CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER No. R2-2018-0020

WASTE DISCHARGE REQUIREMENTS AND WATER QUALITY CERTIFICATION for:

U.S. FISH AND WILDLIFE SERVICE and the
CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
SOUTH BAY SALT POND RESTORATION PROJECT, PHASE 2

The California Regional Water Quality Control Board, San Francisco Bay Region, hereinafter called the Water Board or the Board, finds that:

Purpose of the Order

1. The U.S. Fish & Wildlife Service (USFWS) and the California Department of Fish & Wildlife (CDFW), hereafter jointly and independently referred to as the Discharger, are currently regulated by Waste Discharge Requirements (WDRs) Order Nos. R2-2008-0078 (Phase 1) and R2-2012-0014 (Modification 1 to Phase 1). The Discharger has applied for reissuance of WDRs to implement Phase 2 of the South Bay Salt Pond Restoration Project (SBSPRP or Project) by submitting a Report of Waste Discharge/ Application for 401 Certification on March 21, 2017. The Project covered by this Order includes:

   I. New tidal marsh restoration or management of approximately 2,385 acres of former salt ponds referred to as "Phase 2" of the 15,100-acre complex;

   II. Ongoing management of ponds in accordance with the Initial Stewardship Plan (ISP), Phase 1, and Modification 1 to Phase 1, as permitted by Order Nos. R2-2008-0078 and R2-2012-0014, which will be rescinded upon adoption of this Order (see Provision E.1); and

   III. Ongoing operation and maintenance.[1]

2. The Project's goal is to restore and enhance native wildlife habitats and wetlands, maintain or improve flood protection, and provide wildlife-oriented public access and recreation. The Project is needed because approximately ninety percent of the original tidal marsh ecosystems around San Francisco Bay have been lost.

3. Under the ISP, the Discharger released low salinity pond waters from former salt ponds to the Bay and operated and maintained ponds while it developed a restoration plan. Order Nos. R2-2008-0078 and R2-2012-0014 covered the first phase of restoration, which involved 3,270 acres of the 15,100 acres. This Order maintains coverage for the first phase and also covers the second phase of restoration, which will involve 2,385 acres of the 15,100 acres. Authorizations for future phases will come before this Board for approval. Adaptive management is an important component of the SBSPRP (see Findings 111 -113) and will allow information learned from earlier phases of the SBSPRP to be incorporated into later ones.

4. The future ratio of tidal marsh to managed ponds will be between 50:50 and 90:10. These two endpoints represent the two alternatives that were evaluated for this project under the California

[1] Operation and Maintenance similar to operation and maintenance of the salt ponds performed by Cargill, Inc., under the Certification issued to Cargill, Inc. for Site No. 02-01-C1066 on August 3, 2010 (U.S. Army Corps of Engineers (Corps) Permit No. 2008-00160S).

Environmental Quality Act (CEQA). The variability between projected ratios of tidal marsh to managed ponds is significant because it is uncertain what percentage of managed ponds is necessary to provide habitat for shorebirds and waterfowl and whether managed ponds can be reconfigured to protect water quality. The amount of tidal marsh restoration approved under Order Nos. R2-2008-0078 and R2-2012-0014 was 10.5 percent of the 15,100-acre SBSPRP area. This increase remains well below the approved 50 percent endpoint analyzed for the SBSPRP. The amount of tidal marsh restoration approved under this Order will increase tidal marsh from 10.5 percent to 17 percent (2,605 acres) of the 15,100-acre project. This increase remains well below the approved 50 percent endpoint analyzed for the SBSPRP. The above tidal marsh restoration percentages do not include Pond A8 (1,440 acres), which is being operated as reversible muted tidal habitat and may eventually be restored to tidal marsh. Future Phase 2 implementation at Eden Landing could bring the total area of tidal marsh restoration up to 35 percent of the total Project area.

Site Location and Description of entire 15,100-acre SBSPRP

5. The overall 15,100-acre SBSPRP is located in South San Francisco Bay and consists of three former salt pond complexes and adjacent habitats: the Alviso Ponds, Ravenswood Ponds, and Eden Landing Ponds, as shown on Figure 1. The SBSPRP will be implemented in a number of phases taking place over several decades.

Discharger

6. USFWS owns and manages the 8,000-acre Alviso pond complex and the 1,600-acre Ravenswood pond complex, and CDFW owns and manages the 5,500-acre Eden Landing pond complex. The Alviso pond complex consists of 25 ponds on the shores of the South Bay in the towns of Fremont, San Jose, Sunnyvale, and Mountain View, within Santa Clara and Alameda counties. The Ravenswood pond complex consists of 7 ponds on the bay side of the San Mateo Peninsula. The Eden Landing pond complex consists of 23 ponds on the shores of the East Bay, west of Hayward and Union City in Alameda County. Each agency is responsible for the acreage it owns and not that of the other agency.

Regulatory Background of the SBSPRP

7. In 2003, the Discharger purchased 15,100 acres of salt ponds in South San Francisco Bay from Cargill Incorporated. In 2004, this Board issued WDRs Order No. R2-2004-0018 to the Discharger to release low salinity waters from these ponds to waters of the State in order to prepare them for future restoration. As part of those WDRs, the Discharger developed an ISP to operate and maintain ponds within the Alviso, Ravenswood, and Eden Landing complexes before restoration. The ISP indicated that planning and design for long-term restoration would take about five years and that additional time would be required for implementation. Objectives of the ISP include: (a) cease commercial salt operations, (b) introduce tidal hydrology, (c) maintain existing wildlife habitat, (d) facilitate long-term restoration, (e) minimize management costs, and (f) meet water quality standards.

   In 2008, Order No. R2-2008-0078 was adopted to authorize Phase 1 of SBSPRP. Order No. R2-2012-0014 was adopted in 2012 to implement Modification 1 to Phase 1 of the SBSPRP. Phase 1 actions included: restoring tidal marsh habitat in Ponds A6, A17, E8A, E9, and E8X; introducing muted tidal habitat to Pond A8; and reconfiguring managed Ponds A16 and SF2.

8. This Order is organized into four sections: Phase 2 Marsh Restoration and Pond Management; Phase 1 Marsh Restoration and Pond Management; Management of Ponds under the Initial Stewardship Plan (ISP); and Ongoing Operation and Maintenance. The Findings are followed by Prohibitions, Specifications, Receiving Water Limitations, and Provisions.

9. Attachments to the Order include Figures, Supplemental Tables, the Adaptive Management Plan (AMP) (See Attachment C and Findings 111 - 113), the Water Quality Self-Monitoring Plan, the Landscape and Habitat Monitoring Plan, and Standard Provisions and Reporting Requirements. Many of the monitoring efforts outlined in the Landscape and Habitat Monitoring Plan were specific to Phase 1 and have been completed. Monitoring efforts in the Attachments that will be implemented in Phase 2 are summarized below:

   Attachment D, Water Quality Self-Monitoring Program: Monitoring is currently performed for salinity from June through November on a weekly basis at the discharges from Ponds A5, A7, A8, A14, A16, A2W, A3W, and SF2. In Phase 2, the discharges from these ponds will continue to be monitored and the discharge from Pond R5/S5 will also be monitored.

   Attachment E, (Draft) Landscape, Habitat, and Biological Species Monitoring Plan: Monitoring continues for various biological species. Western Snowy Plovers, Ridgway's Rails, and salt marsh harvest mice are monitored in areas of the SBSPRP footprint on an annual basis. *Spartina* continues to be mapped across the SBSPRP area on an annual basis. Studies of mercury in fish and birds and of environmental mercury have continued throughout the SBSPRP in association with project activities at Pond A8.

   By September 30, 2018, this Order requires the Discharger to prepare addenda to Attachment C, *Adaptive Management Plan*, Attachment D, *Water Quality Self-Monitoring Program*, and Attachment E, *(Draft) Landscape, Habitat, and Biological Species Monitoring Plan*. The addendum to each Attachment shall contain the following information:

   - A list of monitoring activities that were unique to Phase 1 and will not be implemented in Phase 2.
   - The names and completion dates of monitoring reports completed in Phase 1 in response to requirements in Attachments C, D, and E, along with web addresses at which those reports are available or electronic copies of the reports.
   - A list of the monitoring activities described in Attachments C, D, and E that will be implemented in Phase 2.

I. Phase 2 Marsh Restoration & Pond Management

Site Location & Description of Phase 2 Activities of the SBSPRP

10. Phase 2 of the SBSPRP is a collaborative effort among federal, State, and local agencies working with scientists and the public to develop and implement project-level plans and designs for habitat restoration, flood management, and wildlife-oriented public access within portions of the former Cargill salt ponds in South San Francisco Bay (Bay). The former salt ponds covered in Phase 2 are part of the USFWS-owned and managed Don Edwards San Francisco Bay National Wildlife Refuge (Refuge) and cover approximately 9,600 acres in the South Bay. The Refuge ponds in Phase 2 are collectively about 2,385 acres in size. The proposed Phase 2 actions will restore a mosaic of habitats, including tidal brackish and salt marsh, tidal mudflat, salt panne, subtidal flats and channels, sloughs, ponds, marsh ecotones, upland transition zones, and open water habitats (managed ponds), to support populations of fish and wildlife, special-status species, migratory waterfowl, shorebirds, and anadromous and resident fishes. After implementation of actions

authorized by this Order, Phase 2 target habitats in Ponds A1, A2W, and R4 are expected to develop over 50 years but may take longer. Phase 2 of the SBSPRP includes activities that were not components of the ISP or Phase 1: the construction of broad habitat transition zones (also referred to as ecotones) between some ponds and levees and the enhancement of existing levees to replace flood management services that will be lost as the result of Project-related levee breaching. Both of these activities require fill of waters of the State in quantities much larger than the amount of fill authorized for the ISP or Phase 1. Most of this fill will be associated with creating habitat transition zones and with enhancing landward levees for flood management.

11. The creation of habitat transition zones, which are low lying riparian areas that separate wetlands from uplands, is an especially important element of this project. Habitat transition zones between marshes and uplands are locally scarce and provide habitat that is essential to sustaining five endangered species: two endangered animals, Ridgway's rail (*Rallus longirostris obsoletus*) and salt marsh harvest mouse (*Reithrodontomys raviventris*), and three endangered plants, *Cirsium hydrophilum* var. *hydrophilum* (Suisun thistle), *Chloropyron molle* ssp. *molle* (soft bird's-beak), and *Suaeda californica* (California sea-blite). Breaching of bayside levees, which is essential to restoring tidal wetlands in the former salt ponds, would not be allowed if communities adjacent to the former salt ponds were not provided with replacement flood management. In addition, the habitat transition zones will provide habitat resiliency to sea level rise and, over time, portions of the habitat transition zones that will be uplands immediately after ecotone creation will eventually convert to tidal marshes.

    Creation of habitat transition zones in Phase 2 of the SBSPRP will require the placement of fill in 81.1 acres of waters of the State. However, at the time of transition zone construction, 75.9 acres of that fill area will be below the High Tide Line (HTL). Therefore, this 75.9 acres of transition zone fill will still be regulated as waters of the State at the time of transition zone construction. Only 5.2 acres of fill will change waters of the State into uplands, and, as sea levels rise, this 5.2-acre area will be converted to waters of the State. In light of the significant benefit to listed species habitat associated with the creation of habitat transition zones, this amount of fill will not have a significant negative impact on waters of the State in the footprint of the SBSPRP. In addition, this amount of fill is essential to tidal marsh restoration, since some of the habitat transition zones will also replace the flood protection for near shore communities that is currently provided by the outer levees of the salt ponds.

12. SBSPRP Phase 2 will modify ponds in the 8,000-acre Alviso pond complex and the 1,600-acre Ravenswood pond complex, both of which are owned and managed by USFWS as part of the Refuge (see Figures 2a through 2d). Within these two pond complexes, there are four groups of ponds (or "pond clusters") that are included in the proposed Phase 2 actions; these are illustrated in Figures 3 through 6. They are as follows:

    - Alviso–Island Ponds (Island Ponds) shown in Figure 3 in the Alviso pond complex
    - Alviso–A8 Ponds (A8 Ponds) shown in Figure 4 in the Alviso pond complex
    - Alviso–Mountain View Ponds (Mountain View Ponds) shown in Figure 5 in the Alviso pond complex
    - Ravenswood Ponds, shown in Figure 6 in the Ravenswood pond complex

    The Alviso pond complex consists of 25 ponds on the shores of the South Bay in the cities of Fremont, San Jose, Sunnyvale, and Mountain View, within Santa Clara and Alameda counties. The pond complex is bordered on the west by the Palo Alto Baylands Park and Nature Preserve and the City of Mountain View's Charleston Slough; on the south by commercial and industrial land uses, Mountain View's Shoreline Park, the National Aeronautics and Space Administration Ames Research

Center, and Sunnyvale Baylands Park; and on the east by Coyote Creek in San Jose and Cushing Parkway in Fremont. The Phase 2 project actions in the Alviso pond complex focus on three clusters of ponds.

The first cluster, the Island Ponds, containing Ponds A19, A20, and A21 is between Coyote Creek and Mud Slough near the eastern end of the Alviso pond complex. The Island Ponds were breached in 2006 as part of tidal marsh restoration actions covered by the ISP.

The second cluster is the A8 Ponds. Work would be completed in Ponds A8 and A8S in the southern and central portion of the Alviso pond complex. The A8 Ponds are west of the town of Alviso, north of Sunnyvale and State Route (SR) 237, and east of other parts of the Alviso pond complex. Ponds A8 and A8S were also included in the Phase 1 work; they were made reversibly tidal through the installation of a variable-size and reversible "notched" gate that opened in July 2010. Ponds A5 and A7 were also connected to Pond A8 and Pond A8S as part of Phase 1 actions. There will be no Phase 2 actions at Ponds A5 and A7.

The third cluster, the Mountain View Ponds, containing Ponds A1 and A2W, is on the western edge of the Alviso pond complex. The City of Mountain View lies immediately to the south, and the Charleston Slough and the Palo Alto Flood Control Basin lie to the west.

The Ravenswood pond complex consists of seven ponds on the Bay side of the Peninsula, both north and south of SR 84, west of the Dumbarton Bridge, and on the Bay side of the developed areas of the City of Menlo Park in San Mateo County. Bayfront Park in Menlo Park is directly west of the Ravenswood pond complex, and SR 84 is along its southern border. The Phase 2 project actions in the Ravenswood pond complex are focused on the western half of the pond complex, which contains Ponds R3, R4, R5, and S5, here referred to as the Ravenswood Ponds.

Construction activities to be performed in Phase 2 are summarized in Table 4 in Attachment B.

13. At a broad scale across the project activities, the Project will affect open waters and wetlands in the Coyote Watershed (Hydrological Unit Code - 8: 1805003) and San Francisco Bay (Hydrological Unit Code -8: 18050004). The United States Geologic Survey 8-digit Hydrological Unit Code and the San Francisco Bay Basin Plan Surface Water Plan Area for each complex/cluster are provided in Table 1 and depicted in Figure 7 in Attachment A. Table 1 also includes the latitude/longitude (in decimal degrees) of the centroid point of each pond.

Table 1. Other Location Descriptions: Watershed, Surface Water Plan Area, and Lat/Long

POND CLUSTER	POND	WATERSHED NAME (HUC 8)	*AREA (ACRES)	BASIN PLAN SURFACE WATER PLAN AREA AFFECTED	LATITUDE	LONGITUDE
ALVISO-ISLAND PONDS	A19	Coyote Watershed (1805003)	265	Santa Clara Basin	37.467092	-121.957692
	A20		65		37.464876	-121.970986
	A21		150		37.465142	-121.979427
ALVISO-A8 PONDS	A8	Coyote Watershed (1805003)	410	Santa Clara Basin	37.428778	-121.991558
	A8S		160		37.420860	-121.989553
ALVISO MOUNTAIN VIEW PONDS	A1	Coyote Watershed (1805003)	275	Santa Clara Basin	37.442525	-122.086577
	A2W		435		37.441989	-122.074607
RAVENSWOOD PONDS	R3	San Francisco Bay (18050004)	270	South Bay Basin (Lower Bay)	37.486675	-122.155291
	R4		295		37.493048	-122.161933
	R5		30		37.488054	-122.170371
	S5		30		37.485913	-122.170712
Note: *Pond areas excerpted from the 2007 SBSP FEIS/R AECOM 2016						

14. Adjacent water bodies and ponds affected by Phase 2 actions are summarized in Table 2:

Table 2. Name of Affected Waterbody and City/County of Ponds

Complex	Cluster	Affected Named Bodies of Water	City Location	County Location
Alviso	Island Ponds (A19, A20, A21)	San Francisco Bay, Salt Ponds, Mud Slough, Coyote Creek	Fremont	Alameda
Alviso	A8 Ponds (A8, A8S)	San Francisco Bay, Salt Ponds, Alviso Slough/ Guadalupe River, Guadalupe Slough	Sunnyvale	Santa Clara
Alviso	Mountain View Ponds (A1, A2W)	San Francisco Bay, Salt Ponds, Charleston Slough, Mountain View Slough/Permanente Creek, Whisman Slough/Stevens Creek	Mountain View	Santa Clara
Ravens-wood	Ravenswood Ponds (R3, R4, R5, S5)	San Francisco Bay, Salt Ponds, Flood Slough, Ravenswood Slough, San Francisco Creek, West Point Slough, All-American Canal	Menlo Park	San Mateo

Benefits of Wetland Restoration

15. The Project will make a large and valuable contribution to tidal wetland restoration in the San Francisco Bay region, which was recommended by the *Baylands Ecosystem Habitat Goals Report* (1999) and the *Comprehensive Conservation and Management Plan* (1993; updated 2007); both studies encouraged the return of salt ponds to tidal marsh where feasible. Habitat Goals Chapter 5 contains goals for the South Bay Subregion of San Francisco Bay states:

> The overall goal in the South Bay subregion is to restore large areas of tidal marsh connected by wide corridors of similar habitat along the perimeter of the Bay. Several large complexes of salt ponds, managed to optimize shorebird and waterfowl habitat functions, should be interspersed throughout the subregion, and naturalistic, unmanaged salt ponds (facsimiles of historical, hypersaline backshore pans) should be restored on the San Leandro shoreline. ***There should be natural transitions from mudflat through tidal marsh to adjacent uplands*** **[*emphasis added*]**, wherever possible. Adjacent moist grasslands, particularly those with vernal pools, should be protected and improved for wildlife. Riparian vegetation and willow groves should be protected and restored wherever possible.

The unique characteristics of the restoration opportunities in Phase 2 of the SBSPRP justify a focus on listed species that depend on tidal marshes. Both the Habitat Goals and the *USFWS Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California* (Recovery Plan) (USFWS, August 27, 2013), which include recovery actions for the California Ridgway's rail (formerly California Clapper Rail) and salt marsh harvest mouse (SMHM), support both the restoration of as many acres of tidal marsh as feasible and the creation of habitat transition zones (i.e., ecotones) between marsh habitats and upland high water refuges.

Habitat transition zones also provide a gentle slope for dissipation of wave energy and reduction of erosion potential, thereby protecting the closed landfill below Shoreline Park at Ponds A1 and A2 and the closed landfill south of Pond A8S. The benefits of habitat transition zones include the establishment of habitat complexity and diversity, erosion protection for the landfill and adjacent levees, and preparation for long-term sea-level rise adaptation. Fill placed to build transition zones below HTL tidal elevation would convert ponds to tidal wetlands, but fill placed above that elevation would convert waters to uplands. Estimated quantities of fill are provided in Table 4.

16. Restoring tidal wetland functions to former salt ponds will improve water quality in the South San Francisco Bay Estuary on a spatially significant scale with large contiguous habitat to maximize ecotonal or edge habitat, and minimize non-native vegetation (if appropriate management efforts are taken to control non-native species). Marsh systems that are tidally connected to the estuary improve water quality by filtering and fixing pollutants, in addition to protecting beneficial uses by providing the following: nursery habitat and protection from predation for native fish species, significant biological productivity to the estuarine system, and habitat for rare and endangered species such as the salt marsh harvest mouse (*Reithrodontomys raviventris*) and the Ridgway's rail (*Rallus longirostris obsoletus*). Successful SBSPRP restoration would also provide shallow-water habitat for migrating shorebirds and foraging and nesting islands for birds such as Forster's terns, American avocets, Caspian terns, black-necked stilts and snowy plovers. In addition to habitat and water quality benefits, tidal marsh restoration will also help protect communities from floods, storms, and sea level rise.

17. Public access and recreation elements are an important component of the overall restoration strategy. These elements help to educate the public, achieve regional public access and recreation

goals (e.g., the Bay Trail), and to build public support for future phases of restoration. The project goals of habitat creation and public access are being carefully balanced, and an adaptive management approach is being implemented, to ensure that public access does not significantly affect the habitat goals of the project.

18. The SBSPRP area can be divided into four general habitat types (tidal habitat, reversible muted tidal habitat, managed pond, and reconfigured managed pond) covering a total of 15,100 acres. The habitat types in Table 3 present the resulting acres of each habitat type after implementation of the proposed Phase 2 actions in 2,385 acres of salt ponds. The net benefit is an increase in tidal marsh, muted tidal, and reconfigured managed pond habitats, and a corresponding decrease in salt ponds. The Phase 2 restoration actions will provide approximately 1,005 acres of tidal habitat (not including the 480 acres of tidal marsh restored at the Island Ponds, approved under Order No. R2-2004-0018), plus about 1,440 acres of reversible muted tidal habitat in Ponds A5, A7, A8, and A8S and 330 acres of reconfigured managed ponds.

Table 3. Proposed Habitat Changes to be Implemented in Phase 2

Pond	Existing Habitat Type	Anticipated Start of Construction	Type of Restoration	Acres	Anticipated Construction Completion
Alviso Pond Complex (USFWS)					
A1	Managed Pond	2019	Tidal habitat	275	2021
A2W	Managed Pond	2019	Tidal habitat	435	2021
A19[1]	Tidal Habitat	2019	Tidal habitat enhancements	65	2020
A20	Tidal Habitat	2019	Tidal habitat enhancements	265	2020
A8S[2]	Managed Pond	2018	Enhancements to previously reconfigured managed ponds	160	2019
Ravenswood Pond Complex (USFWS)					
R3	Managed Pond	Fall 2018	Reconfigured managed pond	270	2021
R4	Managed Pond	Fall 2018	Tidal habitat	295	2021
R5	Managed Pond	Fall 2018	Reconfigured managed pond	30	2021
S5	Managed Pond	Fall 2018	Reconfigured managed pond	30	2021

Table 3. Proposed Habitat Changes to be Implemented in Phase 2

Eden Landing Pond Complex (CDFW)
The Phase 2 action at Eden Landing is still pending CEQA/NEPA selection of a preferred alternative. The dates for the "Bay Ponds" (E1, E2, E4, E7) are still uncertain, and the full restoration of the other groups of ponds has not been determined at this time.

Total Acreage			1,825	2021

1 In previous documents in the SBSPRP, Ponds A19, A20, and A21 were treated together as a group referred to as "the Island Ponds." That terminology has persisted in the Phase 2 documents, including the request for a 401 Water Quality Certification, largely because the Phase 2 CEQA/NEPA document's range of alternatives for a Phase 2 action at the Island Ponds includes all three of these ponds, even though the selected alternative to move forward into design and permitting included only Ponds A19 and A20. The acreage of Pond A21 is 150 acres, and it will remain on its trajectory to tidal habitat establishment.

