site. However, the lack of trees and mostly grasslands and marsh make the fuel load of the site low, reducing the severity of wildfire risks. Construction activities would include dust suppression using water trucks and all equipment would be required to be equipped with spark arresting devices and fire equipment (e.g., fire extinguishers). Construction workers could be exposed to an uncontrolled spread of wildfire, but their brief presence on the site combined with the low severity of a grass or marshland wildfire makes the impact from wildfire risk low. Therefore, project construction would not exacerbate wildfire risks and impacts would be **less than significant**.

Operational Impacts

Although the project would result in an increase in visitors, the public access facilities would limit visitor access to trails and the interpretive center, reducing the access other vegetated areas of the project. Further, the expansion of marsh habitat, which has lower fire risk than either the existing seasonal wetlands or grasslands, could potentially lower fuel load and, thus, wildfire risk of the project area overall. No fuels would be used or stored on-site for project operation; therefore, the impact of the project would be **less than significant**.

c) Would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment? (*Less than Significant*)

Construction Impacts

Additional infrastructure would not be required for construction that could exacerbate fire risk. The project would rely on existing utilities and would not involve the construction of additional access roads for the project. Therefore, the impact of the project would be **less than significant**.

Operational Impacts

The interpretive center would be built as part of the project and would involve the construction of minor associated infrastructure connecting existing roads and utilities to the project site. This would require improvements to the road connecting the interpretive center to Waterfront Road, as

well as connections to existing utilities located along Waterfront Road. However, infrastructure on site would be maintained properly and would not exacerbate the risk of wildfire or result in ongoing impacts on the environment. Therefore, the impact would be **less than significant**.

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

Construction Impacts

The project would not expose people or structures to significant risks as a result of runoff, post-fire slope instability, or drainage changes during construction. Therefore, the impact of the project would be **less than significant**.

Operational Impacts

Operation of the project would include expanding the floodplain, but would not would expose people or structures to significant risks including flooding or landslide as result of runoff, pot-fire slope instability or drainage changes. Additionally, no people or structures would be located downstream of the project. Therefore, the impact of the project would be **less than significant**.

2.2.21 Mandatory Findings of Significance

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

Discussion

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

As discussed in Section IV, implementation of Mitigation Measures BIO-1 through BIO-13 would ensure that development of the proposed project would not: 1) substantially reduce the habitat of a fish or wildlife species; 2) cause a fish or wildlife species population to drop below self-sustaining levels; 3) threaten to eliminate a plant or animal community; or 4) reduce the number or restrict the range of a rare or endangered plant or animal. Specifically, implementation of Mitigation Measures BIO-1 through BIO-13 would ensure that potentially significant impacts would be reduced to less-than-significant levels. As discussed in Section V, implementation of Mitigation Measures CUL-1 through CUL-2 would ensure that the project does not eliminate important examples of the major periods of California history or prehistory. Implementation of Mitigation Measures CUL-1 through CUL-2 would ensure that potentially significant impacts to tribal cultural resources would be reduced to less-than-significant levels. In addition, mitigation measures would be implemented as described in the Air Quality and Hazards and Hazardous Materials sections to reduce other impacts to less-than-significant levels. Therefore, Project impacts will be **less than significant with mitigation incorporated**.

b) Does the project have impacts that are individually limited but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)? (*Less than Significant with Mitigation Incorporated*)

As noted throughout this document, the potential impacts of the proposed project are largely restricted to temporary and short-term construction-related impacts and are site-specific. As noted above, all of the potential direct and indirect impacts of the proposed project were determined to be fully avoided or reduced to a less-than-significant level with incorporation of mitigation measures AQ-1, BIO-1 through BIO-13, CUL-1 through CUL-2, and HAZ-1. As a result, the potential impacts of the proposed project are not considered to have cumulatively considerable contributions to other past, present, or probable future projects, and impacts **would be less than significant with mitigation incorporated.**

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 Incorporated*)

Most of the potential impacts of the proposed project would be temporary, short-term, and site-specific. These impacts would be localized to the proposed project site and may include limited adverse effects on air quality, biological resources, cultural resources, greenhouse gas emissions, and hazard and hazardous materials. However, the proposed project would not include any activities or uses that would cause substantial adverse effects on human beings, either directly or indirectly. The proposed project has been designed to meet the District’s flood standards and would adhere to local codes and regulations as conditions of project approval. Compliance with applicable local, State, and federal standards, as well as incorporation of project mitigation measures, would result in less-than-significant impacts. The proposed project would not cause substantial adverse direct or indirect effects on human beings as impacts would be avoided and minimized where possible and mitigated when necessary. Mitigation measures would be implemented as described in the Biological Resources, Cultural Resources, Hazards and Hazardous Materials, and Tribal Cultural Resources sections. Therefore, project impacts would be **less than significant with mitigation incorporated.**

This page intentionally left blank

Appendix A

GHG and Air Quality

Appendix B

Lower Walnut Creek Habitat Assessment

Appendix C

Soil Quality Assessment

Appendix D

Mitigation Monitoring and Reporting Program