2 The Phase 2 action at the A8 Ponds only includes a direct action (construction of habitat transition zones) in Pond A8S, which is why the table listed above only lists that pond. However, the Phase 1 action hydraulically connected Ponds A8, and A8S. Their combined acreage is 570 acres.

Note: The Phase 2 actions at Ravenswood include a trail section to complete a loop trail around Ponds R5 and S5 with connections to existing trails in Bedwell Bayfront Park and to the Bay Trail spine adjacent to State Route 84. Phase 2 also includes a viewing platform near the midpoint of that new trail segment. The Phase 2 actions at the Alviso pond complex include several new trails and viewing platforms at the Alviso-Mountain View Ponds (A1 and A2W) as well as enhancements or preservation or reconstruction of existing public access facilities. No new public access or recreational facilities are proposed as the Island Ponds (A19 and A20) or the A8 Ponds as part of Phase 2.

Current Regulatory Status of Wetlands in the SBSPRP

19. *Existing wetlands.* Existing wetlands and other waters of the State will be impacted by Phase 2 dredge and fill activities. Table 4 below summarizes the Phase 2 impacts to existing wetlands and other waters in the four Phase 2 action areas (See Tables 5 through 8 in Attachment B for summaries of dredge and fill volumes in Phase 2). Phase 2 actions will convert about 14.1 acres of wetlands and other waters to uplands. No compensatory mitigation is required for impacts to existing wetlands and waters of the State, since this restoration project will result in many more acres of restored and enhanced habitats than the acres of habitat that are impacted and the restoration will create about 81.1 acres of regionally-rare habitat transition zones (See Finding 11).

Table 4. Summary of Dredge and Fill Information for Phase 2 of the SBSPRP

Pond System	Dredge Area (Acres)	Dredge Area Below HTL (Acres)	Net Gain In Waters Below HTL (Acres)	Fill Area (Acres)	Fill Areas Below HTL (Acres)	Net Fill Above HTL (Acres)	Net Conversion of Waters to Uplands (Acres)
A19/A20	6.4	2.4	4.0	6.6	6.6	0.0	-4
A8 Ponds	0	0	0.0	24.6	23.9	0.7	0.7
Mountain View Ponds	2.2	1.3	0.9	52.8	46.4	6.4	5.5
Ravenswood Ponds	10.4	8.2	2.2	41.9	27.8	14.1	11.9
Total	19	11.9	7.1	125.9	104.7	21.2	14.1

Note: HTL is the high tide line. The net gain in waters below HTL is the net change in uplands (areas above HTL) to waters (areas below HTL). The net fill above HTL is the net change in bed elevation of waters to an elevation above HTL. The net conversion of waters to uplands is the net increase in the acres of ponds with bottom elevations raised above HTL.

20. The U.S. Army Corps of Engineers (Corps), as the federal regulatory agency implementing the Clean Water Act (CWA), is expected to issue a CWA section 404 permit after the Water Board has adopted this combined WDR/CWA 401 Certification. The Corps initiated an Endangered Species Act, Section 7 consultation with USFWS and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS). Biological Opinions and respective amendments have been issued by USFWS (USFWS Reference No. 08FBDT00-2017-F-0109-2, November 21, 2017) and will be issued by NMFS prior to Project implementation. With the implementation of the Terms and Conditions and the Reasonable and Prudent Measures in these Biological Opinions and their amendments, the Project will not jeopardize the continued existence of species listed under the federal Endangered Species Act.

21. The San Francisco Bay Conservation and Development Commission (BCDC), a State regulatory agency, is responsible for issuing a consistency determination (CD) and a permit to the Discharger. The CD is for actions on federal lands, and the permit is for actions on lands owned by the State. BCDC also has an active role in the planning and design of the Project. One element of BCDC's CD/permit addresses public access via the Bay Trail. BCDC has approved Phase 1 of the Project and Modification 1 to Phase 1 of the Project and is expected to take an action on Phase 2 of the Project after adoption of this Order.

Related Studies and Projects in South San Francisco Bay

22. Since the mid-1990s, many projects and studies have been conducted to support the SBSPRP, including its Phase 1 activities (see http://www.southbayrestoration.org/Documents.html).

23. The SBSPRP partners are also coordinating with several other restoration or environmental projects in the South Bay, including the Corps' South San Francisco Bay Shoreline Study, the San Francisco Estuary Invasive Spartina Project, the Eden Landing Ecological Reserve

Restoration Project, the Lower Guadalupe River Flood Protection Project, the Alviso Slough Restoration Project, and the Bair Island Restoration Project.

General Phase 2 Construction Activities

24. Restoring former salt ponds to tidal marsh habitat, re-configuring ponds for wildlife habitat, and providing recreational facilities will involve the following construction activities:

Tidal Restoration. Construction activities involved in the proposed tidal habitat restoration include the following. These activities apply only to ponds where restoration is actively occurring:

- Breach sections of outboard levees.
- Lower sections of outboard levees.
- Breach internal levees.
- Lower sections of internal levees.
- Excavate pilot channels to sloughs through the fringe marsh outboard of outboard levee breaches or dredge lock access to allow for marine access.
- Construct ditch blocks in the perimeter and internal borrow ditches with material excavated from the levee breaches and lowered levees, or from other clean sediment.
- Import sediment (according to Specifications B.1 and B.2).
- Side-cast of dredge spoils into adjacent marsh.
- Excavate portions of outboard sloughs, if necessary to enlarge the channel and obtain borrow ditch block material.
- Construct marsh ponds/pannes by constructing shallow depressions in pond bottoms prior to restoration of tidal action or along the tops of lowered internal levees.
- Remove or abandon existing water control structures.
- Reconfigure culvert connections.
- Break up the gypsum layer in some pond bottoms by mechanical means (Note: In Phase 2, the only break up of gypsum layers will occur in Pond R4. Channel excavation will break up the gypsum layer in the footprint of the excavated channels).
- Construct access bridges over levee breaches and armor the sides of breaches under the bridges.

Managed Ponds. Construction activities involved in reconfiguring managed ponds include the following:

- Install, replace, or modify intake/outlet water control structures with tide gates.
- Install fish screens on outboard intake/outlet water control structures as appropriate.
- Construct low berms to divide a given pond into multiple cells.
- Lower internal levees to combine ponds.
- Install water control structures, such as flashboard weirs, in internal berms to regulate flow among cells. Installation of water control structures will most likely require the construction of cofferdams using sheet piles on the internal side of the levee to dewater the construction area, as needed.
- Construct intake and outlet canals to convey water among individual cells.

- Construct internal islands for nesting, roosting, and foraging using fill material excavated from the windward side of the islands.
- Grade pond bottoms to achieve desired grades and elevations.
- Improve, raise, and extend levees between managed ponds and existing or restored marshes as necessary to prevent tidal inundation of managed ponds.
- Install or operate pumps as necessary.
- Excavate pilot channels to the Bay through the fringe marsh outboard of new water control structures to allow for marine access.
- Improve levees around ponds to improve maintenance access.

Habitat Transition Zone (Ecotone) Construction. Habitat transition zones will be constructed inside selected ponds to create transitional habitat between the lower elevation of the pond bottoms and the uplands and levees behind them. Construction activities involved in Habitat Transition Zones include the following:

- The habitat transition zones will be constructed of fill material from upland construction projects and will extend into the center of the pond at a typical slope of 30:1 (h:v).
- Material will be placed and compacted to approximately 70 percent density to enable vegetation establishment.
- The tops of the habitat transition zones will be constructed to about 9 feet elevation North American Vertical Datum (NAVD88)
- Slope protection will be maintained by establishment of native vegetation.

PG&E Tower Work. Conversion of Pond A2W to tidal marsh habitat requires PG&E to upgrade the tower foundations of 16 transmission towers in response to the introduced tidal flux and to raise the maintenance/service boardwalks that run under the power lines and provide PG&E access to the towers.

- Cofferdams will be constructed around each foundation at low tide and then dewatered.
- Water pumped from within cofferdams will be managed in accordance with the 2007 SBSPRP Final Program EIS/R Mitigation Measure 3.4-5a.
- Concrete will be poured into forms within the dewatered cofferdams.
- Temporary structures will be removed once construction is complete
- Existing boardwalks will be raised a maximum of 4 feet, using the existing boardwalk pillars.

Recreational Elements. Construction activities involved in installing or upgrading public access and recreation elements include the following:

- Upgrade the existing Bay Trail.
- Construct viewing platforms and interpretive stations.
- Upgrade the portions of trails that follow existing levees to provide a minimum width of 6 to 8 feet (ft) of compacted earth and allow multi-use, excluding equestrians.
- Construct interpretive stations that include elements such as a view portal, educational symbols, and storyboarding. They will be constructed of a combination of wood and steel and will be sized based on the site location.

- In Phase 1, a kayak/boat launch was constructed approximately to accommodate non-motorized small boats (e.g., kayaks and canoes) and small motorized craft for use in hunting. No new kayak/boat launches are proposed in Phase 2.
- Install Americans with Disabilities Act (ADA)-compliant features for all trails as soon as possible. Phase 1 action ADA-compliant features include the trail to the Oliver Salt Works interpretative area, the A16 viewing platform, the A17 fishing platform, and all Ravenswood area recreational features. ADA-compliant features constructed in Phase 2 will include a trail and viewing platforms on the west levee of Pond A1, a trail and viewing platform on the eastern levee of Pond A2W, and a trail on the eastern border of Ponds R5 and S5.

25. **Sources of Material – Sources of fill for Phase 2** will include material excavated from onsite breaches, borrow ditches, and levees. Fill material that is imported to any of the SBSPRP sites, consisting of either dredged sediments or upland soil, shall be determined to be acceptable for use in the SBSPRP based on criteria approved by Water Board staff, per Specifications B.1 and B.2 and Provisions E.40 and E.41.

Specific Phase 2 Activities

26. General descriptions of each of the planned pond habitats are provided below. Specific Phase 2 construction activities for each pond are summarized in Table 4 in Attachment B. Phase 2 actions will increase habitat connectivity, increase tidal flow, expedite the transition of the Island Ponds to tidal marsh, and create habitat transition zones.

27. At the Island Ponds (Ponds A19, A20, and A21 in the Alviso pond complex), the majority of the two internal levees, including the western levee of Pond A19 and the eastern levee of Pond A20, will be removed. The levees will be excavated to match the elevation of the surrounding marsh that exists between the two ponds, at MHHW elevation (approximately 7 feet NAVD88). Removing most of the levees between Ponds A19 and A20 will improve habitat connectivity by connecting the two former ponds. Sections of these two levees will be left at their existing elevations to provide high-tide refugia for birds and other wildlife species. Widening of the existing western breach along Pond A19's southern levee will improve the circulation and flow of sediment into the pond, speed the breakdown of the remaining levee, and increase the rate of transition to marsh habitat. Following breach widening, the breach will have a bottom width of approximately 150 feet, an invert elevation near 3.5 feet NAVD88 and 3:1 (horizontal to vertical [h:v]) side slopes. The length of the cut will be about 90 feet. Two new breaches will be made in the levee on the north side of Pond A19 to improve habitat connectivity between the Island Ponds and Mud Slough, and also to improve the distribution of sediment to the ponds. Both breaches will be roughly 50 feet wide at the bottom with an invert elevation of 3.5 feet NAVD88 with 3:1 (h:v) side slopes. The length of channels cut to connect Pond A19 with Mud Slough through the levees will be about 150 feet at the Pond A19 northwest breach and about 90 feet at the Pond A19 northeast breach. Phase 2 operations will build about 6 ditch blocks in Pond A19. Ditch blocks will be established in the existing borrow ditches to direct tidal flows into the interior of the ponds. The material for the ditch blocks will be sourced on-site from levee lowering or levee breaches.

28. ***Alviso System A2W***. Ponds A1 and A2W will be modified by Phase 2 actions. Pond A1 receives water at its northwesterly end from Charleston Slough via an existing 60-inch gate intake structure. From Pond A1, a 72-inch siphon that runs under Mountain View Slough transfers water

to A2W. The outlet from pond A2W discharges pond water at its northerly end to the Bay through a 48-inch gate structure (Discharge Point AA2W-1). The ponds themselves are somewhat subsided and have water depths of approximately 2 to 4 feet above pond bottom elevations that are at approximately 0-1 feet elevation NAVD88. Pond A1 will be breached at two Locations and Pond A2W will be breached at four locations. The two Pond A1 breaches will be at the northwest corner of the pond, on the western levee, and along the eastern levee into Permanente Creek/ Mountain View Slough. Two of the four Pond A2W breaches will be on the western levee into Permanente Creek/Mountain View Slough. The other two breaches will be on the eastern levee into Stevens Creek/Whisman Slough. Breach locations will generally follow the locations of historical slough traces. The breaches will have an invert elevation of about 2 feet NAVD88 and have about 2:1 (h:v) side slopes. Bottom widths will be about 60 feet. The length of the channel cut connecting Pond A1 to adjacent Mountain View Slough will be about 110 feet long. At Pond A2W's western levee, the channel cut through the south breach connecting Pond A2W to Permanente Creek/Mountain View Slough will be about 230 feet long and the channel cut through the north breach will be about 200 feet long. On Pond A2W's east levee, the channel cut through the south breach connecting A2W to Stevens Creek/Whisman Slough will be about 210 feet long and through the north breach the channel cut will be about 200 feet long. Both of the breaches on the eastern side of Pond A2W will be armored on both sides to protect bridge abutments from future erosion or scour.

29. Phase 2 levee breaches in Pond A1 will remove some of the de facto flood protection currently provided by the outboard levees of Pond A1. Most of the western levee of Pond A1 will be raised to offset that loss and maintain current levels of flood risk management in the communities and infrastructure to the southwest of Pond A1. Much of the material for raising the levee will come from offsite, upland sources, but some material may come from onsite breaching. About 4,400 feet of the levee will be raised. The improved levee will have a 12-foot wide crest north of the proposed viewing platform, where no trail would be present, and a 14-foot wide crest from the viewing platform southward, where a trail will be added. Levee side slopes will be 3.5:1 (h:v). The crest of the levee north of a new viewing platform will be constructed to an elevation of 11 feet NAVD88. The crest of the Pond A1 western levee at the viewing platform and southward will be raised to an elevation of approximately 14.7 feet NAVD88, to match that of the raised Coast Casey Forebay levee that it connects to on its southern terminus. Only the south portion of the A1 west levee has proposed public access that will need to be improved and built to an elevation that matches the public access trail at the Coast Casey levee. The target elevation for the A1 West levee is 11 feet NAVD88, to match the existing level of flood protection.

30. To offset the loss of de facto protection provided by Pond A1, the Coast Casey Forebay levee that is along the western end of the southern border of Pond A1 will be improved between the Palo Alto Flood Control Basin levee and the high ground in Shoreline Park. The City of Mountain View, which owns that levee, will raise the entire length of that levee even beyond its intersection with the Pond A1 levee. To incorporate the highest sea-level rise prediction from the City of Mountain View's Sea Level Rise Study, Feasibility Report, and Capital Improvement Program, this levee improvement will build a levee base and foundation support sufficient to support a 16- foot NAVD88 cross section to a crest elevation of 14.7 feet NAVD88. This design levee height satisfies the FEMA design criteria for 100-year flood level plus 3 feet and gives the City of Mountain View the option of future improvements to address sea-level rise. This design levee height would also improve flood risk management along the southern end of Charleston Slough and the communities and infrastructure behind it. Levee improvements will be about 1,440 feet long. The top width of the improved levee will be about 24 feet. The existing wooden platform and

viewing station that extend into the slough from the trail near the water intake will remain in place, and an Americans with Disabilities Act (ADA) compliant sloped path would be installed to connect it to the raised Coast Casey Forebay levee. A similar path will connect the top of the Coast Casey Forebay levee to the existing trail from the parking area to the south.

31. To provide access to existing PG&E utilities, two single-span precast/prestressed I-girder bridges will be installed to extend over the armored breaches on the eastern levee of Pond A2W. The bridges will consist of pile supported abutments and wing walls at each end. Foundations and wing walls will be cast in place concrete footings supported on top of piles driven into the existing levee and its edges. The total pile count for both bridges is estimated to be 32 piles. The superstructure will be a cast-in-place concrete bridge deck on precast/prestressed 2.5-foot deep I-girders. Each bridge will be about 60 feet long and 19 feet wide. This length allows for a minimum of a 40 foot channel bottom width through the bridge opening.

32. About 3,700 linear feet and 3,200 linear feet of transition zones will be established along the inside slopes of Ponds A1 and A2W, respectively. The transition zone in Pond A1 will extend all the way across the southern border of the pond. In Pond A2W the transition zone will only cross the central portion of the pond's southern border, so that potential future connections with the existing mitigation marshes to the south (the Mountain View mitigation marsh and the Stevens Creek mitigation marsh) are not precluded. The habitat transition zones will have a top elevation of approximately 9 feet NAVD88. The slope of these features in Pond A1 would be varied to provide a range of different slopes including slopes at 10:1, 20:1, 30:1 and 40:1 (h:v). In Pond A2W, the slope will be approximately 30:1 (h:v).

33. Nesting and roosting habitat for shorebirds, terns, and dabbling ducks will be created by constructing up to 10 islands in Ponds A1 and A2W. The islands will be constructed largely of upland fill material from offsite projects. Each island will have a top area of about 10,100 square feet, a top elevation of 12.5 feet NAVD88) and side slopes will be about 3:1 (h:v).

34. **PG&E Tower Work**. Conversion of Pond A2W to tidal marsh habitat requires PG&E to upgrade the tower foundations of 16 transmission towers to account for the introduced tidal flux and to raise the maintenance/service boardwalks that run under the power lines and provide PG&E access to the towers. The concrete pedestals on which the towers sit will be reinforced with additional concrete placed higher on the tower legs to protect the metal portions of the towers from the corrosive action of saltwater. Cofferdams will be constructed around each foundation at low tide and then dewatered. Concrete will be poured into forms within the dewatered cofferdams and all temporary structures will be removed once construction is complete. During cofferdam dewatering, pumped water will be managed in accordance with the 2007 SBSP Final Program EIS/R Mitigation Measure 3.4-5a. Existing PG&E access boardwalks in Pond A2W will be elevated and a new section of boardwalk will be constructed outside of Pond A1 to connect Pond A2W's outboard levee with an existing boardwalk outside of the Palo Alto Flood Control Basin. The additional boardwalk would be about 2,350 feet long and 3 feet wide (7,050 square feet or 0.16 acre). This area will be new shade over to the Bay. Existing boardwalks will be raised a maximum of 4 feet, using the existing boardwalk pillars. Existing boardwalks in Pond A2W are made of wooden planks on a wooden frame that rests on concrete foundations set into the pond bottom. The decking is approximately 6,700 feet long and two to three feet wide. This boardwalk will be removed and replaced with a higher one to retain PG&E access to the towers. The replacement would increase the width of the boardwalk by approximately two feet and thus increase the shaded area of the Bay. The exact amount of added surface area will not exceed 13,500 square feet (about 0.3 acre).

35. ***Alviso System A7***. This system consists of Ponds A5, A7, A8, and A8S. During Phase 1 Actions, Ponds A8 and A8S were made reversibly tidal through the installation of a variable-size and reversible "notched" gate between Pond A8 and Alviso Slough that opened in July 2010. The gate is now operated year round with the full 40-foot wide gate kept open. As part of Phase 1 restoration actions, Ponds A5 and A7 were also connected to Pond A8 and Pond A8S by breaching internal levees between these ponds. Phase 1 also added one culvert into the sloughs adjacent to Ponds A5 and A7. As Part of Phase 2, habitat transition zones will be constructed at the southwest and southeast corners of Pond A8S. The tops of the habitat transition zones will be about 9 feet elevation NAVD88. The lengths of the transition zones along the southwest and southeast corners will be about 2,075 feet each. The habitat transition zones will be separated in the middle to allow future connections with San Tomas Aquino Creek and Calabazas Creek to the south.

Ravenswood Complex

36. The Ravenswood complex includes five subsystems and seven ponds (R1, R2, R3, R4, R5, S5, and SF2) that comprise about 1,600 acres in San Mateo County. Phase 2 work at the Ravenswood Ponds includes a breach to Ravenswood slough, four water control structures, a number of other habitat enhancements, flood risk management components, and public access and recreation features. Ponds R1 and R2 will continue to be managed as seasonal ponds in Phase 2. Pond SF2 was reconfigured in Phase 1, with the addition of about 30 habitat islands and the construction of new water intake and outflow gates. Pond SF2 will continue to be operated to circulate water around the habitat islands to meet water quality objectives, discharge requirements, and to provide forage for roosting and nesting birds in the pond. Pond R3 will be operated as an enhanced managed pond for small shorebirds, including western snowy plover (*Charadrius nivosus nivosus*). Ponds R5 and S5 will be converted to managed ponds for dabbling ducks and other bird guilds. Pond R4 will be restored to tidal marsh by connecting it to the Bay through a breach into Ravenswood Slough.

37. The levee at the northeastern corner of Pond R4 will be breached to open the pond to tidal flows from Ravenswood Slough. Material from the breached levee will be used to build ditch blocks to direct flows through the borrow ditch to the historic slough trace and into the pond's center; material may also be used to improve levees or construct habitat transition zones. The bottom width of this breach will be about 200 feet, with an invert elevation of 2 feet NAVD88 and with side slopes of 3:1 (h:v). A channel about 470-feet long will be excavated through the existing fringe tidal marsh to connect the breach to Ravenswood Slough. About 2,890 feet of pilot channels will be created in the interior of the pond. The invert elevation will be at 2 feet NAVD88 to roughly match the invert elevation of existing channels within Pond R4. The bottom width of the channel cut will be roughly 50 feet wide with side slopes of 2:1 (h:v). Excavated material will be used to enhance levees, and to construct habitat transition zones and ditch blocks in the existing borrow ditches west of the R4 breach. Material for the ditch blocks will be from a combination of imported fill material and local material from levee lowering or breaches. About 960 linear feet of the northwestern levee on the edge of Pond R4 will be lowered to HTL to improve habitat connectivity between Pond R4 and Greco Island/West Point Slough. The new top elevation will be at about 8 feet NAVD88 and side slopes will be about 2:1 (h:v). Material from the lowered levee will be used to raise levees or construct habitat transition zones.

38. Ponds R5 and S5 will be converted into a single enhanced, managed pond through removal or modification of levees within and between the ponds. A habitat island will be created between Ponds R5 and S5 from the remnants of the internal levee currently between those ponds. The habitat island surface will be about 1.77 acres, with a relatively flat top at elevation 9 feet NAVD88 (above

the HTL elevation), with side slopes of 2:1 (h:v). Sand, shell, or other suitable topping will be added to the island to enhance its usefulness for the birds that would use it for roosting and nesting, and to help control invasive vegetation. Four water control structures (pipe culverts through levees) will be installed. One will be installed at the levee between Ponds R4 and R5. Another will be installed between Pond S5 and Flood Slough. A third will be installed between Ponds S5 and R3. The fourth will be installed between Pond R3 and Ravenswood Slough. These structures will allow for separate control of different types of managed pond habitat for various guilds of birds, by allowing different bottom depths and elevations. Water control structures are summarized in Table 5. The water control structures will be gated at both ends to allow two-way control over flows in or out of each pond.

Table 5. Ravenswood Ponds – Water Control Structures

Location	Pipe Quantity	Inside Diameter (Inches)	Pipe Length (Feet)	Invert Elevation NAVD88 (Feet)	Pile Quantity*	Total Area** (Square Feet)
Pond R5/S5 to Flood Slough	2	48	183	2	8	3,790
Pond R5/S5 to Pond R4	2	48	78	3.5	8	1,650
Pond R5/S5 to Pond R3	1	36	67	4.5	8	690
Pond R3 to Ravenswood Slough	1	36	62	2	8	640
Total	**6**	**N/A**	**390**	**N/A**	**32**	**6,770**

Notes:

*All piles are 16-inch diameter and about 20 feet long.

**Total Area includes pipe-culvert, gates, and bridges at each control structure.

About 4,700 feet of improved levee will be constructed on existing levees. The berm-like levees along both sides of the All American Canal (AAC) will be raised and strengthened, and the AAC will be filled in to create a single levee. Constructing this improved levee will replace the de facto flood risk protection currently provided by the outboard levees on Pond R4. Improvements at the western end of the AAC would extend north along the Ponds R4/R5 border and south along the R3/S5 border, to isolate Ponds R5 and S5 from other ponds. Most of the material for the improvements will come from off-site sources, though some may be from local cut activities. The improved levee will consist of a 60-foot-wide crest, with side slopes at about 3.5:1 (h:v) on the north side and 4.5:1 (h:v) on the south side. The crest of the levee will be at elevation 11 feet NAVD88. A habitat transition zone will be constructed on the north face of this levee that will provide increased adaptability to sea level rise over time, as described below.

The improved levee will become wider as it transitions to meet the sections of improved levee that will form the eastern borders of Ponds R5 and S5 and will also be the basis of a public access trail and viewing platform. The AAC will not have a trail on top, but will allow access by vehicles for maintenance and monitoring activities. A gate will be placed at the viewing platform area to restrict access.

A 2,500-foot long habitat transition zone will be constructed in the western side of Pond R4, up against the Bedwell Bayfront Park (a closed landfill) border as shown in Figure 6. A second, 5,100-foot long habitat transition zone will extend northward into Pond R4 from the improved AAC levees. The habitat transition zones will be at an elevation of 9 feet NAVD88 along the levees or the high ground of the park and have side slopes of 30:1 (h:v) with varying steeper slopes at end transitions.

A trail will be constructed along the improved eastern levees of Ponds R5 and S5, and linked to the existing trails outside of these ponds. As shown in Figure 6, the northern end would connect to the existing trail in Bedwell Bayfront Park; the southern end would connect to the Bay Trail spine. This trail would be approximately 2,750 feet long and 10 feet wide with 2 feet of shoulder on each side. Trail surfacing materials will be decomposed granite with timber or concrete edging. A viewing platform will be constructed near the central point of this trail, at the junction with the improved AAC levee. The viewing platform will have benches and interpretive signage on pedestals and/or information panels.

Table 6. Ravenswood Ponds – Recreational Features: Trail Lengths and Areas

FEATURE	LENGTH (FEET)	AREA (SQUARE FEET)
Ponds R5 and S5 eastern levee	2,750	38,500
Total	**2,750**	**38,500**

Table 7. Ravenswood Ponds – Recreational Features: Viewing Platforms Footprints

FEATURE	AREA (SQUARE FEET)
Ponds R5 and S5 eastern levee viewing platform	9,960
Total	**9,960**

There are many complicated easements as well as several different landowners in the area where Flood Slough, the Pond S5 forebay, SR 84, Marsh Road, Bedwell Bayfront Park, and the driveway into the park, all come together. This area includes various parcels and their owners, as well as easements for utilities or access. Cargill holds fee title on much of Flood Slough and has a 10-foot wide pipeline strip of property along the entire southern border of Ponds S5 and R3. Cargill's coordination and approval will be required for any proposed activities that would take place on, cross, or otherwise affect lands or properties in which it has property interest. Proposed activities that are expected to require coordination with and approval from Cargill include construction of fencing, building a trail that would cross Cargill's pipeline easement, and connecting Flood Slough to the S5 forebay. Because the City of Menlo Park and the West Bay Sanitary District are also landowners in the area, and the California Department of Transportation and PG&E hold utility easements in the area, coordination with these entities will also be required.

I. Phase 1 Marsh Restoration & Pond Management

Site Location & Description of SBSPRP Phase 1 Activities

39. The 3,270-acre Phase 1 actions of the SBSPRP included tidal habitat restoration, pond reconfiguration, and recreation/public access actions, as well as monitoring activities and applied studies in six different ponds, or pond systems, across the three pond complexes (see Figure 2). Phase 1 target habitats in Ponds A6 and E8A/E9/E8X are expected to develop over 50 years, but may take longer. The areas of each pond or group of ponds and the predicted target habitats are listed in Table 8.

Table 8. Phase 1 Restoration Actions

PHASE I RESTORATION ACTION	START OF CONSTRUCTION	TYPE OF RESTORATION	ACREAGE	CONSTRUCTION COMPLETION
Alviso Pond Complex (USFWS)				
Pond A6	Summer 2010	Tidal habitat	360	2010
Pond A8	Summer 2009	Reversible muted tidal habitat	1,440[1]	2011
Pond A16 and A17	Fall 2011	Reconfigured managed pond and tidal habitat	373[2]	2013
Ravenswood Pond Complex (USFWS)				
Pond SF2	Fall 2008	Reconfigured managed pond	237	2010
Eden Landing Pond Complex (CDFW)				
Pond E8A, E9, and E8X	Summer 2009	Tidal habitat	630	2011
Ponds E12 and E13	Summer 2012	Reconfigured managed pond	230	2013
Total Acreage			**3,270**	

[1] This acreage includes Ponds A5, A7, and A8S, which are affected by tidal inundation over the low internal levees that separate these ponds from Pond A8.

[2] This acreage includes both Pond A16 (242 acres), which will be a reconfigured managed pond and Pond A17 (131 acres), which was breached to create tidal habitat.

Note 1: Recreational facilities include: Alviso Pond Complex improvements to the Bay Trail; Ravenswood Pond Complex improvements to Bay Front Park and Pond SF2; and Eden Landing Complex trail construction, kayak launch, and viewing platforms.

Note 2: Not shown in Table 1 is the 480-acre Island Pond tidal marsh restoration already approved by the Water Board under the ISP, Order No. R2-2004-0018.

Specific Phase 1 Activities

POND A6 TIDAL HABITAT RESTORATION

40. Alviso Pond A6 was restored to tidal action to create about 330 acres of tidal salt marsh and tidal channel habitat through levee breaching, levee lowering, pilot channel excavation to the sloughs, and the installation of borrow ditch blocks. The habitat will evolve over time through natural tidal processes. The Pond A6 restoration did not include recreation, public access, or flood control features.

POND A8 REVERSIBLE MUTED TIDAL HABITAT CONVERSION

41. Phase 1 actions at Pond A8 introduced muted tidal action to create approximately 1,400 acres of shallow subtidal habitat in Ponds A5, A7, and A8 through the construction of a 40-ft notch at the southern end of Pond A8, and modified management of existing water control structures on Ponds A5 and A7. To facilitate tidal exchange, the Project excavated an approximately 475-foot-long pilot channel through the fringe marsh of Alviso Slough, immediately outboard of the armored notch. The top width of the constructed pilot channel was over-excavated to approximately 130 feet to minimize erosion. The depth of the pilot channel extended through the erosion-resistant vegetation and root mass to approximately 9 feet below existing grade. Restoration of tidal action to Pond A8 was reversible. In the event that unacceptable ecological impacts begin to occur, tidal exchange to Pond A8 can be eliminated to prevent long-term adverse impacts. If tidal exchange to Pond A8 is eliminated, water management at Ponds A5, A7, and A8 would revert to the original Initial Stewardship Plan (ISP) operations.

42. Compared to water discharges through culverts fitted with flap gates, the two-way (ebb and flood) flows across the open notch at Pond A8 minimizes the potential for fish trapping inside the pond. Partial restoration of tidal prism in these ponds promotes channel scour and increases salinity along Alviso Slough. The expected potential increases in channel width and salinity, and likely increase in salt marsh dominated vegetation over the existing freshwater marsh dominated vegetation will help improve navigation access in Alviso Slough in a sustainable fashion. At this time, all of the 'bays' in the armored notch are kept open year round.

POND A16/A17 RECONFIGURATION, VIEWING PLATFORM, AND INTERPRETIVE DISPLAY

43. ***Alviso System A16/A17***. This system consists of two ponds (A16 and A17). As part of Modification 1 to Phase 1, Pond A16 was maintained as a reconfigured managed pond and Pond A17 was restored to tidal habitat. The table below shows the expected hydraulic residence times for Pond A16 in the summer. The Pond A16 managed pond was reconfigured to create 16 islands for nesting birds and shallow water habitat for shorebird foraging, via the installation of 2 new water control structures (inlet and outlet), excavation of a pilot channel to Artesian Slough, and the construction of the nesting islands. Pond A17 (131 acres) was restored to tidal habitat by breaching the existing levees along Coyote Creek. Water is introduced into Pond A16 from restored tidal habitat in Pond A17. The intakes into Pond A16 from Pond A17 is screened to exclude anadromous fish. In addition, a viewing platform and interpretive station were constructed at Pond A16 and a fishing platform and interpretive station were constructed at the northwestern end of Pond A17 in Coyote Creek.

Table 9: Summer Hydraulic Residence Times for Pond A16

Pond	Area (acres)	Depth (ft)	Volume (acre-ft)	Outlet Flow (ft^3/s)	Residence Time (days)
Revised Pond A16	242	1.68	408	60	3.4

STEVENS CREEK TO SUNNYVALE BAY TRAIL SPINE

44. The 2.25-mile long Stevens Creek to Sunnyvale Bay Trail Spine is an integral spine connection in the Association of Bay Area Government's (ABAG) Bay Trail project, a partially constructed 500-mile recreational "ring around the Bay." The spine trail will be designed in accordance with ABAG Bay Trail Design Guidelines that require a two-way, multi-use trail 10 to 12 ft in width and paved with asphalt, with 2-ft dirt shoulders on either side. In the longer term, this alignment will include a flood protection levee. The Bay Trail will then be retrofitted and incorporated into the design of the levee. As this may take many years, this segment of Bay Trail will be opened for immediate access to this part of the Project area, using the existing levee until a more permanent segment can be constructed.

    No significant construction activities for this trail were implemented as part of Phase 1. The existing levee was opened to public use with minor amenities added. Future improvements to the trail to meet Caltrans Class I trail standards will be the subject of a future Biological Assessment tiered to the Programmatic action.

POND SF2 RECONFIGURATION, VIEWING PLATFORM, INTERPRETIVE STATION, AND TRAIL UPGRADES

45. Ravenswood Pond SF2 was reconfigured to create 237 acres of high quality nesting and shallow water foraging habitat for shorebirds. Phase 1 work included the installation of 2 new water control structures, excavation of pilot channels through the fringe marsh outboard of the new water control structures, development of an internal water circulation system using a series of berms and water control structures such as flashboard weirs, and the construction of 36 nesting islands. Three cells were created; the two eastern cells were reconfigured to create nesting islands for birds and shallow water habitat for shorebird foraging. The third, western cell is managed to provide snowy plover habitat similar to existing conditions. In addition, 2 viewing platforms and interpretive stations were constructed, and portions of the existing trail along Pond SF2 were upgraded.

BAYFRONT PARK VIEWING PLATFORM

46. A viewing platform at Bayfront Park was constructed at one of the high points in the Park that provides a vantage point to view Greco Island as it meets Pond R4.

PONDS E8A, E8X, AND E9 TIDAL HABITAT RESTORATION

47. Eden Landing Ponds E8A/E8X/E9 were restored to tidal action to create tidal salt marsh and tidal channel habitat through levee breaching, excavation of pilot channels through the fringe marsh outboard of certain levee breaches, levee lowering, and the installation of borrow ditch blocks to create 630 acres of restored tidal marsh habitat. The restoration was designed to maintain or improve existing levels of flood protection in Old Alameda Creek.

PONDS E12 AND E13 RECONFIGURATION, INTERPRETIVE STATION, AND TRAILS

48. Phase 1 activities included the reconfiguration and management of Ponds E12 and E13 as a small-scale salt pond system to create 230 acres of high quality shallow water foraging areas at varying salinities and 6 constructed nesting islands. Phase 1 activities included the replacement of an existing pump, the installation of three new water control structures for intake and discharge, development of an internal water circulation system using a series of berms and flashboard weirs, and the construction of nesting islands. Ponds E12 and E13 were reconfigured to create shallow water foraging habitat for migratory shorebirds, with a range of salinities, and a limited number of islands for nesting bird habitat.

MT. EDEN CREEK VIEWING PLATFORM, BOAT LAUNCH, INTERPRETIVE STATION, AND TRAIL

49. A trail was constructed along the existing levee on the south side of Mt. Eden Creek. This trail is 6 to 8 ft wide on an existing managed pond levee, and has a firm and stable, hardened surface for public access. The nearby staging area supports 58 motor vehicles and was being built as part of the restoration plan for the northern 835 acres of the Eden Landing Ecological Reserve (ELER), a separate action from the SBSPRP. A kayak/boat launch, located north of Pond E12 and on the north side of Mt. Eden Creek, is accessible year-round from the levee road that leads from the staging area to the Mt. Eden Bridge. Mt. Eden Creek is currently being restored under a separate action such that kayakers can travel 2.5 miles from the launch point to the Bay.

50. A total of 5 miles of new trails were constructed along existing levees as part of the Phase 1 public access plan at Eden Landing. New trails have firm and stable, hardened surfacing to allow for hikers and cyclists, and ADA compliant features were installed as funding allowed. The managed pond levees provide firm and compacted surfaces so paving was not be required. The trails are open to the public.

51. The historic Oliver Salt Works consists of remnants of the old salt production/ harvesting-related facilities (e.g., pilings, foundations). Under the Phase 1 actions, the salt works were made accessible to the public by a new trail. An interpretive station tells the history of the salt works at this location, explains how salt is produced, and explains the salt works' cultural, economic, and social linkage to the greater San Francisco Bay Area.

III. Management of Ponds under the Initial Stewardship Plan (ISP)

ISP Activities Since 2004

52. Since 2004, the ponds within the SBSPRP area have been managed by the Discharger to provide habitat values while the long-term restoration plan is being developed. During ISP implementation, Bay waters have continued to be circulated through water control structures and existing levees have been maintained for minimum flood protection. Additionally, some ponds have been managed for bird or other wildlife habitat as seasonal ponds, which fill with rain water in the winter, and which dry through evaporation in the summer months. Finally, other ponds have been operated as high salinity ponds. The Island Ponds (Ponds A19, A20, and A21) in the Alviso pond complex were breached to tidal action in March 2006, during the ISP. Two breaches were made to Pond A19, one breach was made to Pond A20, and two breaches were made to Pond A21. All breaches were on the south side of the ponds, connecting the ponds to Coyote

Creek. Phase 2 activities will add breaches to Mud Slough on the north side of Ponds A19 and A20 (See Finding 27).

53. Modification 1 to Phase 1 restoration actions directly impacted the design and management of Ponds A6, A8, A16, A17, SF2, E8A, E8X, E9, E12, and E13. The Phase 1 Order also continued to permit the Discharger to operate the remaining ponds under the management protocols that were authorized under the ISP. Most of the remaining ponds are managed to maintain open water conditions. Without the introduction of Bay water, these ponds would dry down during the summer and become seasonal ponds in the winter, which would significantly reduce open water habitat. Operating former salt ponds as managed ponds is considered by the Water Board to be a transitional phase between salt-making and restoration. This transitional lagoon management phase for most of the former salt ponds benefits the environment in the near term by providing shallow open water habitat for shorebirds, thus avoiding the consequences of operating them as seasonal ponds (See Finding 102).

54. While the lagoon management phase benefits the environment by providing habitat, it has posed challenges for water quality, particularly dissolved oxygen, due to algae proliferation in the ponds during the summer when the days get longer and hotter. The water quality impacts associated with operating former salt ponds as managed ponds could be overcome by opening the ponds to unrestricted tidal action. However, at this time, there are constraints that prevent the Discharger from moving more aggressively in this direction. First, the Discharger needs to ensure that flood control structures are built between the ponds and developed lands before it can consider opening much of the Project Area ponds to tidal action. Additionally, the Alviso ponds are subsided, so the Discharger needs to phase tidal restoration to ensure that sediment accretion in these ponds will not result in a corresponding erosion of nearby mudflats. At this time, natural processes (e.g., windy conditions) resuspend sediment from mudflats, creating high sediment concentrations in the water column that are subsequently redeposited on the mudflats, when the water column becomes more quiescent. If the Discharger does not carefully phase the restoration of salt ponds to tidal action, additional flow into the salt ponds could result in the transport, and subsequent deposition, of much of the sediment into former salt ponds, instead of to mudflats. Finally, because former salt ponds provide bird habitat, the Discharger needs to carefully transition pond systems from managed to tidal while ensuring that existing shorebird and waterfowl habitat is not adversely affected. This Order requires that, through applied studies and adaptive management, the Discharger address the above constraints. In other words, the Discharger needs to maximize restoration of former salt ponds to tidal marsh, but must do so in a phased approach for biological reasons (i.e., maintaining bird habitat).

55. Findings 40 to 51 describe each pond system in more detail. The purpose of these findings is to (a) illustrate how flow will be routed in the Alviso and Eden Landing Pond Systems, (b) document the dimensions of individual pond systems, and (c) illustrate the time it will take Bay water to circulate through pond systems that operate under directional flow. The residence time of pond systems is important because stagnant waters (i.e., ponds with long residence times) are more likely to experience water quality problems, such as low dissolved oxygen levels, due to excessive algal growth. While the residence times indicated in Tables 4 through 8 reflect averages and will likely change based on management practices implemented by the Discharger, they do illustrate the significant lag time and subsequent management constraints involved in improving dissolved oxygen levels by flow management alone.

Alviso Complex

56. The findings below describe how USFWS will operate ponds that are affected by Phase 1 actions and the remaining ponds operating under the ISP. To maximize water circulation patterns within ponds, USFWS plans to operate all ponds that are unaffected by Phase 1 or Phase 2 actions as directional systems (as described in the findings below).

57. ***Alviso System A3W***. This system consists of five ponds that were not affected by Phase 1 or Phase 2 actions. The intake pond AB1 receives water from the Bay via a 36-inch gate structure and from a 48-inch culvert. The outlet pond A3W discharges pond water through three 48-inch gates to Guadalupe Slough (Discharge Point A-A3W-1) near the Sunnyvale Water Pollution Control Plant (WPCP) outfall. The normal flow in this system follows two routes. One route is from AB1 to A2E to A3W. The second route is from AB1 to AB2 and then to A3W. This system also includes pond A3N, which operates as a seasonal pond. The table below shows the expected summer hydraulic residence times for this system.

Table 10: Range of Summer Hydraulic Residence Times for Pond System A3W

Pond	Area (acres)	Depth (ft)	Volume (acre-ft)	Outlet Flow (ft^3/s)	Residence Time (days)
AB1	142	1.2	170.4	21 to 62	1.4 to 4.1
AB2	170	1.0	170.0	21 to 62[1]	6.7 to 19.7
A2E	310	2.1	651		
A3W	560	1.8	1008	21 to 62	8.2 to 24.2
Total	1182[2]				16 to 48

[1] In this table, the outlet flow for AB2 and A2E is a summation as these ponds operate in parallel. To estimate the hydraulic residence time of the system, Ponds AB2 and A2E were assumed to have equal residence times.

[2] The total area does not include Pond A3N (163 acres) since the Discharger proposes to operate it as a seasonal or batch pond and thus flows to this pond are not expected to be significant.

58. ***Alviso System A14***. This system consists of seven ponds that were not affected by Phase 1 actions and will not be affected by Phase 2 actions. The intake to pond A9 receives water from Alviso Slough through two 48-inch gates. The outlet pond A14 discharges water through two 48-inch gate structures into Coyote Creek (Discharge Point A-A14-1). The route of flow through this system is from A9 to A10 to A11 to A14. Over the past few years, the Discharger has operated ponds A12, A13, and A15 as batch ponds to maintain higher salinity levels (between 80 and 120 ppt) for brine shrimp habitat. Because water intakes at A9 have the potential to entrain migrating salmonids, this system cannot intake water from Alviso Slough between December and April. The table below shows the expected summer hydraulic residence times for this system. Since the Discharger plans to close the intake structure at pond A9 during the winter to avoid entraining migrating salmonids, relatively small flows will discharge from this system in these months.

Table 11: Range of Summer Hydraulic Residence Times for Pond System A14

Pond	Area (acres)	Depth (ft)	Volume (acre-ft)	Outlet Flow (ft^3/s)	Residence Time (days)
A9	385	2.2	847	22 to 44	9.7 to 19.4
A10	249	2.6	647.6	22 to 44	7.4 to 14.8
A11	263	3.1	815.3	22 to 44	9.3 to 18.7
A14	341	0.9	306.9	22 to 44	3.5 to 7.0
Total	1238[1]				30 to 60

[1] The total area does not include Ponds A12, A13, and A15 (309, 269, and 249 acres) since the Discharger proposes to operate these ponds on a batch basis and thus flows to them are not expected to be significant.

59. ***Alviso System A23***. This system consists of two ponds (Ponds A22 and A23) that are owned by USFWS. During the ISP, Cargill managed these ponds as seasonal ponds (intake only, no discharge) to provide snowy plover habitat. Cargill transferred these ponds to USFWS in 2011. USFWS continues to operate them as seasonal ponds.

Eden Landing Complex

60. The findings below describe how CDFW will operate ponds that are affected by Phase 1 actions and the remaining ponds. The tables presented below describing the Eden Landing Systems do not include estimated residence times because CDFW operates all of the Eden Landing systems under muted tidal flows.

61. ***Eden Landing System E2 and E2C***. The E2 system consists of four ponds and the E2C system consists of eight ponds. Neither of these systems will be affected by the Phase 2 actions authorized by this Order. In 2005, CDFW linked these systems together. The objective of system E2/E2C is to maintain year-round open water habitat in Ponds E1, E2, E6, E5, and E2C and winter open water habitat in all of the ponds (E1, E2, E7, E4, E6, E5, E2C, E1C, E4C, E5C, and E6C). Pond E3C, owned by Cargill, is still part of the E2C system and will be operated as year-round open water habitat until it is decoupled from circulation patterns. In the E2 system, the intake pond E1 receives water from Old Alameda Creek through four 48-inch gates and through a 30,000 gallon per minute (gpm) pump. During the winter months, the inflow from Pond E1 circulates through Ponds E7, E6, E5, E4, and E2 before discharging to the Bay (Discharge Point E-2-10) through two 48-inch gates. In the summer months, CDFW intakes water at E-1 and transfers water from E-1 to E-2, while operating E-2 under muted tidal conditions. During the fall, CDFW links systems E2 and E2C by routing water from pond E7 to ponds E6 and E5 to makes up for evaporation losses and reduce salinity. CDFW operates ponds E6 and E5 as batch ponds. This means that ponds E6 and E5 have low salinity in the spring and CDFW allows for evaporation to increase salinity during the summer months. On average, CDFW estimates that salinity levels in ponds E6 and E5 will increase from about 30 ppt to 120 ppt between May and November. The high salinity waters in Ponds E6 and E5 are routed, in the winter months, to ponds E4 or E6C and diluted before reaching discharge locations. In the E2C system, CDFW operates pond E2C under muted tidal conditions (intake and discharge at the same structure) to

the Alameda Flood Control Channel (Discharge Point E-2C-14). CDFW operates Ponds E6C, E4C, E5C, and E1C as seasonal ponds. This means that ponds E6C, E4C, E5C, and E1C have open water conditions during the winter months, shallow water conditions in the spring and fall, and dry conditions during the summer months. To moderate salinity levels and improve dissolved oxygen levels in the E2C system, CDFW increases intake volumes at E2C and periodically drains intake waters to adjacent seasonal ponds (E5C, E4C, and E1C) to improve turnover of pond system waters. The surface area for ponds in the E2 and E2C systems are shown in the tables below:

Table 12: Surface Area of Pond System E2

Pond	Area (acres)
E1	337
E7	209
E4	175
E2	673
Total	1394

Table 13: Surface Area of Pond System E2C

Pond	Area (acres)
E6	176
E5	159
E6C	78
E4C	175
E3C	153
E2C	24
Total	942

62. ***Eden Landing System E6A***. This system consists of three ponds (E6A, E6B, and E8) and two control ponds (less than one-acre each) that will not be affected by Phase 2 actions. The ponds in this system are managed seasonally, with varying salinities ranging from low to medium levels. During the summer months, Pond E6A and E6B may be operated as intake ponds with no discharge to maintain breeding habitat and shallow water foraging habitat for the western snowy plover. In other words, during the summer months, CDFW operates this system to enhance seasonal ponding via limited intake at E6A. During the fall, CDFW would fill the ponds with water so it can operate these ponds as open water habitat during the winter months, with Pond

E6A and E6B operating under muted tidal conditions. Pond E8 generally operates as a seasonal pond with intake and flow through to E6B and E6A in the winter. The surface area for ponds in the E6A system is shown in the table below:

Table 14: Surface Area for Pond System E6A

Pond	Area (acres)
E8	180
E6B	284
E6A	340
Total	804

63. ***Eden Landing System E8A***. This system consists of six ponds (Ponds E9, E8A, E8X, E12, E13, and E14) that were modified by Phase 1 restoration efforts. Eden Landing Ponds E8A/E8X/E9 were restored to tidal action in Phase 1 to create tidal salt marsh and tidal channel habitat. Ponds E12, E13, and E14 continue to be operated as seasonal ponds (i.e., these ponds are open water during the winter and become dry during the summer months), as they were under the ISP.

64. ***Eden Landing System E11***. This system consists of two ponds (E10 and E11) that are not be affected by Phase 1 or Phase 2 actions. The Discharger operates E10 under muted tidal conditions and E11 as a seasonal pond. The surface area for ponds in the E11 system is shown in the table below:

Table 15: Surface Area for Pond System E11

Pond	Area (acres)
E10	214
E11	118
Total	332

Ravenswood Complex

65. USFWS owns the Ravenswood ponds, which are part of the larger Redwood City pond complex. The Ravenswood complex includes five subsystems and seven ponds (R1, R2, R3, R4, R5, S5, and SF2) that comprise about 1,600 acres in San Mateo County. During the ISP, Cargill managed ponds north of Highway 84 (i.e., Ponds 1, 2, 3, 4, 5, and S5) as batch ponds. Prior to Phase 2, USFWS has been operating these ponds as seasonal ponds (intake only, no discharge). Ponds R1 and R2 will continue to be managed as seasonal ponds in Phase 2. Pond SF2 will continue to be operated to circulate water around the habitat islands to meet water quality objectives, discharge requirements, and to provide forage for roosting and nesting birds in the pond. Phase 2 actions will restore Pond R4 to tidal marsh by connecting it to the Bay through a breach into Ravenswood

Slough. Pond R3 will be operated as an enhanced managed pond for small shorebirds, including western snowy plover (*Charadrius nivosus nivosus*). Ponds R5 and S5, which are currently seasonal ponds, will be converted into a single enhanced, managed pond through removal or modification of levees within and between the ponds. Four water control structures (pipe culverts through levees) will be installed. These structures will allow for separate control of different types of managed pond habitat for various guilds of birds, by allowing different bottom depths and elevations.

Overview of Pond Discharges

66. This Order permits discharge from former salt ponds as waters from the South Bay are taken into pond systems and then discharged more-or-less continuously. The main parameters of concern for pond discharges include salinity, metals, dissolved oxygen, pH, and temperature.

67. ***Salinity Levels of Pond Discharges.*** For ponds unaffected by Phase 1 or Phase 2 actions, the Discharger will continue to operate these ponds to limit salinity discharge levels. While the Discharger designed pond systems to ensure that discharged salinity levels remain below 40 ppt, the Discharger modeled the impact on receiving water salinities of discharging salinity levels near 44 ppt, in order to be conservative (for development of Order No. R2-2004-0018). This modeling effort showed that discharging pond waters at salinity levels up to 44 ppt will not cause any significant or potentially significant impacts to any receiving waters.

68. ***Salinity as a Surrogate for Metals***. To ensure that pond waters do not discharge metals at toxic levels, this Order uses salinity as an indicator parameter for the concentrations of metals. Many of the metals present in the ponds are present as inorganic salts. Therefore, metals concentrations are anticipated to follow salinity levels. Increases in salinity represent a worst-case scenario for the parallel increase in metals concentrations. In other words, if only evaporation affected metals concentrations, they would increase proportionately with salinity. However, other factors within the ponds, such as biological uptake and adsorption to fine sediments, will reduce metals concentrations. Accordingly, using salinity as a surrogate for metals concentrations should be more protective, as it will only consider evaporation, which is the mechanism by which metals concentrations increase. Besides offering more protection, the use of salinity will give the Discharger immediate feedback on conditions at discharge points and within pond systems, and thereby enable it to implement corrective measures in a timely manner based on monitoring results.

69. ***Metals Concentrations.*** Metals concentrations in the discharge should not exceed applicable water quality objectives, provided that the Discharger operates each pond system to maintain salinities below 44 ppt. The tables below show the estimated maximum metals concentrations associated with an in-pond salinity of 44 ppt. This indicates that, if salinity levels remain below 44 ppt, discharges from the Alviso and Eden Landing Systems will meet water quality objectives for metals.

Table 16: Maximum Salinity and Associated Metals Levels for the Alviso System[1]

Maximum Salinity	Cr µg/L	Ni µg/L	Cu µg/L	Zn µg/L	As µg/L	Se µg/L	Ag µg/L	Cd µg/L	Hg ng/L	Pb µg/L
44 ppt	1.22	8.05	2.98	1.83	10.7	0.4	0.01	0.08	1.8	0.31
WQO[2]	11.4	27	13	86	36	5.0	2.2	0.27	50	3.2

[1] To estimate the maximum metals concentrations from the Alviso System for continuous discharges, Order No. R2-2004-0018 considered an average of Regional Monitoring Program (RMP) data from 1997-1999 at the South Bay Station and salt ponds with salinities of 31.6 and 42 ppt.

[2] The Basin Plan only specifies water quality objectives south of Dumbarton Bridge for copper and nickel. For the other inorganics, water quality objectives are from the California Toxics Rule. Since the Board must express limits for metals in the total recoverable form, Board staff used default translators to convert dissolved water quality objectives to total. The water quality objectives for chromium, cadmium, and lead are freshwater driven and based on a hardness of 100 mg/L as $CaCO_3$, which is the lowest value found in sloughs (in this case Guadalupe Slough) monitored near the discharge in the Regional Monitoring Program.

Table 17: Maximum Salinity and Associated Metals Levels - Eden Landing System[1]

Maximum Salinity	Cr µg/L	Ni µg/L	Cu µg/L	Zn µg/L	As µg/L	Se µg/L	Ag µg/L	Cd µg/L	Hg ng/L	Pb µg/L
44 ppt	3.67	11.8	4.27	5.48	11.9	0.36	0.02	0.10	16	0.84
WQO[2]	11.4	16.3	4.6	58	36	5.0	2.3	0.27	25	3.2

[1] To estimate the maximum metals concentrations for the Eden Landing System for continuous discharges, Order No. R2-2004-0018 considered an average of RMP data from 1997-1999 at the Dumbarton Bridge Station and salt ponds with salinities of 31.6 and 42 ppt.

[2] These Basin Plan water quality objectives apply to waters north of Dumbarton Bridge except for copper, which is from the California Toxics Rule. This is because the Basin Plan does not specify a saltwater objective for copper. The Discharger performed site-specific translators for copper and nickel. Therefore, the values shown in Table 16 represent site-specific water quality objectives.

70. ***Diurnal Variations in Dissolved Oxygen and pH***. Algal growth in salt ponds can cause dissolved oxygen and pH levels to vary significantly over the course of a day. This is because during daylight hours, photosynthesis will produce oxygen and consume dissolved carbon dioxide. At night, respiration will produce dissolved carbon dioxide and consume oxygen. Therefore, any significant algal growth will cause dissolved oxygen and pH levels to peak during the late afternoon and to be at their lowest levels in pre-dawn. Since implementation of the ISP in 2004, continuous monitoring data within former salt ponds shows that pH levels can vary significantly and are often above the Basin Plan objective of 8.5. However, receiving water data has also shown that high pH levels from pond discharges are quickly normalized in nearby sloughs and the Bay. Continuous monitoring data for dissolved oxygen within former salt ponds has also shown significant variations throughout the day. As described in later findings, the biggest water quality challenge for former salt ponds has been maintaining dissolved oxygen at concentrations that are safe for aquatic life.

71. ***Temperature***. Since implementation of the ISP began in 2004, continuous monitoring data show that discharges from former salt ponds have complied with the Thermal Plan. Due to shallow water depths and limited tidal exchange, water temperature in the salt ponds is elevated and varies widely throughout the day. Annual water temperatures within the ponds generally range from 40 to 80°F and generally track air temperature. The State's Thermal Plan indicates that discharges

shall not exceed the natural temperature of receiving waters by 20°F, and discharges shall not cause temperatures to rise greater than 4°F above the natural temperature of the receiving water at any time or place.

72. ***Migration of Salmonids***. Steelhead trout and Chinook salmon migrate in South Bay sloughs, or slough channels that receive pond discharges. During certain times of the year, Coyote Creek and Alviso Slough may contain steelhead trout and Chinook salmon. The table below describes the upstream and downstream migration periods when former salt ponds have the potential to affect migrating salmonids.

Table 18: Migration Periods for Salmonids

Species	Upstream Migration	Downstream Migration
Steelhead Trout	January-March	March-April
Chinook Salmon	September-November	March-April

While Steelhead Trout and Chinook salmon migrate primarily downstream in March and April, storm induced migrations can begin as early as December. For this reason, NMFS recommends that the Discharger close intakes on all salmonids creeks and sloughs from December through April, with the exception of the notch between Pond A8 and Alviso Slough. Pond A17 was breached to full tidal action as part of Modification 1 to Phase 1, and a fish screen was installed at the Pond A16 intake from Pond A17. This Order requires that, during the December through April period, the Discharger shall close the intake structure at Pond A9 and operate the fish screen at Pond A16.

73. ***Adaptive Management to Improve Water Quality.*** Since the ISP was implemented in 2004, the interim management of discharges from former salt ponds has posed challenges for water quality, particularly dissolved oxygen, due to algae proliferation in the ponds when the days get longer and hotter. The Discharger has tried a number of corrective measures to improve oxygen levels. These include switching pond systems from directional flow to muted tidal flow, installing baffles, installing solar-powered aerators, and increasing flows to reduce residence times. While some corrective measures (e.g., baffles, muted tidal flows) appear to have improved discharge dissolved oxygen levels in some pond systems, the use of solar powered aerators and attempts to increase flow through the ponds have not had discernible results because the ponds are too large for existing intake/discharge structures or a few aerators to have a meaningful impact on dissolved oxygen levels at the discharge point.

74. ***Dissolved Oxygen and Within Pond Fish Mortality.*** While both USFWS and CDFW have experienced difficulty in maintaining adequate dissolved oxygen levels at pond discharge points, the problem, at least with respect to fish mortality, has been more severe for ponds managed by USFWS. During the summer months, ponds in the Alviso complex intake more Bay waters, and therefore, more fish than those in the Eden Landing complex. This is because ponds in the Alviso complex are subsided due to historic groundwater pumping. Between August of 2005 and July of 2016, there have been 11 reports or incidents in which low dissolved oxygen levels corresponded to fish kills of at least 10 fish (Ponds A3W, A5, A7, A11, A12, A16, and A17). Observations of fish mortality in Ponds A16 and A17 occurred prior to the Phase 1 modifications to those ponds. In the Eden Landing complex, there are no known reports of fish mortality since implementation of the ISP.

75. ***USFWS - Adaptive Management.*** All of the discharge ponds in the Alviso System have, at times, failed to meet the dissolved oxygen limitation prescribed in Order No. R2-2004-0018 at the discharge point. However, the most severe impacts (fish mortality) from low dissolved oxygen have occurred within Ponds A1, A5, A7, and A16. In each of these cases, USFWS was implementing a corrective measure to improve dissolved oxygen levels at the discharge point (i.e., muted tidal flows or discharge timing) that would result in reduced circulation patterns within ponds, and therefore, lower within-pond dissolved oxygen levels. To provide a better balance between within-pond water quality and receiving water quality, in 2008, USFWS began operating all of its ponds under directional flow to maximize flow through. This operation is intended to reduce stagnant areas in the back portion of ponds, and, therefore, reduce the likelihood of fish mortality.

76. ***USFWS - Altering Managed Ponds.*** By operating ponds to minimize the impact of low dissolved oxygen levels on beneficial uses (i.e., balancing within-pond water quality with receiving water quality), USFWS recognizes that simple operational changes will not significantly improve discharge water quality with respect to dissolved oxygen. In other words, future adaptive management changes will likely be aimed at altering pond geometry, changing residence times, and/or water depths. To determine how former salt ponds should be modified in the long term, USFWS has implemented applied studies at Ponds A3W, A14, and A16 (See Finding 112).

77. ***CDFW - Adaptive Management***. While CDFW has experienced low dissolved oxygen levels in former salt ponds, the effect of low dissolved oxygen does not appear to be as significant as that experienced in the Alviso complex. This is because ponds in the Eden Landing complex are at higher elevations, have trouble taking in waters during the summer months, and therefore, are often operated as seasonal ponds. In other words, many of the CDFW ponds do not have much water in the summer months when maintaining adequate dissolved oxygen levels is most problematic. To minimize the effect of pond discharges on receiving waters, CDFW plans to continue operating ISP ponds under muted tidal conditions. In its larger systems (E8A and E2/E2C), CDFW increases pond turnover rates, and thereby optimizes within-pond water quality (in its intake ponds) by routing water from intake ponds to seasonal ponds.

78. ***CDFW – Altering Managed Ponds***. While there has been no reported fish mortality in the Eden Landing Ponds, CDFW has not shown that managed ponds, as currently designed, are ecologically sustainable. This is because dissolved oxygen levels within ponds do not always comply with Basin Plan objectives. For this reason, CDFW implemented an applied study at Pond E10. A report on this applied study was submitted to the Water Board in 2009, as part of the annual self-monitoring report for Eden Landing (see http://www.southbayrestoration.org/monitoring/2009%20ASMR-KRAUSE031610.pdf).

79. ***Regulation of Dissolved Oxygen.*** The Basin Plan's water quality objective for dissolved oxygen is 5.0 mg/L. However, during the implementation of Order No. R2-2004-0018, the Water Board recognized that, without the installation of aerators, it would not be feasible for a well-operated lagoon system to meet an instantaneous dissolved oxygen limitation of 5.0 mg/L. Additionally, it has been noted that sloughs in the South Bay often do not meet the Basin Plan objective of 5.0 mg/L. For this reason, the Discharger has been implementing best management practices if dissolved oxygen levels fall below a 10^{th} percentile of 3.3 mg/L (calculated on a weekly basis) at the point of discharge. This dissolved oxygen trigger was based on levels found in Artesian Slough near Heron Rookery in July 1997. These values are the most relevant representation of natural dissolved oxygen variations in sloughs or lagoon systems currently available. Even using this trigger value as a threshold, the Discharger repeatedly has been implementing corrective

measures (e.g., discharge timing, muted tidal flows, and installing baffles) to address low dissolved oxygen levels in pond discharges. In order to improve dissolved oxygen levels in former salt ponds, the Discharger will likely need to implement corrective measures aimed at significantly reducing residence times and/or altering pond geometry.

80. ***Applied Studies.*** To address how the Discharger needs to adaptively manage ponds in the long term, this Order requires that the Discharger continue to implement applied studies. These studies will focus on ponds that may be operated as managed ponds in the long term (e.g., A3W, A14, and E10) and ponds that will be reconfigured (SF2 and A16/A17) under Phase 1 restoration actions (Note: Pond A17 was converted from a managed pond to a tidal pond in Modification 1 to Phase 1). The purpose of these applied studies is to guide long-term restoration efforts to determine (a) how pond geometry (surface area, depth, filling borrow ditches) should be altered to make managed ponds ecologically sustainable, (b) if the Discharger should move towards a restoration effort that will involve fewer managed ponds and more tidal marsh (especially if managed ponds cannot be reconfigured to become ecologically sustainable), and (c) how to develop a site-specific objective for dissolved oxygen in managed ponds. References to completed studies are provided in Finding 112.

IV. On-Going Pond Operation & Maintenance

81. On-going maintenance for those ponds that were not specifically modified as a part of Phase 1 or will not be modified by Phase 2 is also a critical element of the project. On-going operations and maintenance of all ponds in the SBSPRP area is included in this Order. Lack of maintenance to the existing levees and water control structures could have flood management and water quality implications if uncontrolled breaches are allowed to happen. The goal of these activities is to maintain the current level of maintenance in order to protect the existing infrastructure and neighboring communities, until specific restoration actions are carefully planned and implemented in subsequent project phases.

82. Waterbodies affected by ongoing operations and maintenance of ponds will include (see Figure 1):

- Eden Landing: Alameda Flood Control Channel, Old Alameda Creek, Mt. Eden Creek, and North Creek (Adjacent Ponds: E1, E1C, E2, E2C, E4, E4C, E5, E5C, E6, E6A, E6B, E6C, E7, E8, E8A, E8X, E9, E10, E11, E12, E13, and E14).
- Ravenswood: Lower South San Francisco Bay and Ravenswood Slough (Adjacent Ponds: R1, R2, R3, R4, R5, S5, and SF2).
- Alviso: Lower South San Francisco Bay, Alviso Slough, Guadalupe Slough, Coyote Creek, Mud Slough, and Artesian Slough (Adjacent Ponds: A1, A2W, AB1, A2E, AB2, A3W, A3N, A5, A6, A7, A8, A8S, A9, A10, A11, A12, A13, A14, A15, A16, A17, A19, A20, A21, A22, and A23).

83. Operations, management, and maintenance activities will be performed periodically for all Project facilities, including reconfigured and managed ponds, recreational/public access facilities, and (less frequently) tidal habitat restorations. These operations, management, and maintenance activities are currently being performed in a manner described in the Biological Opinion issued to Cargill (5 July 1995; Reference #1-1-95-F-47). The Discharger has already undertaken the responsibilities for operations, management, and maintenance activities as part of the SBSPRP. Levees, ponds, and water control structures will be routinely operated and maintained according to a protocol outlined in the 2008 USFWS and 2009 NMFS Biological Opinions and respective amendments. The USFWS Biological Opinion was most recently amended on November 21,

2017 (USFWS, Reference No. 08FBDT00-2017-F-0109-2). The NMFS Biological opinion will be amended prior to Project implementation. Additional operations, management, and maintenance activities are described in Provision E.43.

84. Portable pumps, such as diesel-powered pumps, may be used occasionally for operations and maintenance activities, such as supplementing gravity flows through water control structures or dewatering cells or canals for maintenance.

Laws, Regulations, and Policies

85. Basin Plan: The Porter-Cologne Water Quality Control Act (Water Code sections 13000-16104) authorizes the Water Board to develop a Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) which is the Water Board's master water quality control planning document. It designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater. It also includes programs of implementation to achieve water quality objectives. The Basin Plan was duly adopted by the Water Board and approved by the State Water Resources Control Board (State Water Board), U.S. EPA, and the Office of Administrative Law where required. The latest version can be found at the Water Board's website at http://www.waterboards.ca.gov/sanfranciscobay/basin_planning.shtml

86. The Basin Plan includes the following Beneficial Uses for the San Francisco Bay, Santa Clara Basin, South Bay Basin, and Lower San Francisco Bay. Because the salt ponds are hydrologically connected to San Francisco Bay, these beneficial uses also apply to the salt ponds:

- Ocean, Commercial, and Sport Fishing (COMM)
- Estuarine Habitat (EST)
- Industrial Service Supply (IND)
- Fish Migration (MIG)
- Navigation (NAV)
- Preservation of Rare and Endangered Species (RARE)
- Water Contact Recreation (REC-1)
- Noncontact Water Recreation (REC-2)
- Shellfish Harvesting (SHELL)
- Fish Spawning (SPWN)
- Wildlife Habitat (WILD)

87. This project is consistent with the goals of the following components of the State Wetlands Policy: California Wetlands Conservation Policy (Executive Order W-59-93, signed August 23, 1993), which is incorporated in the Basin Plan, that includes ensuring "no overall loss" and achieving a "…long-term net gain in the quantity, quality, and permanence of wetland acreages and values…." Senate Concurrent Resolution No. 28 states that "it is the intent of the legislature to preserve, protect, restore, and enhance California's wetlands and the multiple resources which depend on them for benefit of the people of the State." Section 13142.5 of the California Water Code (CWC) requires that the "[h]ighest priority shall be given to improving or eliminating discharges that adversely affect …wetlands, estuaries, and other biologically sensitive areas."

88. The San Francisco *Baylands Ecosystem Habitat Goals* and the *Comprehensive Conservation and Management Plan* (referred to in Finding 13) are regional plans that support the restoration of San Francisco Bay salt ponds to tidal marsh. The *USFWS Recovery Plan for Tidal Marsh Ecosystems*

of Northern and Central California (Recovery Plan) (USFWS, August 27, 2013), which include recovery actions for the Ridgway's rail and salt marsh harvest mouse (SMHM), supports both the restoration of as many acres of tidal marsh as feasible and the creation of habitat transition zones (i.e., ecotones) between marsh habitats and upland high water refuges. The Phase 2 SBSPRP is consistent with the recommendations in the two reports and the Recovery Plan.

89. Sediment Quality. The State Water Board adopted the Water Quality Control Plan for Enclosed Bays and Estuaries Part 1, Sediment Quality on September 16, 2008, and it became effective on August 25, 2009. This plan supersedes other narrative sediment quality objectives and establishes new sediment quality objectives and related implementation provisions for specifically defined sediments in most bays and estuaries. This Order implements the sediment quality objectives of this plan for both the existing and proposed discharges.

90. State Water Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California" (Antidegradation Policy), states that discharges to existing high quality waters will be required to meet WDRs that will result in the best practicable treatment or control of the discharge necessary to assure that (a) a condition of pollution or nuisance will not occur, and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained. These WDRs are consistent with Resolution No. 68-16 because implementation of the proposed restoration expected to enhance the existing beneficial uses of the waters of the State and achieve potential beneficial uses. Restoration is ultimately expected to improve water quality and fish habitat in the former salt ponds. The temporary impacts to water quality associated with restoration-related construction are minimized due to phased implementation (as explained in Findings 26 to 38, above) and are consistent with the maximum benefit to the people of the state because they will restore or enhance critically important wildlife habitat and recreation opportunities, and will protect infrastructure and residences from the effects of sea level rise.

91. The following California- and federally-listed species and designated critical habitat are present at the project location:

    (a) Delta smelt (*Hypomesus transpacificus*);
    (b) Longfin smelt (*Spirinchus thaleichthys*);
    (c) Green sturgeon (*Acipenser medirostris*);
    (d) Ridgway's Rail (*Rallus longirostris obsoletus);*
    (e) the threatened Pacific coast population of the western snowy plover (*Charadrius alexandrines nivosus*);
    (f) Steelhead trout, central California coast evolutionarily significant unit (ESU) (*Oncorhynchus mykiss*);
    (g) Chinook salmon, Central Valley (Sacramento) spring-run (*Oncorhynchus tshawytscha*).

92. **Endangered Species Acts:** This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). The Discharger is responsible for meeting all requirements of the applicable Endangered Species Acts. As applicable, the Discharger shall utilize the appropriate protocols, as approved by USFWS and stated in the USFWS Coordination Act Report and required in this Order, to ensure that Project

activities do not adversely impact water quality or the beneficial uses of the waters of the State referenced in Table 2 and Finding 82, above.

93. **Wetland Tracker:** It has been determined through regional, State, and national studies that tracking wetland mitigation/restoration projects must be improved to better assess the performance of these projects, following monitoring periods that last several years. In addition, to effectively carry out the State's No Net Loss Policy for wetlands, the Water Board and State Water Board need to closely track both losses and mitigation/restoration project success. Therefore, the Water Board requires that the Discharger use a standard form to provide Project information related to impacts and mitigation/restoration measures. An electronic copy of the form and instructions can be downloaded at http://www.waterboards.ca.gov/sanfranciscobay/certs/shtml. Project information concerning impacts and mitigation/restoration will be made available at the web link: http://www.californiawetlands.net.

94. The Water Board is a lead agency in the development and implementation of a San Francisco Bay Wetlands Regional Monitoring Program (Wetlands RMP), a proposed coordinated and comprehensive long-term monitoring program with the goal of monitoring bayland wetlands to ensure their on-going management, restoration, and protection. Development and implementation of a San Francisco Bay Regional Wetland Monitoring Plan is also called for the in the Comprehensive Conservation and Management Plan (CCMP), updated as the Estuary Blueprint in 2016 (San Francisco Estuary Partnership, 2016). Phase 2 monitoring and monitoring for future Project phases may be conducted collaboratively through a Wetlands RMP.

95. Basin Plan Wetland Fill Policy. The Basin Plan Wetland Fill Policy (Fill Policy) establishes that there is to be no net loss of wetland acreage and value, and a long-term net gain, when a project and any proposed mitigation are evaluated together, and that mitigation for wetland fill projects is to be located in the same area of the region, whenever possible, as the project. The Fill Policy further establishes that wetland disturbance should be avoided whenever possible and, if not possible, should be minimized and only after avoidance and minimization of impacts should mitigation for lost wetlands be considered. The Water Board incorporated U.S. EPA's Section 404(b)(1) Guidelines into the Basin Plan for determining the circumstances under which dredging or filling of wetlands, streams, or other waters of the U.S. may be authorized. The Water Board must ensure that all projects meet State water quality standards, including, but not limited to, water quality objectives, existing and potential beneficial uses, and the State's Anti-degradation Policy. Requirements of this Order implement the Fill Policy.

96. California Wetlands Conservation Policy. Requirements of this Order implement the California Wetlands Conservation Policy. The goals of the California Wetlands Conservation Policy (Executive Order W-59-93, signed August 23, 1993) include ensuring "no overall net loss" and achieving a "...long-term net gain in the quantity, quality, and permanence of wetland acreage and values... ."

97. Senate Concurrent Resolution No. 28 states that "[i]t is the intent of the legislature to preserve, protect, restore, and enhance California's wetlands and the multiple resources which depend on them for benefit of the people of the State." Section 13142.5 of the CWC requires that the "highest priority shall be given to improving or eliminating discharges that adversely affect...wetlands, estuaries, and other biologically sensitive areas." The Water Board applies the California Wetlands Conservation Policy to waters that have the potential to be restored or

converted to tidal marsh and related tidal marsh refugia in part because 79 percent of tidal marsh (150,000 acres) and 42 percent of tidal flats (21,000 acres) in San Francisco Bay were lost to diking and filling between 1800 and 1998 (Goals Project).

CEQA Findings

98. CEQA requires that the effects of all discretionary projects authorized by public agencies to be analyzed to prevent significant avoidable impacts and to reduce or mitigate unavoidable impacts to the environment. All projects approved by State agencies must be in full compliance with CEQA. CDFW, as lead agency together with USFWS, certified a final environmental impact statement/report (EIS/R) for Programmatic Analysis of the SBSPRP and Project-Specific Analysis of Phase 1 of the SBSPRP (2007 EIS/R) (State Clearinghouse Number 2004114003) on March 11, 2008. For Phase 2, CDFW and USFWS prepared the *South Bay Salt Pond Restoration Phase 2 Project, Environmental Impact Statement / Report* (State Clearinghouse No. 2013092010) (Phase 2 EIS/R). CDFW, as lead agency together with USFWS, certified a final EIS/R for Phase 2 on May 27, 2016, that has been considered and relied upon in preparation of the Order. The Water Board, as a responsible agency under CEQA, finds that all environmental effects have been identified for project activities that it is required to approve, and that those proposed project activities, as conditioned and with Monitoring (Attachments D and E) and Adaptive Management (Attachment C), will not have significant adverse impacts on the environment. The lead agency's CEQA Findings are presented below (Findings 99-110).

99. The Environmental Impact Statement/Report (EIS/R) prepared for the SBSPRP (State Clearinghouse Number 2004114003) included both programmatic level and Phase 1 specific impact analysis. Over a 50-year period, the 2007 EIS/R found that the benefits from the overall SBSPRP and Phase 1 projects outweighed adverse environmental impacts, after mitigation and incorporating adaptive management, is taken into account. No mitigation measures were deemed necessary for the potential impacts to hydrology and flood management; geology, soils and seismicity; or biological resources -- all of which were considered to be less than significant or beneficial. The Phase 2 EIS/R concluded that additional fill activities associated with creating habitat transition zones would have a net beneficial impact. The conditions and monitoring required in this Order will substantially lessen the temporary impacts and disruption associated with project construction, and implementation of this Order will result in the creation of significant transition zone habitat. The baseline conditions for the 2016 Phase 2 EIS/R were different from the 2007 EIS/R. In the 2007 EIS/R, the Programmatic No Action Alternative assumed not doing the program-level project also meant that the Adaptive Management Plan (AMP) (See Attachment C and Findings 111 - 113) would not be implemented. A program-level Action Alternative was selected and is being implemented; that alternative included the AMP. Therefore, for the purposes of the 2016 Phase 2 CEQA analysis, the assumption was that the Dischargers will continue to implement the AMP measures that maintain water quality. Because of this, some of the Phase 2 project-level significance determinations for the No Action Alternatives are different in the 2016 Phase 2 EIS/R than they were in the 2007 EIS/R.

100. The SBSPRP will be implemented in a series of phases over many years, on the order of decades. Each phase will have its own project level CEQA documentation that will tier off of the programmatic EIS/R approved by CDFW and USFWS. Subsequent phases of the SBSPRP are not covered by these WDRs.

101. Potential water quality impacts in Phase 2 were found to be less than significant (See Table 19). No mitigation measures were required in the Phase 2 EIR/S, because implementation of the AMP is part of the Phase 2 baseline condition. The potential impacts are numbered coincident with the 2016 Phase 2 EIS/R (State Clearinghouse No. 2013092010) where a full impact analysis is provided.

Table 19. Potential Impacts to Water and Sediment Quality Identified in the 2016 Phase 2 EIS/R

POTENTIAL IMPACT	LEVEL OF SIGNIFICANCE
Impact 3.3-1: Degradation of water quality due to changes in algal abundance or composition.	Less than Significant Impact
Impact 3.3-2: Degradation of water quality due to low DO levels.	Less than Significant Impact
Impact 3.3-3: Degradation of water quality due to Potential to increased methylmercury production or mobilization of mercury-contaminated sediments.	Less than Significant Impact
Impact 3.3-4: Potential impacts to water quality from other contaminants.	Less than Significant Impact
Impact 3.3-5: Potential to cause seawater intrusion of regional groundwater sources.	Less than Significant Impact

Water Quality Issues Under CEQA

102. As stated in Findings 54, 55, 70, 73, 74, 75, 76, 77, and 79, the interim management phase has posed challenges for water quality, particularly dissolved oxygen, due to algae proliferation in the ponds when the days get longer and hotter. In order to provide water quality and ecosystem benefit to offset potential low dissolved oxygen conditions associated with lagoon management, the Discharger must minimize the time-period of operating former salt ponds as managed ponds as they are currently configured.

i) *Mercury Methylation*

103. Mercury occurs naturally in the San Francisco Bay environment and has been introduced as a contaminant in various chemical forms from a variety of anthropogenic sources. Ambient levels of sediments in San Francisco Bay are elevated in total mercury above naturally occurring background levels. Although mercury often resides in forms that are not hazardous, it can be transformed through natural processes into toxic methylmercury. Natural accretion processes in salt marshes continually supply fresh layers of mercury-contaminated sediments that release mercury in a form that can become biologically available to mercury-methylating bacteria and subsequently bioaccumulate in the food chain. The resulting concentration of methylmercury is dependent on numerous variables, including: redox potential, salinity, pH, vegetation, sulfur (including sulfate derived from gypsum layers in pond bottoms), dissolved organic carbon, nitrogen, and seasonal variations in each of the identified variables.

104. The Water Board's Basin Plan, which includes a TMDL for mercury,[2] states that wetlands may contribute substantially to methylmercury production and subsequent biological exposure to mercury within the Bay. Wetland restoration projects can, therefore, increase levels of methylmercury, and monitoring is a useful tool to evaluate whether this is occurring, and can inform management decisions regarding what types of restoration discourage methylmercury production. Natural sedimentation occurring via sediments brought in by the tides and creeks may also provide a source of mercury that may be methylated in the SBSPRP.

105. Sediments in the Alviso pond complex have considerably higher mercury concentrations than Bay sediments (i.e., about 2 to 10 times the ambient Bay concentration). These concentrations are due to the mercury load that historically entered the Project Area from the Guadalupe River watershed. Breaching levees in this complex has the potential to generate increased levels of methylmercury. The Discharger minimizes increases in methylmercury by monitoring and by implementing its Adaptive Management Plan (see Findings 111 - 113 and Provisions E.8-E.10).

106. The South Baylands Mercury Project (SBMP), commissioned by the Discharger, gathered baseline data on mercury in biota and characterized methylmercury in the Alviso Slough area, including Alviso Pond A8. One of the main purposes of this Phase 1 action was to assess any significant changes in methylmercury bioaccumulation in and around Pond A8 as a result of the action. Biosentinel species included brine flies, fish, and resident marsh birds. Sediment and water mercury and additional chemical data were also gathered to provide further insight into expected conditions after Phase 1 actions. Analyses of data collected as part of the SBMP in 2006 and 2007, and additional samples collected in April and May 2008, are summarized in the *South Baylands Mercury Project, Final Report* (Letitia Grenier, et. al., February 10, 2010). This Report recommended restoring Pond A8 to tidal action, while also recommending ongoing monitoring of methyl mercury in the food webs of fish and wildlife in the South Bay (The Report is available at http://www.southbayrestoration.org/documents/south-baylands-mercury/SBMP_Final%20Report%2010FEB2010.pdf).

ii) *Other Contaminants*

107. The proposed alternatives (see Finding 4) for the SBSPRP have the potential to affect water and sediment quality with various constituents other than mercury, methylmercury, nutrients, algae, salinity, and DO. The primary mechanisms that could impair water and sediment quality by introducing these other contaminants include: construction-related activities, maintenance activities, excavating channels, intrusion of selenium from adjacent aquifers, illegal discharges and dumping, increased mobilization and transport of particle-associated contaminants, unplanned levee breaching/failure, surface water contamination from groundwater, increased interaction with urban runoff, and bacterial regrowth in the restored areas.

iii*) Other Water Quality Issues*

108. Mosquito abatement: Of the wetland habitats in the project areas, only transitional habitat transition zones and seasonal wetlands are considered to have the potential to produce problem numbers of mosquitoes. The SBSPRP is in the jurisdiction of Alameda, Santa Clara, and San Mateo County mosquito abatement districts. The Discharger is coordinating with those districts during design, implementation, and operation phases of the project to mitigate for any increases in potential mosquito breeding habitat.

[2] http://www.waterboards.ca.gov/sanfranciscobay/basin_planning.shtml

109. Bay Mud: If fine-grained dredged material (Bay Mud) is allowed to dry out on the surface, the following adverse effects on wetland environments can occur: it can harden, which makes it a poor substrate for wetland biota; it can develop deep cracks that harbor mosquitoes; and it can cause metals, including mercury, to become soluble, thereby increasing their potential to leach out when the site is re-flooded. Therefore, this Order requires that the Discharger ensure that imported dredged material placed into ponds is kept wet (see Provision E.42).

110. Invasive Cordgrass was inadvertently introduced into San Francisco Bay tidal marshes in the 1970's (predominantly *Spartina alterniflora* and *S. densiflora)* and threatens the existence of the native cordgrass (*S. foliosa*) upon which many tidal marsh species depend. To mitigate for potential impacts from cordgrass, the Discharger is cooperating with the Invasive Spartina Project to eradicate invasive cordgrass and protect the native tidal marsh species (see Provisions E.9 and E.18). In particular, the Discharger collaborated with the Invasive Spartina Project to identify the following "Best Practices" which have been incorporated into the Project:

a. No Spartina is proposed to be planted in the Project Area. If circumstances arise where Spartina will be planted in the Project Area, the plantings will be genetically verified to be Spartina foliosa.

b. The Project Area should be monitored annually for the presence of non-native or hybrid Spartina. In addition to field identification, representative samples of any found Spartina should be genetically analyzed to verify absence of S. alterniflora or S. densiflora genetic markers. Any found non-native or hybrid Spartina plants should be removed or killed before their first season of flowering and seed set.

c. One measure of the Project's success in achieving the Project Objective regarding management of "the spread of non-native invasive species" is that there is no non-native or hybrid Spartina found in the Project Area.

d. The Project will not initiate connection of ponds with tidal flows (full or muted) at locations where S. alterniflora or S. alterniflora x S. foliosa seed or propagules are likely to get into the Project Area.

e. The Project will take care to not introduce non-native Spartina seed or propagules into the Project Area on contaminated excavators, dredges, or other equipment. The Project will require that all equipment be cleaned prior to entry into an intertidal part of the Project Area if it has been in contact with non-native Spartina plants, seeds, or roots.

f. The Project will make sure that any dredged materials brought to the Project Area do not contain non-native Spartina seed or fragments.

g. Variations to the above best practices may be appropriate, based on site-specific conditions and scientific analysis. Proposed variations should be developed with assistance or review from the Invasive Spartina Project. Additionally, the Project will discuss any proposed variations with nearby marsh owners/managers, who could be affected by the actions of the Project.

Adaptive Management Plan (AMP)

111. Adaptive management, as described in the AMP in Attachment C, is an integral component of the SBSPRP. The loop between science and management (while keeping the public informed) is designed to occur at every phase during adaptive management, which results in a stepwise conversion (known as a "staircase") of habitats from ponds to tidal habitats. Additional feedback loops may occur that require modification to pond management between successive phases of additional tidal restoration. Avoidance of impacts will be completed through a combination of adaptive management and mitigation measures. The term "staircase issue" is used to describe environmental considerations that would have an effect on the Discharger's decision making with regard to progress along the tidal habitat restoration "staircase" towards the 50:50 mix of tidal and managed pond habitats and potentially to a 90:10 mix of habitats as described in Finding 4. To ensure that significant impacts to water quality are avoided while progressing with conversion of habitat types, triggers for adaptive management actions will be established well below the thresholds of significance used to analyze impacts to water quality parameters (defined in Section 3.3 of the 2016 EIS/R).

112. The Phase 1 actions provided the opportunity to address specific uncertainties about how the South Bay ecosystems may respond to restoration actions, through applied studies as described in the AMP. Specifically, these studies tracked and evaluated the breakup of hardened gypsum layers for marsh restoration, the creation of bird nesting and roosting islands, mercury mobilization through sediment accretion and methylation, and variations in salinity gradients. The results of the applied studies and small- and large- scale response monitoring associated with Phase 1 provided information for Phase 2. Similarly, information gained in implementing Phase 2 will inform future restoration phases. Other staircase issues include sediment dynamics, bird use of changing habitats, effects on non-avian species, effects on invasive and nuisance species, public access and wildlife, and social dynamics. The results of Phase 1 applied studies are available on the SBSPRP's website at:

- http://www.southbayrestoration.org/documents/technical/Kuwabara_Pond%20A3W_of2013-1128_text.pdf
- http://www.southbayrestoration.org/documents/technical/BOD%20Report_Brent%20Topping_OFR_2009-1180.pdf
- http://www.southbayrestoration.org/pdf_files/USGS%20Report%202008%E2%80%931097.pdf

Additional details of water quality and pond management are included in the annual self-monitoring reports for the Project. These reports are available at:

- http://www.southbayrestoration.org/monitoring/

Phase 2 actions will also include the monitoring of created habitat transition zones. Information on these issues and the process for adaptive management is presented in the attached AMP and the March 2018 Addendum to the AMP. To establish that the habitat transition zones create sufficient habitat benefits to compensate for significant fill associated with implementing Phase 2, the monitoring outlined in the March 2018 Addendum to the AMP will track the successful establishment of functioning habitat transition zones and the ongoing stability of flood management levees. This monitoring data should also provide information for adaptive management as future habitat transition zones are designed and constructed. Monitoring data from the restored tidal wetlands and the created habitat transition zones will be used to

demonstrate that the habitat benefits provided to listed tidal marsh species and other wildlife have been sufficient to compensate for the fill of waters of the State summarized in Table 4.

113. To ensure that water quality meets objectives in the Basin Plan, the AMP includes potential management actions that are summarized in Table B-8 in Attachment B (ii) and in the table in the March 2018 Addendum to the AMP (See Attachment C). The methods presented in these tables are examples of methods that could be implemented in the adaptive management of the SBSPRP. For the Phase 1 and Phase 2 actions, data will be generated from monitoring and applied studies. The data will be analyzed to determine if the restoration is proceeding towards the defined Project Objectives and if defined triggers have been exceeded, in which case management action needs to be taken.

Monitoring Plans (MPs)

114. Monitoring will ensure that the Project does not cause unintended adverse environmental effects to water, sediment, humans (especially from flooding), wildlife and plants, and that habitat and hydro-geomorphology development is proceeding as expected.

115. Water quality monitoring in Phase 2 is summarized in Finding 9 and monitoring procedures are provided in the attached Self-Monitoring Plan (SMP) (Attachment D). Salinity monitoring will be performed from June through November on a weekly basis at the discharges from Ponds A5, A7, A8, A14, A16, A2W, A3W, SF2, and R5/S5.

116. Other Phase 2 monitoring, including landscape processes, hydrology, habitat, and biological populations, are summarized in Finding 9, the Monitoring Plan (Attachment D), and the March 2018 Addendum to the AMP (Attachment C), which was developed for the monitoring of Habitat Transition Zones.

Western snowy plovers, Ridgway's Rails and salt marsh harvest mice will continue to be monitored in areas of the South Bay Salt Pond Restoration footprint on an annual basis. *Spartina* will continue to be mapped across the SBSPRP area on an annual basis. Studies of mercury in fish, birds and environmental mercury will continued throughout the project in association with activities at Pond A8.

117. To assure that the predicted hydrology and the habitat goals listed in Table 3 are being achieved, criteria described in the MP and summarized in Finding 9 will be tracked, including geomorphic evolution, water quality parameters, biosentinel mercury concentrations, vegetation populations, bird populations, and endangered species populations. Monitoring to track project performance will continue in each of the six Phase 1 pond systems and four Phase 2 pond systems for at least 15 years. No penalties will be imposed for a failure to achieve the interim and final habitat goals, since this is a restoration (not a mitigation) project, but an investigation will be undertaken by the Discharger as part of the SBSPRP Project Management Team. Regulatory agencies will be involved, including the Water Board and BCDC in decision making with the Project's Management Team, and management modifications will be made as necessary to put the project back on a restoration path that will achieve the desired habitats.

118. As stated above in Finding 106, the South Baylands Mercury Project will use the *South Baylands Mercury Project, Final Report* (Letitia Grenier, et. al., February 10, 2010) to develop an

ongoing monitoring plan for methyl mercury in the food webs of fish and wildlife in the South Bay.

Management Options for Adaptive Management

Dissolved Oxygen and Algae

119. The Phase 1 and Phase 2 restorations have been designed to minimize high risk factors for poor water quality (i.e., low dissolved oxygen). Design elements, including hydraulic residence time, water depth, and mixing, have been optimized in each Phase 1 and Phase 2 design. As specified in the AMP, monitoring will be necessary to track the algal abundance and water quality in the ponds. The three Phase 1 managed ponds (A16, SF2, and E12/13) were operated with shallower water depths than other ISP managed ponds, which resulted in greater wind driven mixing and re-aeration of those ponds in Phase 1. In Phase 2, Ponds R5/S5, which are currently seasonal ponds with no connection to the Bay, will be managed for shallow, muted-tidal water. Pond R3, which is currently managed as a seasonal pond, will be managed in Phase 2 for western snowy plover nesting habitat by actively draining it prior to nesting season and periodically refreshing the water in the borrow ditches and slough channels to enhance forage quality. Data from Phase 1 studies of dissolved oxygen levels in these ponds have been analyzed and submitted to the Water Board in the Self-Monitoring reports. For Phase 2, Ponds R5/S5 will be added to the self-monitoring program, as outlined in Finding 9.

120. Increases in algal blooms and decreases in dissolved oxygen (DO) are a potential result of the Phase 1 and Phase 2 actions identified in Finding 107. Phase 1 and Phase 2 risk factors for both algae and DO in any particular pond complex are waters that are deep, slow (long residence times), rich in nutrients, rich in organic matter, subject to calm wind exposure, and highly transparent. Conversely, the lowest risk water bodies would likely be quickly turned over (short residence times), poor in nutrients, poor in organic carbon, windy and opaque. If triggers developed in the Adaptive Management Plan are exceeded in monitored waters as a result of high risk factors, then adaptive management actions will be implemented that convert high risk factors to low risk factors. Examples of such actions include improving water circulation patterns with fill, decreasing hydraulic residence time, increasing exposure to wind, or otherwise increasing the re-aeration rate.

Mercury Methylation

121. Periodic monitoring of biosentinel species and/or sediment and water at the site will be required as outlined in the Adaptive Management Plan, Water Quality Monitoring Plan, and Landscape, Habitat and Biological Species Monitoring Plans (Attachments C, D, and E) after the current mercury studies have been analyzed, to determine if mercury methylation poses a potential problem. If elevated levels of methylmercury are found, the Discharger may be required to investigate ways to design and operate features of the SBSPRP to minimize methylmercury uptake and loads to the Bay; and monitoring may be increased to include water, sediment, and/or additional biosentinel species.

122. Movement of mercury-contaminated sediments is a potential outcome of Phase 1 or Phase 2 actions. Mercury concentrations in Bay sediments increase to the south and, as stated earlier, sediments in the Alviso pond complex have considerably higher mercury concentrations than Bay sediments (i.e., about two to ten times the ambient Bay condition). In the Alviso ponds, breaching levees introduces the risk of transporting mercury-contaminated sediments from

Phase 1 and 2 ponds to the Bay. This has the potential to exceed the Bay Mercury Total Maximum Daily Load (TMDL) allocation that is based on a target for mercury in suspended sediments. However, because of historic subsidence and Bay hydrodynamics, essentially all Alviso projects in Phase 1 and Phase 2 would create accretional areas, resulting in a net loss of mercury from the Bay to the SBSPRP area. Therefore, the 2007 EIS/R concluded that restoring the Alviso ponds may actually benefit biological species by burying mercury and effectively removing it from the system.

123. For both Eden Landing and the Ravenswood ponds, there is a risk that the introduction of Bay ambient sediments could increase mercury bioaccumulation within the SBSPRP Area; however, there is not a significant risk to the regional setting.

124. All pond complexes will be monitored and, if triggers are exceeded in the Adaptive Management plan, then actions will be implemented that avoid significant impacts. Examples of such actions include monitoring to evaluate the bioaccumulation impact of mercury-contaminated sediments, capping sediments in pond bottoms with clean fill, or removing mercury-contaminated sediments. The Phase 1 action at Pond A8 included an adjustable notch that allows for tidal exchange between Alviso Slough and Pond A8. This action could allow accumulation of sediments in Pond A8 that originate more directly from the Guadalupe River watershed. The SBMP mentioned under the Monitoring Program above, which is led by the San Francisco Bay Estuary Institute, is taking the first step in the adaptive management process for this geographic area by defining sentinel species and measuring mercury in those species along Alviso Slough. The Phase 1 action at Pond A8 was designed such that it can be reversed, so that the tidal exchange can be cut off if data indicate that methylmercury production and bioaccumulation are being exacerbated by the tidal exchange. The notch will be operated fully open in Phase 2.

125. The Eden Landing and Ravenswood ponds will have a range of conditions, including accumulations of gypsum on pond bottoms that may release sulfate, which can influence mercury methylation, as well as varying salinities and water depths that will allow the Project to conduct studies to monitor the effects of methylmercury production on different organisms. The AMP can examine the interactive effects of varying salinity and hydraulic residence time on net mercury methylation in the Phase 1 and Phase 2 actions.

Other Water Quality Issues

126. The main impacts from contaminants, other than mercury, nutrients, and algae, are likely to result from construction activities, which may cause accidental spills or leaks and transient increases of turbidity; however, proper inspection of equipment and proper planning can minimize these impacts. Steps are included in the Provisions to assure that construction and other project-related activities avoid and minimize impacts to water quality and existing habitats.

127. Habitat values in the SBSPRP may also be impacted by increased interaction of the restored area with contaminants transported in creeks, including contaminants in the creek associated with the discharge of urban runoff to the creeks.

128. Treatment of the gypsum deposits could mobilize sulfate. The principal risk from released sulfate is the effect of sulfate on mercury methylation, as discussed above.

129. Preliminary results of Philip Williams & Associates (PWA's) hydrodynamic modeling of salinity (EIS/R Appendix J) indicate that seawater will not intrude into regional groundwater sources and that surface water salinity would not increase substantially in the Eden Landing, Alviso, or Ravenswood pond complexes. The project will coordinate with the county water districts (Alameda County Water District and Santa Clara Valley Water District) to prevent groundwater contamination via improperly abandoned wells, thereby reducing potentially significant impacts.

130. Preliminary results of PWA's hydrodynamic modeling results for salinity (EIS/R Appendix J) indicate that salinity would increase approximately 4 ppt at the southeast edge of the SBSPRP Area in the Guadalupe River and Coyote Creek at the end of the 50-year modeling period. Salinity increases will continue up both water bodies for an unknown distance. The increased salinity concentrations may reach as far as the area of the unconfined portion of the Santa Clara Valley Subbasin on Coyote Creek in the vicinity of Milpitas. The increase in salinity is a result of a greater volume of tidal inflow in the Alviso area, as ponds are opened to tidal action. The greater volume is a product of the same tidal range acting over a greater tidal area. The increase in salinity is not a result of saline discharges from the ponds but is rather the new ambient condition as a result of increased tidal prism.

131. The Water Board notified the Discharger and interested agencies and persons of its intent to issue WDRs for the SBSPRP and provided them with an opportunity to submit their written views and recommendations.

132. The Water Board, in a public hearing on May 9, 2018, heard and considered all comments pertaining to the proposed WDRs for the project.

It is Hereby Ordered pursuant to the provisions of Division 7 of the California Water Code and regulations, and guidelines adopted thereunder, that the Discharger, its agents, successors, and assigns shall comply with the following:

A. PROHIBITIONS

1. Discharges of water, material, or wastes which are not otherwise authorized by the Order are prohibited.

2. The discharge of wastes, including debris, rubbish, refuse, or other solid wastes into surface waters or at any place where they would contact or where they would be eventually transported to surface waters, including floodplains, is prohibited, except as in compliance with this Order.

3. It is prohibited to import dredged material or upland soils without first following the testing and screening protocols described in Specifications B.1 and B.2, below, and obtaining Water Board staff approval. Movement of on-site material is allowed.

4. Intake from waters of the State into Ponds A9 and A16 between December 1 and April 30 is prohibited. For Pond A16, this prohibition does not apply as long as the fish screen at the Pond A16 intake from Pond A17 is properly operated to exclude anadromous fish.

5. The activities subject to these requirements shall not cause a condition of pollution or nuisance as defined in CWC sections 13050(i) and (m), respectively.

6. No debris, soil, silt, sand, cement, concrete, or washings thereof, or other construction related materials or wastes, oil or petroleum products or other organic or earthen material shall be allowed to enter into or be placed where it may be washed from the SBSPRP sites by rainfall or runoff into waters of the State. When operations are completed, any excess material shall be removed from the work area and any adjacent area where such material may be washed into waters of the State.

7. Project-related discharges shall not cause a violation of any water quality standard for receiving waters adopted by the Water Board or State Water Board as required by the CWA and regulations adopted thereunder. If more stringent water quality standards are promulgated or approved pursuant to CWA section 303, or amendments thereto, the Water Board may revise or modify this Order in accordance with the more stringent standards. Pond dewatering discharges, accumulated groundwater or stormwater removed during dewatering of excavations, and diverted pond and stormwater flows shall not be discharged to waters of the U.S. without meeting the receiving water objectives in the Basin Plan.

B. SPECIFICATIONS

1. Dredged Material Screening Procedures. The Discharger shall submit, acceptable to the Water Board Executive Officer, data characterizing the quality of all dredged material (Bay sediments) proposed for use as fill prior to placement at any of the Phase 1 or subsequent SBSPRP project sites (See Provision E.40). Sediment characterization shall follow the protocols specified in:

   a. The Dredged Materials Management Office (DMMO) guidance document, "Guidelines for Implementing the Inland Testing Manual in the San Francisco Bay Region" (Corps Public Notice 01-01, or most current version), with the exception that the water column bioassay simulating in-bay unconfined aquatic disposal shall be replaced with the modified effluent elutriate test, as described in Appendix B of the Inland Testing Manual, for both water column toxicity and chemistry (DMMO suite of metals only); and,

   b. Water Board May 2000 staff report, "Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines," or most current revised version.

   Modifications to these procedures may be approved on a case-by-case basis pending the Discharger's ability to demonstrate that the dredged material is unlikely to adversely impact beneficial uses.

2. Imported Upland Soil Screening Procedures: Imported soil from upland borrow sites must be determined to be suitable based on the procedures and screening guidelines contained in *South Bay Salt Pond Quality Assurance Project Plan for Fill Import to Operate and Maintain Levees at Ravenswood and Alviso Salt Pond Complexes* (QAPP) (H.T. Harvey & Associates, January 12, 2017) (See Provision E.41).

3. Appropriate soil erosion measures shall be undertaken and maintained to prevent discharge of sediment to surface waters or surface water drainage courses.

C. EFFLUENT LIMITS

1. All pond waters discharging to the Bay or Sloughs shall meet the following limits:

Constituent	Instantaneous Maximum	Instantaneous Minimum	Units
Salinity	44		ppt
Dissolved Oxygen [1]		5.0	mg/L
pH [2]	8.5	6.5	

[1] This limitation applies when receiving waters contain at least 5.0 mg/L of dissolved oxygen. In cases where receiving waters do not meet the Basin Plan objective, pond discharges must be at or above the dissolved oxygen level in the receiving water.

[2] The Discharger may determine compliance with the pH limitation at the point of discharge or in the receiving water.

2. Pond waters discharging to the Bay or Sloughs shall not exceed the natural temperature of the receiving waters by 20°F, or more.

D. RECEIVING WATER LIMITATIONS

For the following Receiving Water Limitations, the Project Boundary shall be defined as the limit of the receiving waters at mean lower-low water level, which is the topographic contour representing an elevation of 0 ft. NAVD88.

1. The Project activities shall not cause:
   a. Floating, suspended, or deposited macroscopic particulate matter or foam at any place more than 100 feet from the Project Boundary or point of discharge, which persists for longer than 24 hours;
   b. Bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses;
   c. The temperature of any cold or warm freshwater habitat to be increased by more than 5 degrees Fahrenheit above natural receiving water temperature, unless a qualified biologist can demonstrate that such alteration in temperature does not adversely affect beneficial uses;
   d. Visible, floating, suspended, or deposited oil or other products of petroleum origin; and
   e. Toxic or other deleterious substances to be present in concentrations or quantities which will cause deleterious effects on wildlife, waterfowl, or other aquatic biota, or which render any of these unfit for human consumption, either at levels created in the receiving waters or as a result of biological concentration.

2. The discharge of pond waters shall not cause the following limits to be exceeded in waters of the State at any one place within 1 foot of the water surface:
   a. Dissolved Oxygen: 5.0 mg/L, minimum

When natural factors cause lesser concentrations, then these activities shall not cause further reduction in the concentration of dissolved oxygen.

b. Dissolved Sulfide: 0.1 mg/L, maximum

c. pH: Variation from normal ambient pH by more than 0.5 pH units

d. Un-ionized Ammonia: 0.025 mg/L as N, annual median; and 0.16 mg/L as N, maximum

e. Nutrients: Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.

3. Turbidity of the waters of the State, at any place more than 100 feet from the Project Boundary or point of discharge, shall not increase by more than the following for more than 24 hours, to the extent practical:

Receiving Waters Background	**Incremental Increase**
< 50 NTU	5 NTU maximum
≥ 50 NTU	10% of background, maximum

4. The discharge shall not cause a violation of any particular water quality standard for receiving waters adopted by the Water Board or the State Water Board as required by both the State's Porter-Cologne Water Quality Control Act and the federal Clean Water Act and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to section 303 of the Clean Water Act, or amendments thereto, the Water Board will revise and modify this Order in accordance with such more stringent standards.

E. PROVISIONS

1) Order Compliance and Rescission of Previous Waste Discharge Requirements: Requirements prescribed by this Order supersede the requirements prescribed by Order Nos. R2-2008-0078 and R2-2012-0014. Order Nos. R2-2008-0078 and R2-2012-0014 are hereby rescinded upon the effective date of this Order, except for purposes of enforcement.

2) Operations Plan and Adaptive Management. The Discharger shall continue to implement its Operations Plan for each pond system to ensure the minimization of impacts to beneficial uses from managed ponds. The Discharger shall submit a plan, acceptable to the Executive Officer, that shall describe operational constraints pertinent to each system, and indicate corrective measures available to the Discharger, as outlined in the Adaptive Management Table (Attachment B(ii), Table B-8), if discharge limits may be violated (e.g., salinity, dissolved oxygen, pH). The Discharger shall update each Operations Plan **annually** (as necessary) to reflect any necessary modifications (e.g., increased flow-through) needed to protect water quality and wildlife. The Operations Plan shall also address avian botulism control, mercury methylation and inorganic salt mobilization. To document avian botulism control efforts, the Discharger shall monitor the salt ponds and nearby receiving waters for the presence of avian botulism, and control outbreaks through the prompt collection and disposal of sick and dead vertebrates. To demonstrate that

managed pond systems are operated to minimize conditions that could mobilize inorganics and/or the methylation of mercury, the Discharger should describe how it manages water levels within each pond system and recommend corrective measures if data show it is enhancing inorganic salt mobilization and/or methylation of mercury. Each Operations Plan is subject to the written approval of the Executive Officer.

Due Date: Annually by March 1 of each year.

3) **Ravenswood Ponds.** Prior to discharging saline waters from the Ravenswood Ponds (with the exception of SF2), the Discharger shall submit a technical report that evaluates the potential for (a) discharges to increase the concentration of salinity and/or metals in receiving waters during the initial release and continuous circulation period, and (b) salinity to cause significant impacts to Ravenswood or Flood Slough during the continuous circulation period. Additionally, the Discharger's technical report shall include a proposal to add these ponds to the Self-Monitoring Program. This technical report is subject to the written approval of the Executive Officer.

4) **Ecological Sustainability of Managed Ponds.** For long-term managed ponds and for those managed under Phase 1 and Phase 2 actions (i.e., SF-2, A16, R1, R2, R3, R5/S5, E12, and E13), the Discharger shall show how ponds will be managed to improve compliance with Basin Plan water quality objectives, in particular, for dissolved oxygen. The Discharger shall submit an annual report **by March 1 of each year** that documents its efforts towards improving water quality within managed ponds. This Report shall evaluate monitoring data collected under the Applied Studies section of the Self-Monitoring Program and recommend: (a) modifications to the geometry of managed ponds (surface area, filling borrow ditches, levees, inlet and outlet structures) to improve dissolved oxygen levels; (b) if the Discharger should move more aggressively to restore a pond system to tidal action and/or increase the acreage of ponds that will be restored to tidal because of the water quality impacts associated with managed ponds; and (c) data collection requirements necessary to provide a framework for developing a site-specific objective for dissolved oxygen in managed ponds.

Due Date: Annually by March 1 of each year.

5) All required reports and documents submitted after Board approval of this Order are subject to Executive Officer approval.

Monitoring and Reporting

6) **Standard Provisions and Reporting Requirements.** The Discharger shall comply with all applicable items of the Standard Provisions and Reporting Requirements for NON-NPDES Wastewater Discharge Permits, August 1993 (Attachment F), or any amendments thereafter with the exception of General Provisions A.4, A.5, and A.10; Treatment Reliability B.2 and B.3; and General Reporting Requirements C.5, as these requirements are not relevant to this project. Where provisions or reporting requirements specified in this Order are different from equivalent or related provisions or reporting requirements given in 'Standard Provisions,' the specifications of this Order shall apply.

7) **Water Quality Self-Monitoring Plan**: The Discharger shall comply with the Water Quality Self-Monitoring Program (SMP) dealing predominantly, but not exclusively, with water quality for this Order as adopted by the Board (Attachment D) to implement the monitoring summarized in Finding 8. The Discharger shall submit an annual Self-Monitoring Report (SMR) **by March 1 of**

each year. The SMP may be amended by the Executive Officer in response to a written request by the Discharger, or as necessary to assure collection of information to demonstrate compliance with this Order. The Discharger shall report on activities required in Provisions E.8 through E.15.

By September 30, 2018, the Discharger shall prepare and submit an addendum to Attachment D, *Water Quality Self-Monitoring Program*. The addendum shall contain the following information:

- A list of monitoring activities that were unique to Phase 1 and will not be implemented in Phase 2.
- The names and completion dates of monitoring reports completed in Phase 1 in response to requirements in Attachment D, along with web addresses at which those reports are available, or electronic copies of the reports.
- A list of the monitoring activities described in Attachment D that will be implemented in Phase 2.

8) Landscape, Habitat, and Biological Species Monitoring Plan: To show progress toward achieving target habitats, monitoring is required. Specific methods, locations, and sampling procedures for the Phase 1 and Phase 2 SBSPRP projects are provided in the Phase I Landscape, Habitat, and Biological Species Monitoring Plan (Attachment E – *South Bay Salt Pond Restoration Project Phase 1 Monitoring Plan*, H.T. Harvey & Associates, October 14, 2008) and the Adaptive Management Plan and its March 2018 Addendum (Attachment C), all of which can be amended with written Executive Officer approval, subsequent to the issuance of the Biological Opinions. The Adaptive Management Plan and Addendum present possible future studies and some general methods. The Monitoring Plans include:

(a) target habitat goals for the nine Phase 1 areas (A6, A8, A16, A17, SF2, E8A, E8X, E9, E12, and E13);

(b) target habitat goals for the nine Phase 2 areas of USFWS property: A1–tidal marsh habitat, A2W–tidal marsh habitat, A8/A8S-enhanced managed pond habitat (deep water muted tidal ponds), A19–tidal marsh habitat, A20–tidal marsh habitat, R3-enhanced managed pond habitat (dried seasonally for western snowy plover), R4–tidal marsh habitat, R5-enhanced managed pond habitat (shallow water pond for dabbling ducks and small shorebirds), S5-enhanced managed pond habitat (shallow water pond for dabbling ducks and small shorebirds);

(c) parameters to be monitored, including detailed procedures and locations for assuring that the beneficial uses of water and habitat will be protected and/or improved; and

(d) parameters to be monitored to ensure that created habitat transition zones are stable and vegetated sufficiently to provide a net habitat enhancement for endangered tidal marsh species: Ridgway's rail (*Rallus longirostris obsoletus*), salt marsh harvest mouse (*Reithrodontomys raviventris*), *Cirsium hydrophilum* var. *hydrophilum* (Suisun thistle), *Chloropyron molle* ssp. *molle* (soft bird's-beak), and *Suaeda californica* (California sea-blite).

By September 30, 2018, the Discharger shall prepare and submit addenda to Attachment C, *Adaptive Management Plan*, and Attachment E, *(Draft) Landscape, Habitat, and Biological Species Monitoring Plan*. The addendum to each Attachment shall contain the following information:

- A list of monitoring activities that were unique to Phase 1 and will not be implemented in Phase 2.
- The names and completion dates of monitoring reports completed in Phase 1 in response to requirements in Attachments C and E, along with web addresses at which those reports are available or electronic copies of the reports.
- A list of the monitoring activities described in Attachments C and E that will be implemented in Phase 2.

9) The Landscape, Habitat, and Biological Species Monitoring Plan includes the following: water and sediment quality; mercury monitoring of biosentinel species in accordance with the South Baylands Mercury Project or other regional program, or mercury in water and sediment; landscape mapping; physical and/or hydrogeomorphic development (i.e., channel and marsh development, tidal circulation, habitat transition zone stability and vegetation); vegetation mapping; highly invasive (detrimental) species which should include plants and introduced predators; specific target species monitored (typically endangered species) or groups such as birds, fish, mammals.

10) Mercury Monitoring: Analysis of mercury data collected from the South Baylands Mercury Project and other South Bay projects will be used to determine appropriate triggers to implement activities within the context of the Adaptive Management Plan (Attachment C) to prevent increases in methylmercury production and bioaccumulation. If triggers are exceeded, then adaptive management actions will be implemented to avoid significant impacts. Triggers and actions will be subject to Executive Officer approval. The *South Baylands Mercury Project, Final Report* (Letitia Grenier, et al., February 10, 2010) was completed in early 2010. The Report is available at http://www.southbayrestoration.org/documents/south-baylands-mercury/SBMP_Final%20Report%2010FEB2010.pdf.

11) SBSPRP Phase 1 and Phase 2 projects: The Discharger shall be responsible for submitting biennial monitoring reports (every other year) with biennial memos in the intervening years. The monitoring periods shall cover 15 years for each phase beginning after each of the six separate Phase 1 units (A6, A8, A16/A17, SF2, E8A/E8X/E9, and E12/E13) and the four Phase 2 units (A19, A20, A21, A8, A8S, A1, A2W, R3, R4, R5, and S5) have been constructed and restoration initiated. The biennial monitoring reports shall: (i) analyze all physical and biological data collected to date, and contain appropriate figures, graphs, and photos; (ii) assess progress toward target habitats; (iii) provide status updates on the Applied Studies proposal process designed to provide information on wildlife habitats; potential flood hazards; and recreational impacts; and (iv) make recommendations for future monitoring and assessment. The biennial memos shall notify the Water Board of any sampling occurring during that period and any problems, and shall provide appropriate photos. For each project, monitoring reports shall be due at the end of Year 2, 4, 6, 8, 10, 12, and 14 following each Phase 1 project's implementation and biennial memos shall be due in the intervening years. A final report for each Phase 1 project shall be submitted in Year 15 after implementation of that Project.

12) Aerial or satellite photos (such as those available on Google Earth, or IKONOS images using multispectral satellite imagery) shall be reviewed annually for the six Phase 1 units (A6, A8, A16/A17, SF2, E8A/E8X/E9, and E12/E13) and the four Phase 2 units (A19, A20, A21, A8, A8S, A1, A2W, R3, R4, R5, and S5) to ensure that habitat evolution is occurring without any associated significant adverse or unforeseen events, such as excessive scour or erosion,

sedimentation, or establishment of highly invasive plants. If necessary, more detailed analysis of aerial or satellite photos shall be conducted every other year to allow measurements of channel widths, vegetation zones, and other important features listed in the Monitoring Plans (Attachments D and E). If habitat targets for Phase 1 actions are not met by the end of the 15-year monitoring periods, the technical advisory committee (see Provision E.13) shall determine whether aerial or satellite photos should continue for a specified period, such as every 5 years, until the target habitats are achieved, or whether the SBSPRP Phase 1 project or SBSPRP Phase 2 Project has successfully provided adequate wetland habitat benefits to justify discontinuing monitoring.

13) A SBSPRP Technical Advisory Committee (TAC) was organized and convened through a public process by the Discharger and includes, at a minimum, representatives from the Water Board, BCDC, California Coastal Conservancy, the Corps, and the National Marine Fisheries Service. The purpose of this committee is to assess progress of the restoration project by reviewing monitoring data, and to suggest adaptive management strategies. Results of the data analysis shall be presented to the TAC annually, or biennially, for discussion and comment. The TAC can include members of the Wetland Monitoring Group of the San Francisco Bay Regional Wetland Monitoring Program, or use that forum for advice and review. The TAC met throughout Phase 1 implementation, and will continue to meet throughout Phase 2 implementation.

14) At the end of the monitoring periods for each of the Phase 1 and Phase 2 projects, the wetland restoration sites and managed ponds shall be assessed for wetland functionality using a method approved by the Executive Officer.

15) The Discharger shall be responsible for all monitoring and reporting requirements at the SBSPRP sites. However, a Wetland Regional Monitoring Program run by the San Francisco Estuary Institute (SFEI) or any other regional entity equipped to take on regional wetland monitoring in the San Francisco Bay Region, may be delegated by the Discharger to carry out some of the obligations for monitoring, analysis, and reporting (See Finding 94).

16) The Discharger shall use the California Wetlands Standard Form to provide SBSPRP Phase 2 project information related to impacts at the restoration and managed pond sites. An electronic copy can be downloaded at http://www.waterboards.ca.gov/sanfranciscobay/certs.shtml. Project information concerning restoration will be made available the web link: http://www.californiawetlands.net.

17) All Monitoring Reports shall be provided to the Water Board in the form of one hard copy and one electronic copy. In the case of large files, the electronic copy shall be sent on a CD or delivered via another medium appropriate to transferring large file sizes and be made accessible on SFEI's Wetland Tracker (http://www.wetlandtracker.org).

18) Aggressive non-native plant species that threaten sensitive native tidal marsh communities, including those listed under Tier I (and to a lesser extent Tier II) of the Water Board's "Invasive Non-Native Plant Species to Avoid in Wetlands Projects in the San Francisco Bay Region" (2006), should be kept off site to the extent feasible. The Discharger should review the Tier I and Tier II lists and discuss with the Water Board staff the species that the Discharger has determined to be feasible to keep off the Phase 1 and Phase 2 project sites. Invasive cordgrass (*Spartina alterniflora*) is a high priority for preclusion from tidal wetlands restoration sites in the Bay

Region, and the Discharger shall coordinate efforts with the Invasive Spartina Project to eradicate this species as identified in Finding 110.

19) No later than April 30 of each year, the Discharger shall provide the Executive Officer with a notification report for proposed operation and maintenance activities to be performed during the period between June 1 of the year in which the notification report is submitted to the Water Board and May 31 of the following year. The notification report shall identify the operations and maintenance activities (See Provision E.43) by Pond Complex and individual pond identification numbers. Proposed activities shall be summarized in a table with the following information: the task number assigned to the proposed activities; the ponds involved; a description of the type of activity (e.g., grading, public access, general levee maintenance, riprap); the proposed duration of the activity, the size/scope of each activity; and a short summary of each activity. The notification report shall also include figures illustrating the proposed locations of the maintenance activities.

CEQA Mitigation Measures Required from the 2016 Phase 2 EIR/S by the Lead Agency:

20) There is only one project-level mitigation measure developed for the Phase 2 alternatives. It is described in Section 3.11, Traffic, and it is called Phase 2 Mitigation Measure 3.11-1: Modify Signal Timing. This mitigation measure is not directly related to actions subject to Water Board jurisdiction.

21) Sediments characterization shall follow existing guidance and comply with emerging regulations, as specified in SBSP Mitigation Measure 3.4-5d in the 2007 EIS/R. The Discharger shall characterize contaminant concentrations in sediments whenever activities will involve moving, transporting, or emplacing soils and sediments or exposing older sediments by dredging and excavation, if there is reason to expect that significant contamination is present in these sediments. Existing guidance for the beneficial re-use of sediments establishes numeric screening guidelines for the placement of sediments in direct contact with water or the burial of sediments beneath a cover layer (See Specification B.1). This guidance may be refined by the State's emerging program of Sediment Quality Objectives. Sediment characterization data shall be used to follow existing guidance and follow emerging regulations for the placement of sediments and other activities that affect the mobilization and transport of sediments. Sediment characterization data shall be used to determine appropriate disposal or beneficial re-use practices for sediments; if this data indicates that tidal scour outside a levee breach could remobilize sediments that are significantly more contaminated than Bay ambient conditions, the Discharger shall consult with Water Board staff regarding other potential required actions. The SBSPRP has developed a QAPP for upland fill import to maintain levees at the Ravenswood and Alviso Complexes (See Specification B.2). In addition, the SBSPRP intends to submit a Phase 2 QAPP, specifically for material from upland sources to construct Phase 2 features such as habitat transition zones, to the Water Board upon receipt of all Phase 2 permits.

Other SBSPRP Operations

22) The Discharger shall conduct periodic inspection and maintenance of restoration features to ensure that the restoration is performing as intended. For example, routine inspection of ditch blocks for unintentional channel bypassing or erosion shall be necessary, particularly following storm events. If bypassing or erosion occurs, maintenance of the ditch block shall be performed to prevent unintended channel formation. The Discharger shall summarize the results of these efforts in its annual report.

23) For managed ponds, water levels and salinity shall be managed by USFWS and CDFW personnel via the adjustment of water intake, outlet, and circulation structures. Periodic inspection and maintenance of restoration infrastructure such as water control structures, managed pond levees and berms, canals, and islands shall be required to ensure that the ponds are operating as intended. Frequent inspection and maintenance of habitat conditions in the ponds, such as water levels and water quality (including salinity and dissolved oxygen), shall be necessary to ensure that the ponds are providing the appropriate environment for the target species (See the Adaptive Management Plan in Attachment C).

24) Water levels and flows in the reconfigured managed ponds shall be controlled by adjusting the gate settings at culverts and by adding or removing flashboard risers at weirs. Routine monitoring of water levels shall be necessary to ensure that the ponds are providing the appropriate habitat for desired species. Regular monitoring of water quality will also be necessary to ensure that target water quality parameters are met both inside the pond and in discharges. If water levels or water quality targets are not met, changes in the operation of water control structures may be necessary. Periodic maintenance of internal channels and canals (e.g., via excavation), replenishment of islands via excavation and placement of spoils on the islands, vegetation control on islands, and possible predator control shall be needed to ensure that managed ponds are providing desired levels of habitat quality for wildlife.

25) Routine inspection of water control structures in reconfigured managed ponds shall be necessary to ensure that they are functioning properly. Inspection of water control structures and canals for debris or trash obstructions shall be necessary to maintain desired flows. If obstructions are found during inspection, it may be necessary to remove the obstructions either manually or mechanically to maintain flows. Routine inspection of the managed pond levees, trails and internal berms for unintentional breaching and erosion shall also be necessary. If unintentional breaching or erosion occurs, the berm or levee shall be repaired as needed to maintain pond operations, prevent potential tidal inundation of adjacent managed ponds, and to maintain public access along the trails. Nesting islands shall also need to be periodically examined for erosion.

26) Viewing platforms, interpretive signs, trails, gates, and fences shall be inspected periodically and shall be repaired and maintained as needed. At the time that the Phase 1 Order was adopted, it was assumed that, in addition to the initial work described above, the new/improved levees in Ponds E9/E14, E10, and E13/E14 would require a second phase of construction after about 5 years of settlement had occurred. However, additional construction has not yet been necessary at the improved levees around these ponds. It is still possible that ongoing settlement may require a second phase of levee construction. The Project Management team and CDFW's Eden Landing staff shall continue to monitor these levees and will keep the Water Board informed of the need for, and timing of, any necessary levee improvements that are not already covered by existing permits for levee operations and maintenance. For Phase 2 levee improvements, a similar process will be used to monitor settlement and add material to adjust levees as necessary.

Construction Operations

27) A qualified biologist shall conduct a tailgate talk to inform construction crews regarding the sensitive wildlife resources and exclusion zones within the proposed construction areas, and regarding what to do if special status species are encountered.

28) A qualified biologist shall be present to monitor construction activities in or near areas known to be occupied by salt marsh harvest mouse and Ridgway's rail. The biologist shall have the authority to install or require wildlife protection measures such as fencing, noise buffers or noise level limitations during avian breeding seasons, and temporary halting or redirecting of construction activities to avoid impacts to sensitive species. Water Board staff shall be notified if construction activities are halted or redirected.

29) Consistent with the USFWS Biological Opinion (USFWS, Reference No. 08FBDT00-2017-F-0109-2, November 21, 2017), the Discharger shall avoid construction activities during the nesting period of the Ridgway's rail (February 1-August 31). If construction activities must occur during nesting periods, a qualified biologist shall conduct pre-construction surveys up to 72 hours before construction begins, using survey methods approved by the USFWS. Due to tidal influences on construction/survey areas, surveys shall be conducted as close to the actual construction period as is practicable. The exact survey distances vary depending on site characteristics, such as natural barriers, between potential nests and construction activities. Water Board staff shall be notified if the work plan is modified.

30) The Discharger shall minimize in-water construction during periods when listed species may be present.

31) Since the Discharger will be impacting greater than one acre in each Phase 2 pond complex, prior to the beginning of project construction, the Discharger or the Discharger's contractor shall submit a Notice of Intent (NOI) to the State Water Board for coverage under the General National Pollutant Discharge Elimination System (NPDES) construction permit and shall implement required Best Management Practices (BMPs) to prevent water pollution from construction activities. The Discharger shall utilize both in-water and on-land BMPs such as the use of coffer dams and measures to prevent and control the potential spills of hazardous material into the creeks and sloughs. Contractors are required to implement BMPs identified in a Storm Water Pollution Prevention Plan (SWPPP) for controlling soil erosion and discharges of other construction-related contaminants such as fuel, oil, grease, paint, concrete, and other hazardous material. Emergency response, routine maintenance, and preventative activities shall be included in the plan. The plan shall be submitted to the Water Board for review and comment at least 30 days prior to the start of construction and must be acceptable to the Executive Officer.

32) The Discharger shall have a construction monitor on site to ensure that the project is constructed according to plan. The construction monitor shall also resolve implementation questions and refer "Requests for Information" and "Submittals" to the design engineers. Biological monitors, either USFWS or CDFW staff or contractors, shall be on site during specific activities to ensure compliance with mitigation measures and protection of listed species, as discussed above. Construction monitoring notes and observations shall be maintained for five years after project construction is completed, and submitted to the Water Board upon request.

Soil Excavation and Placement Provisions

33) To minimize the effects on special status fish species of temporary increases in suspended sediment and turbidity, the use of best management practices for turbidity control shall be employed during all in-water work conducted in the sloughs or bay, where appropriate.

34) To minimize the effects on special status fish species resulting from the loss of existing habitat, construction activities in river or slough areas having immersed or submersed aquatic plants shall be avoided to the maximum extent practical.

35) Ditch blocks shall be located in such a way as to not trap fish at low tide. Berms adjacent to starter channels shall be constructed on one side of the channel only, and shall be discontinuous, so that fish have easy access to the starter channels as the tide recedes.

36) Construction activities shall be scheduled to avoid the local nesting periods of the special status wildlife species, to the extent practical. When construction is conducted during the nesting period of a special status species known to be present, the activities shall be restricted to maintain a 150-foot buffer between heavy equipment and the nesting sites. Construction activities shall be scheduled in such a way as to limit the period of disturbance in a particular area to as brief a time window as is practical.

37) Before constructing facilities within tidal marsh habitat, the Discharger shall conduct clearance surveys for all species of concern in the construction area.

38) To the extent feasible, the Discharger shall avoid construction activities in or near marsh habitat suitable for the salt marsh harvest mouse.

Mosquito Abatement Provision

39) The Discharger shall coordinate with the county mosquito abatement districts during the design, implementation, and operations of the SBSPRP Phase 1 and Phase 2 Projects.

Potential Future Sediment or Soil Importation Provisions

40) If sediment is imported for SBSPRP areas during or after the completion of Phase 2 projects, the following conditions shall apply and be subject to Executive Officer approval: (i) instructions listed under Specification B.1 shall be followed; (ii) if the materials is proposed for levee maintenance, a levee inspection report shall be submitted at least 30 days prior to dredged material placement and, (iii) if applicable, a work plan and schedule for making any repairs or improvements shall also be submitted prior to dredged material placement.

41) If upland soil is imported for SBSPRP areas during or after the completion of Phase 1 projects, the following conditions shall apply and be subject to Executive Officer approval: (i) instructions listed under Specification B.2 shall be followed, including conformance with the *South Bay Salt Pond Quality Assurance Project Plan for Fill Import to Operate and Maintain Levees at Ravenswood and Alviso Salt Pond Complexes* (QAPP) (H.T. Harvey & Associates, January 12, 2017); (ii) if the materials is proposed for levee maintenance, a levee inspection report shall be submitted at least 30 days prior to dredged material placement and, (iii) if applicable, a work plan and schedule for making any repairs or improvements shall also be submitted prior to imported soil placement.

42) Imported dredged material placed into ponds shall be kept under standing water until breaching and tidal influence is restored. At least 30 days prior to dredged material placement a report shall be submitted, acceptable to the Executive Officer, which describes how the area will be kept wet.

On-Going Operation and Maintenance Provisions

43) Construction activities, both within the Phase 1 and 2 ponds and outside of the Phase 1 and 2 action areas, necessary for the on-going maintenance of existing levees and infrastructure may include the following activities, not all of which may be used at a given pond:

A. Repair, replacement and servicing of existing facilities:

a) Repair and replacement of existing bay intake/outlet structures, and related facilities such as pumps, boat launches, gates, pipelines, siphons, open channels and culverts, and removal of silts, debris and algae. Deleterious materials (i.e., litter) shall be segregated from excavated material and discarded as general waste following appropriate characterization and regulatory protocols. Excavated material shall be placed in an identified upland area for reuse, unless otherwise restricted under regulatory criteria.

b) Excavating, clearing, and retrenching of existing intake structures, boat launches and conveying ditches, so long as the existing configuration is not altered and the structure or ditch conforms with its engineered purpose. Excavated material shall be disposed onto levee tops above the plane of the high tide in a manner that secures the material in place, or be hauled offsite to a non- jurisdictional area for reuse or disposal.

c) Repair and replacement of existing bridges, bridge foundations and abutments within the network of salt pond levees.

d) Repair and replacement of other items such as existing fences, tide gates, siphons in non-tidal areas, power lines, etc., provided such repair and maintenance does not deviate from the plans of the original facility.

e) Repair of ongoing and new authorized reaches of riprap. The authorized riprap areas are designed to have approximately 3:1 slope. If additional work would exceed the existing reach by 10 linear feet, then the proposed design shall be submitted in accordance with the procedures for new work in the riprap section (B.h) below.

f) Stabilization or revegetation of habitat transition zones.

B. Ongoing and new work:

a) Placement of dredged and/or imported fill material on the pond side of salt pond levees below the plane of high water in the pond, for the purpose of raising and fortifying the levees to prevent degradation. The dredged and/or imported fill material shall be placed along the inside and the top of the salt pond levee in accordance with appropriate best management practices.

b) Dredging of existing borrow ditches within the salt ponds for the purpose of placing the dredged material on existing levees.

c) Dredging in salt ponds to allow a dredge to cross a pond. This includes the placement of dredged material on the pond, with the placement of dredged material on the pond bottom along the side of the dredged channel.

d) Dredging of and placement of dredged material at up to 21 existing dredge locks within the SBSPRP footprint that are not being utilized by Cargill, and at any newly constructed

authorized dredge locks, to allow the dredge to access the salt ponds. Advanced notification for these activities (See Provision E.19) shall include specific quantities of material to be dredged and placed, and drawings indicating prestaked, designated areas for stockpiling, side casting and borrowing material. Breached levee material, stockpiled atop the main levee from the last time the lock was accessed, shall be used to dam the breach following entry. Upon dredge exit, breaching and plugging of levees shall be performed in a similar fashion to that described above. The salt marsh muds that were excavated and sidecast in the access cut shall be retrieved and placed back into the access cut and channel, closing it behind the dredge.

e) Dredging within shallow sloughs to provide up to four feet of clearance for access by the dredge to salt ponds. Dredged material that cannot be placed on salt pond levees may be placed on bare mud flats or sidecast, following approval in accordance with the notification procedure (See Provision E.19). Some slough dredging may also be performed near dredge locks for the purpose of obtaining additional mud to bring the access cut to the desired elevation following exit by the dredge.

f) Installation of new intake/outlet structures, new pumps, siphons, culverts, power transmission lines channels/ditches, crossing of channels and streams, in conjunction with new work, or relocation of existing structures.

g) Construction of new pumping donuts, internal coffer dams, and internal salt pond levees.

h) Placement of new riprap along outboard and inboard levees, as needed to fortify the slopes and prevent erosion, so long as the proposed new riprap is placed below the high tide line and/or high pond level at a slope of about 4:1 where needed. Care shall be taken to minimize the number of voids between the rubble in order to maintain structural integrity and prevent burrowing. Riprap will not be placed on top of non-eroding salt marshes.

i) Repair and replacement of siphons that cross salt marshes, sloughs and channels that would require extensive trenching and side-casting of mud.

j) Dredging and placement of bay muds into eroded areas along selected outboard levees for the purpose of encouraging the establishment and expansion of salt marsh vegetation as a means of diffusing wave energy and preventing levee erosion. The quantities of dredging material to be moved will vary greatly, depending on site specific conditions, and will be included in the notification procedures (See Provision E.19).

k) General maintenance activities to maintain the Phase 1 elements of the SBSPRP once implementation is complete. This also includes repair of water control structures and placement of materials on internal levees and nesting islands as needed to maintain ecological function and values.

General Provisions

44) The Discharger shall comply with all the Prohibitions, Specifications, Limitations and Provisions of this Order, immediately upon adoption of this Order, unless otherwise provided below.

45) The Discharger shall notify the Water Board immediately whenever violations of this Order, for which the Discharger is responsible, are detected.

46) The Discharger shall remove and relocate any wastes that are discharged at any sites in violation of this Order.

47) The Discharger shall implement and comply with appropriate Best Management Practices (BMPs) to prevent and control erosion and sedimentation.

48) Construction contractors working on the Project shall be required to provide their employees with spill prevention and response training, and shall be required to have spill response equipment available at the job site, as directed by the Discharger. Contractors shall provide double containment for any hazardous materials or wastes at the job site. Contractors shall be prepared to respond to any spill immediately and to fully contain spills in the SBSPRP area, including any open-water areas. The Discharger is responsible for work conducted by its consultants, contractors, and subcontractors on the Project.

49) The Discharger is considered to have full responsibility for correcting any and all problems that arise in the event of a failure that results in an unauthorized release of waste or wastewater. The discharge of any hazardous, designated, or non-hazardous waste as defined in Title 23, Division 3, Chapter 15 of the California Administrative Code, shall be disposed of in accordance with applicable State and federal regulations.

50) The Discharger shall maintain a copy of this Order at the Headquarters of the USFWS Don Edwards San Francisco Bay National Wildlife Refuge, located off Thornton Avenue, about 0.8 miles south of State Route 84, in the City of Newark. The Order shall be available at all times to site personnel. The Discharger shall ensure that all individuals working on the SBSPRP sites, including all contractors and sub-contractors, are familiar with the contents and requirements of this Order, and with all relevant plans and BMPs.

51) The Discharger shall permit the Water Board or its authorized representative, upon presentation of credentials:

a. Entry onto premises on which wastes are located and/or in which records are kept.
b. Access to copy any records required to be kept under the terms and conditions of this Order.
c. Inspection of any monitoring equipment, construction area(s), or monitoring method completed as part of the Project.
d. Sampling of any discharge or surface water covered by this Order.

52) This Order does not authorize commission of any act causing injury to the property of another or of the public; does not convey any property rights; does not remove liability under federal, state, or local laws, regulations or rules of other programs and agencies; nor does this Order authorize the discharge of wastes without appropriate permits from this agency or other agencies or organizations.

53) The Discharger shall immediately notify the Water Board by telephone or email whenever an adverse condition occurs as a result of the proposed discharge or construction activities. An adverse condition includes, but is not limited to, a violation or threatened violation of the conditions of this Order, significant spill of petroleum products or toxic chemicals, or other events that could affect compliance. Pursuant to CWC section 13267(b), a written notification of the adverse condition shall be submitted to the Water Board within two weeks of occurrence. The

written notification shall identify the adverse condition, describe the action(s) necessary to remedy the condition, and specify a time schedule for performance, subject to modification by the Water Board.

54) The Discharger shall halt work activities if dead or dying fish, or fish exhibiting stress, are observed within 1,000 feet of work activity or discharge. The Discharger shall immediately assign a qualified biologist to investigate the cause of the problem, and to identify an acceptable response, if the cause is determined to be the work activity or discharge. The Discharger shall immediately report all incidents of dead, dying, or stressed fish, as well as prescribed action plans, to the Water Board.

55) All reports pursuant to this Order shall be prepared under the supervision of a suitable professional in the State of California.

56) This certification or Order is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to CWC section 13330 and section 3867 of Title 23 of the California Code of Regulations (23 CCR).

57) This certification action is not intended and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to 23 CCR subsection 3855(b) and that application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

58) Pursuant to CWC section 13260, the Discharger shall timely pay all fees associated with this Order. The fee amount for this Order shall be in accordance with the current fee schedule, per California Code of Regulations, Division 3, Chapter 9, Article 1, section 2200(a)(3). The fee payment shall indicate the Order number, the CIWQS Place ID no. 833812 in the header for this Order, the Regulatory Measure ID no. 412258, and the applicable year.

59) The Water Board may modify, or revoke and reissue, this Order if present or future investigations demonstrate that the discharge(s) governed by this Order shall cause, have the potential to cause, or shall contribute to adverse impacts on water quality and/or beneficial uses of the receiving waters. The Water Board may reopen this Order to review results of the Discharger's and Water Board staff's studies and new data on CWA section 303(d) listed contaminants and decide whether effluent limits should be revised.

I, Bruce H. Wolfe, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on May 9, 2018.

Bruce H. Wolfe
Executive Officer

Attachments (Provided as separate files. These files may be downloaded from https://www.waterboards.ca.gov/sanfranciscobay/board_decisions/adopted_orders_db/index.php)

A: Figures
B: Supplemental Tables
C: Adaptive Management Plan and March 2018 Addendum on Habitat Transition Zones
D: Water Quality Self-Monitoring Program (SMP)
E: (Draft) Landscape, Habitat, and Biological Species Monitoring Plan
F: Standard Provisions and Reporting Requirements

STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

STAFF SUMMARY REPORT (Tahsa Sturgis)
MEETING DATE: December 13, 2017

ITEM: **7**

SUBJECT: **U.S. Army Corps of Engineers, State Coastal Conservancy, and Santa Clara Valley Water District, South San Francisco Bay Shoreline Project, Santa Clara County** – Adoption of Waste Discharge Requirements and Water Quality Certification

CHRONOLOGY: The Board has not considered this item before.

DISCUSSION: The Revised Tentative Order (Appendix A) would issue waste discharge requirements and water quality certification to the U.S. Army Corps of Engineers (Corps), the State Coastal Conservancy (Coastal Conservancy), and the Santa Clara Valley Water District (District) to implement the South San Francisco Bay Shoreline Project (Project). This Project is a significant multi-benefit project that provides both flood protection and environmental restoration and addresses anticipated future sea level rise. The Project would construct a levee that will reduce the risk of tidal flooding to homes, schools, and businesses along Santa Clara County's Bay shoreline, including Alviso and the San Jose/Santa Clara Regional Wastewater Facility (RWF). In addition, it will allow for restoration and enhancement of tidal marsh and related habitat that was lost due to past diking for salt production. The restoration component of the Project includes former salt ponds, currently managed ponds, that are a portion of the larger South Bay Salt Pond Restoration Project. Restoration of these managed ponds cannot occur unless there is adequate flood protection provided prior to breaching the ponds to allow full tidal action.

The Revised Tentative Order would conditionally authorize full Project construction, which is expected to occur over the next 14 years, even though only the initial phase is funded. Given funding availability, it is appropriate to consider Project approval now, so that flood protection can be provided to Alviso as soon as possible.

The Project would be built in three phases, shown with projected dates of construction:

Phase I (2018-2022)

- Construct a 3.8-mile long levee along five reaches, including creation of approximately 91.52 acres of shallowly sloped ecotone habitat along the levee alignment by 2022
- Restore tidal action to Ponds A12 and A18 (1,120 acres)

Phase II (2027)

- Restore tidal action to Ponds A9, A10, and A11 (900 acres)

Phase III (2032)

- Restore tidal action to Ponds A13, A14, and A15 (880 acres)

The Project would result in initial impacts to waters of the State and U.S. associated with the levee and ecotone construction—placement of fill into about 132.2 acres of waters of the U.S. Those impacts are substantially addressed by the Project's significant restoration components, but, because there is uncertainty regarding aspects of Project design and timing, the Order establishes a mechanism for further evaluation and approval as Project details are finalized.

Board staff has worked with the Project proponents on the proposed alignment of the levee and significant progress has been made to resolve issues identified as early as during our review of the Project's Environmental Impact Report. The Order requires, and the Discharger is completing, an evaluation of more-landward alignments for a portion of the levee adjacent to the RWF. Such alignments have the potential to increase wetland acreage, thereby significantly reducing the Project's Bay fill, while also reducing Project costs and facilitating cleanup of inactive sludge lagoons at the RWF.

The Order attempts to balance the short-term impacts from Project construction with recognition that its longer-term benefits support long-term restoration and shoreline resiliency on a spatially significant scale.

A tentative order for the Project was circulated for a 30-day public comment period in October. Staff received comments from the Corps, Conservancy, District, and the U.S. Fish and Wildlife Service (Appendix B). Some of the comments received reflect a misunderstanding that the tentative order would have required all proposed restoration acreage (2900 acres) to be completed and, if not, compensatory mitigation would be required. As described the Response to Comments (Appendix C), we have revised the tentative order to clarify that the tentative order's intent and requirements to mitigate only for fill impacts. Staff also incorporated minor, self-initiated editorial revisions during this process.

RECOMMEN-DATION: Adoption of the Revised Tentative Order

CIWQS Place Number: 813084

APPENDICES:

A. Revised Tentative Order
B. Comments on Tentative Order
C. Response to Comments

Appendix A:
Revised Tentative Order

401 Water Quality Certification and Waste Discharge Requirements

South San Francisco Bay Shoreline Project

City of San Jose
Santa Clara County

December 2017

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

REVISED TENTATIVE ORDER

WATER QUALITY CERTIFICATION AND WASTE DISCHARGE REQUIREMENTS for:

U.S. ARMY CORPS OF ENGINEERS
STATE COASTAL CONSERVANCY
SANTA CLARA VALLEY WATER DISTRICT

SOUTH SAN FRANCISCO BAY SHORELINE PROJECT
SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (Regional Water Board), finds that:

1. The U.S. Army Corps of Engineers (Corps) has applied to the Regional Water Board for approval to construct the South San Francisco Bay Shoreline Project (Project). The Corps intends to build the Project in three phases over approximately 14 years.

2. **Application.** On June 16, 2017, the Corps filed an application for CWA section 401 Water Quality Certification with the Regional Water Board for authorization to implement the Project (33 U.S.C. section 1341). The Regional Water Board used this information to determine compliance with California Water Code (Water Code or CWC) section 13360, which requires a Report of Waste Discharge for issuance of Waste Discharge Requirements (WDRs).

3. **Order Authorization.** This Order authorizes, subject to the requirements herein, Project Reaches 1 through 3 and mitigation and monitoring activities, including ecosystem restoration and adaptive management actions. Additionally, it conditionally authorizes the remaining parts of the Project (Reaches 4 and 5) by setting forth a process by which the Project's remaining construction events and phases may be authorized, subject to applicable public, Regional Water Board, and Regional Water Board Executive Officer review. Authorization of Reaches 4 and 5 is conditioned on additional submittals, including acceptable design plans and supporting documentation, and associated review, as described herein. This Order identifies potential Project impacts to water quality and beneficial uses and requires necessary measures, including the successful implementation of compensatory mitigation, to address them.

4. **Local-Federal Partnership.** The Corps is partnering with the State Coastal Conservancy (Coastal Conservancy) and the Santa Clara Valley Water District (District) to increase flood protection and provide shoreline resiliency against projected sea level rise (SLR) to protect the community of Alviso and valuable shoreline infrastructure and restore tidal action to about 2,900 acres of historically diked baylands. The Water Resources Development Act (WRDA) of 1986, Public Law 99-662, as amended (33 U.SC. section 2213) stipulates that the Non-Federal Sponsors (the Coastal Conservancy and District) will contribute 35 to 50 percent of the total Project cost. The Corps and Non-Federal Sponsors are each funding Project costs and are coordinating the division and/or various shared roles and responsibilities, such as design, construction, and post-construction operations, which arrangements will be formalized in accordance with the Project Partnership Agreement (PPA) that will be signed by the Corps, Coastal Conservancy, and District when Congress appropriates funds in the Construction General account. The cost-sharing schedule specifically requires the Corps to conduct (and/or

oversee) construction contracting and activities and the Non-Federal Sponsors to provide all lands, easements, rights-of-way, relocations, and disposal areas (LERRD). A design agreement between the Corps, Coastal Conservancy, and District has been used to move the Project forward until the PPA is signed. The design agreement was signed on July 11, 2016, and states the Non-Federal Sponsors shall contribute 35 percent of the total design costs, in accordance with the WRDA of 1986, Public Law 99-662, as amended. The WRDA also requires the Corps to prepare an operations and maintenance manual for the Project.

5. **Discharger.** The Regional Water Board is issuing this Order to the Corps, the Coastal Conservancy, and the District, collectively referred to as the Discharger, because Project activities will cause or contribute to a discharge of waste that will affect the quality of waters of the U.S.[1] The nature of WDRA projects is that the partnership between the Corps and the Non-Federal Sponsors is inextricable, and the Project could not occur without each sponsor. Therefore, the Regional Water Board is naming the Corps and the Non-Federal Sponsors, who are the Project co-sponsors, as dischargers. As appropriate, this Order notes which partner has agreed to be responsible for certain requirements based on WRDA requirements, as well as the Regional Water Board's understanding of the agreements the Corps, Conservancy, and District have made with each other.

   The Discharger will implement the Project as described in the application materials and herein. As described in the agreement among the Corps and Non-Federal Sponsors, the Corps will be responsible for construction of flood protection, ecosystem restoration, and some recreational elements. Once the flood risk management levee is constructed and fully functional, the Corps will transfer the levee's operation, maintenance, and management responsibility to the District. The Corps and the Non-Federal Sponsors will share financial responsibility for the ecosystem restoration monitoring and adaptive management. However, the Corps' ecosystem restoration cost sharing obligation is restricted to ten years following each pond-breaching event. Once the Corps' cost-sharing obligation ends, the Non-Federal Sponsors will assume the total cost for each pond's long-term operation, maintenance, and management. Responsibilities for costs, which will also include operation and maintenance costs, will be allocated pursuant to the PPA, when it is finalized. Currently, the Non-Federal Sponsors are negotiating how their respective roles and responsibilities, including cost sharing, will be divided during the ecosystem restoration's long-term operation, maintenance, and management.

6. **Project Purpose.** The Project's overall purpose is to safeguard homes, schools, and businesses along Santa Clara County's South Bay shoreline, including Alviso and the San Jose/Santa Clara Regional Wastewater Treatment Facility (RWF), from the risk of tidal flooding by constructing a levee and restoring and enhancing tidal marsh and related habitat that was lost due to former salt production activities. The Project's overall purpose will be achieved through implementation of a flood risk management levee and ecosystem restoration. The Project's objectives are to:

   - Reduce the risk to public health, human safety, and the environment due to tidal flooding along the South Bay shoreline in Santa Clara County, by providing protection from the 1

[1] Waters of the United States are subsumed within waters of the State. All of the surface waters discussed in the Order are both waters of the State and United States. For ease of reference, these WDRs refer to both as waters of the U.S. Groundwater, a water of the State only, is addressed separately, where applicable.

percent annual chance of exceedance flood (i.e., the 100-year event), taking into account anticipated SLR through 2067;

- Reduce potential economic damages due to tidal flooding in areas near the South Bay shoreline in Santa Clara County;

- Increase contiguous tidal marsh to restore ecological function and habitat quantity, quality, and connectivity in the Project Area; and

- Provide opportunities for public access, environmental education, and recreation in the Project Area.

7. **Site Description and Background.** The Project site is located between Alviso Slough/ Guadalupe River and Coyote Creek and includes the community of Alviso and the RWF. The Alviso pond complex is within the Project site, and the RWF is located to the southeast (Att. A, Figures 1 to 3). The Alviso pond complex consists of 25 ponds of former salt production ponds over approximately 9,000 acres along 15 miles of shoreline between Palo Alto and Fremont. The United States Fish and Wildlife Service (USFWS) owns and manages about 8,000 acres of former salt ponds within the Alviso pond complex. The approximately 820-acre Pond A18, just outside the Alviso pond complex, is owned by the City of San Jose and located within the Project site.

   The community of Alviso has over 2,500 residents, 1,100 structures, and 3,000 commuters who work and travel through the area each day. The surrounding low-lying terrain is mostly urban and contains portions of Silicon Valley, transportation corridors, and other critical infrastructure.

   Low-lying terrain within the area is the result of widespread overdraft of groundwater for agricultural and urban uses during the early and middle decades of the 20th century. This overdraft led to severe ground subsidence under most of the Santa Clara Valley and portions of the South Bay, including many of the Project site's former salt ponds. Salt pond dikes were raised by their owners, and outboard tidal marshes accumulated sediment quickly enough to maintain their elevation. However, without tidal flows, the floors of the salt ponds and adjacent alluvial plains had no way to compensate for the previous loss in elevation. In addition, the non-engineered berms protecting these areas from tidal flooding are dikes that were created as early as the 1920s and generally maintained to protect the ponds from tidal flooding when they were used for salt production. These dikes were not engineered or intended to reduce flood risk for urban areas. While groundwater overdraft has ceased and the water table has recovered considerably, the previous loss of elevation is permanent.

   Due to this subsidence, many areas landward of the former salt ponds have become vulnerable to tidal flooding. Alviso is at or below an elevation of 5 feet NAVD88, which is lower than the mean higher high tides in the area. During a 1983 flood event, floodwaters from Coyote Creek reached a depth of 6 feet in Alviso, and more than 1,700 residents were flooded.

   The Project site's flood risk is exacerbated by the substantial SLR that is expected during the Project's fifty-year planning horizon (2017-2067). The Discharger has estimated that regional SLR will be between 0.51 feet and 2.59 feet. This increase in sea level will put the community

of Alviso and surrounding area at a greater risk of flooding than currently present. The Project will provide flood protection to Alviso by constructing a flood risk management (FRM) levee and restoring tidal action to Ponds A9 to A15, within the Alviso pond complex, and Pond A18. Project construction will occur in three phases that will be completed in about 2032, but monitoring and adaptive management will continue until about 2047.

8. **Project Construction Phasing.** The Project will be constructed in three phases through six total construction events, as described below. All phases are authorized or conditionally-authorized by this Order. Phase I is expected to result in fill and non-fill Project impacts for which ecosystem restoration work, integral to the Project in Phases I, II, and III, provides mitigation. However, monitoring data for the Phase I ecosystem restoration Project component may indicate breaching the ponds in Phases II and III would not facilitate tidal marsh restoration or result in other environmental benefits. In that event, Project Phases II and III may not be constructed and the ecosystem restoration benefits of these phases would not be realized. If Phase I is successfully implemented and the Discharger does not move forward with Phases II and III, the Discharger will submit supplemental information on Project impacts as described in the Provisions and, specifically, as part of a Contingency Monitoring and Mitigation Plan.

   Phase I: Phase I activities include the FRM levee construction, ecotone creation, and restoration of Ponds A12 and A18 to tidal action. The levee length has been divided into five reaches. The FRM levee will be constructed first along those five reaches to provide immediate flood protection by increasing the levee height. While the FRM levee is being constructed, fill for Project construction may be stockpiled in the ecotone footprint, as described elsewhere herein.

   Transitional wetland habitat (ecotone) will be created along the bayward side of the FRM levee within three of the ponds. The first two ecotones will be created in Ponds A12 and A13 once the FRM levee construction has been completed along Reaches 1 through 3. The third and final ecotone will be created in Pond A18 once the FRM levee construction has been completed along Reaches 4 and 5. Once the FRM levee has been completed and tied in to existing levees, tidal action will be restored to Ponds A12 and A18 by breaching their respective outboard dikes.

   Additional Phase I activities that are authorized by this Order, but are not expected to result in the placement of fill into waters of the U.S. beyond that otherwise described in the Order, include the following:

   - Construction of a pedestrian bridge over Artesian Slough to link multi-use trails;
   - Completion of public access improvements that will create multi-use trails, mostly on the tops of the FRM levees, to connect to the Bay Trail network; and
   - Appropriate infrastructure construction where the Project crosses the Union Pacific railroad tracks to ensure the Project can provide effective flood protection while still allowing the railroad to function effectively. This Order does not authorize a separate project to modify the railroad line to address the effects of anticipated SLR.

   After Phase I activities have been completed, additional ponds will be breached in specific locations to restore tidal action to the ponds, allow sediment carried by the tides into the breached ponds, and allow for the reactivation of remnant channels in the pond bottom. Once the

salt ponds have been restored to tidal action, the anticipated result is large-scale tidal marsh restoration from sediment accretion, marsh vegetation colonization, and ongoing adaptive management actions.

Phase II: Phase II will restore Ponds A9, A10, and A11 to tidal action in generally the same manner as for the ponds breached in Phase I. Ongoing monitoring data from the previous Project phase will be used to inform restoration strategies for Ponds A9, A10, and A11.

Phase III: This final Project phase will restore Ponds A13, A14, and A15 to tidal action in generally the same manner as for the ponds in Phase I. Similar to Phase II, ongoing monitoring data from previous Project phases will be used to inform restoration strategies for Ponds A13, A14, and A15.

Project Phasing: Phasing the Project is necessary because the levee and ecotone components must be completed prior to restoring the salt ponds to tidal action to ensure that landward flood protection is maintained. The phasing also allows the anticipated ecosystem restoration to have a higher likelihood of success by allowing the Discharger to implement lessons learned from monitoring salt ponds that will be restored in earlier phases. Additionally, the phasing will allow material that will be used for the FRM levee and ecotone construction to be acquired from various sources. The Project will be constructed over approximately 14 years (see Table 1).

Table 1: The Project phases and anticipated construction timeline (Att. A, Figure 4).

Phase	FRM Levee Construction (Reach No.)	Tidal Marsh Restoration (Ponds)	Ecotone Creation (Ponds)	Anticipated Construction (Year)
I	1	--	--	2018
	2 and 3	--	A12 and A13	2019
	4 and 5	--	A18	2020-2021
	--	A12 and A18	--	2022
II	--	A9, A10, and A11	--	2027
III	--	A13, A14, and A15	--	2032

9. **Related Projects.** The Project is closely related to, and implements a portion of, the South Bay Salt Pond Restoration Project (SBSPRP) (Order No. R2-2004-0018, as reissued and amended [R2-2008-0078; R2-2012-0014]). The SBSPRP is located in South San Francisco Bay and consists of three former salt pond complexes and adjacent habitats: the Alviso Ponds,

Ravenswood Ponds, and Eden Landing Ponds. The SBSPRP is similarly phased to allow prior construction and restoration activities to inform future phases, and the same conceptual ecological model used in the SBSPRP will be implemented in the Project's adaptive management strategy. The planning process for the Project is being coordinated with SBSPRP actions, as both efforts have similar flood protection, ecosystem restoration, and recreation objectives.

The Coastal Conservancy, District, and USFWS are currently collaborating to implement the SBSPRP, which encompasses 15,100 acres in the South Bay. As part of the SBSPRP, a range of potential implementation and habitat outcomes were identified, with the endpoint to be determined through phased implementation guided by adaptive management. A "staircase" analogy was used in the SBSPRP to describe the proposed project, with each step on the staircase representing one phase of tidal restoration implementation. Adaptive implementation determines how far "up the staircase" the project proceeds.

The following Findings present a more-detailed discussion of aspects of the Project and are organized into four sections: (I) South San Francisco Bay Shoreline Project (Project); (II) Reaches 1 to 3; (III) Maintenance and Management; and (IV) Other Findings.

I. South San Francisco Bay Shoreline Project (Project)

10. **Phase I (2018-2022)**: Phase I of the Project consists of the construction of approximately 3.8 miles (19,775 ft.) of new levee from the Alviso Marina northeastward to the northeastern corner of the RWF property; ecotone creation; and pond preparation, breaching, and restoration. The entire FRM levee is divided into five reaches (Reaches 1 to 5) that are grouped into two segments, as shown in Table 2. Phase I activities are further divided into four construction events, as summarized in Table 3.

Table 2: Summary of FRM levee construction by Reach (Att. A, Figure 4).

Phase	Reach No.	Segment	Adjacent Ponds	Anticipated Start of Construction (Year)
I	1	Alviso	A12 and A13	2018
	2		A16	2019
	3		A16	2019
	4	RWF	A18	2020-2021
	5		A18	2020-2021

Table 3: Summary of Phase I's construction events and activities (Att. A, Figure 4).

Phase	Construction Event	Activity	Anticipated Construction (Year)
I	First	Construct FRM levee Alviso segment (Reach 1); stockpile fill material in Ponds A12, A13, and A18	2018
	Second	Finish FRM levee Alviso segment (Reaches 2 and 3); create two ecotones in Ponds A12 and A13; stockpile material in Pond A18 as needed	2019
	Third	Complete FRM levee by starting and finishing RWF segment (Reaches 4 and 5); create third and final ecotone in Pond A18	2020-2021
	Fourth	Breach Ponds A12 and A18	2022

The first two construction events in Phase I include construction of the FRM levee's Alviso segment (Reaches 1 to 3), creation of new upland/marsh transitional habitat (ecotone) in Ponds A12 and A13, and stockpiling construction material. The FRM levee's Alviso segment is approximately 1.7 miles long and follows the eastern border of Pond A12 and the southern borders of Ponds A13 and A16. Ecotones will be created along approximately 3,600 linear feet of Reach 1 on the east side of Pond A12 and along approximately 600 linear feet of Reach 1 on the southern side of Pond A13 during Phase I's second construction event. Approximately 28.79 acres of ecotone will be created in Ponds A12 and A13. Following construction of the ecotone, it will be seeded with native grasses, forbs, and low non-woody shrubs.

The third construction event in Phase I includes completion of the entire FRM levee, from construction of the RWF segment (Reaches 4 and 5), and creation of the third ecotone in Pond A18. The FRM levee's proposed conceptual alignment for the remaining 2.1-mile RWF segment follows the southern border of Pond A18. Connecting the Alviso and RWF segments requires crossing Artesian Slough. The Discharger's conceptual levee design is currently proposed to run west to east in a stair step pattern along the southern border of Pond A18, from the southwest corner of the pond to its northeast corner. However, the Discharger has not finalized the FRM levee's RWF segment because a cheaper landward alignment is under evaluation (see Finding 13) (Att. C). The landward alignment under evaluation would require less fill and maximize the Project's ecosystem restoration by utilizing landward elevations that are higher than Pond A18's bottom elevation to support quicker colonization of wetland vegetation. The ecotone created in Pond A18 using the proposed conceptual alignment would be approximately 62.73 acres.

The fourth and final construction event in Phase I will consist of breaching the outboard dikes for Ponds A12 and A18. Monitoring and adaptive management of the Ponds A12 and A18 after breaching is necessary to inform future pond breaches.

FRM Levee: The earthen FRM levee will increase the existing levee height by approximately 10 feet to a design elevation of 15.2 feet NAVD88, after settlement. To accommodate the increase in levee height, the FRM levee's width will be 16 feet at its crest, about twice as wide as the existing levee's width. The FRM levee's design elevation of 15.2 feet corresponds to the levee height that will provide flood protection from a one percent annual chance of exceedance (ACE) flood that includes SLR estimates used by the Discharger (see Finding 17). The flood protection against a one percent ACE flood in 2067 meets Federal Emergency Management Agency (FEMA) criteria. The proposed levee height was requested by the District and Coastal Conservancy to allow for continued FEMA accreditation at the end of 2067 and meet local FRM requirements in Santa Clara County. The one percent ACE level of flood risk protection is consistent with FEMA requirements for eligibility in the National Flood Insurance Program.

The existing dike material along Ponds A12, A13, and A18 has relatively high plasticity and contains organics that make it unsuitable to remain in place or serve as fill for the new FRM levee, but the dike material may be suitable for future ecotone construction. Fill for the FRM levee construction will be imported from local sources and delivered by truck. The Discharger plans to use some fill material from nearby creek dredging projects to reduce Project costs. All imported dredged material must meet established screening criteria for reuse based upon the Regional Water Board's beneficial reuse guidelines for dredged material. Other elements, such as geotextile fabric, stone foundation columns, and foundation over-excavation may be included in the final levee design.

Vegetation is included in the levee design as erosion protection on the bayward and landward side slopes. The vegetation is anticipated to be continuous and serve as erosion protection. Marsh vegetation may be seeded or planted at the toe of the levee following construction. Peripheral halophytes such as 12- to 18-inch tall pickleweed (*Salicornia pacifica*) may be planted at the toe of the levee, if necessary. Upland grasses will be seeded at higher elevations on the side slopes between the levee crest and the pickleweed. Combinations of buried stone protection and buried gravel may be necessary to provide erosion protection in areas where the vegetation cannot be supported or to stunt the growth of native vegetation to reduce the frequency of vegetation maintenance activities, such as mowing, near the levee crest.

Certain locations may require special structures or treatment, as follows:

- The new FRM levee will diverge from the existing levee alignment by cutting across Pond A12 in the southwestern area. The divergence from the existing alignment will make construction easier by avoiding two 90-degree bends in the levee. This divergence will shorten the levee length, thereby requiring less fill material.

- Where the levee crosses an existing water feature, such as a slough, structures will be installed to allow flow during normal conditions and during flood conditions. This Order requires that the design for the Artesian Slough crossing not adversely alter the adjacent RWF's discharge quality and hydraulics.

- Where the levee crosses below-ground infrastructure (e.g., utilities), load-bearing structures may be needed to support the weight of levee materials over the infrastructure.

- Floodgates will be installed where the Reach 1 FRM levee crosses the active Union Pacific Railroad (UPRR) tracks.

Ecotone Creation: Ecotone creation will occur along the bayward sides of Reach 1 (Ponds A12 and A13), Reach 4 (Pond A18), and Reach 5 (Pond A18). The ecotones will be constructed with an average 30:1 horizontal to vertical slope. The ecotones' gradual slope will add up to 345 feet to the width of the Bay side of the levee footprints at these locations. The first two ecotones will be created along 3,600 linear feet of the levee on the east side of Pond A12 and approximately 600 feet on the south side of A13. In Ponds A12 and A13, approximately 28.79 acres of ecotone will be created in total. The third ecotone will be created bayward of the FRM levee through Reaches 4 and 5. Approximately 62.73 acres of ecotone will be constructed along approximately 14,000 linear feet of levee along Pond A18. In total, approximately 91.52 acres of ecotone will be created.

The new ecotones will provide substantial benefits for wildlife in the Project site and nearby areas because this type of habitat is not well represented in the South Bay. Further, the ecotone slopes will allow the transgression of estuarine marsh habitats over uplands as sea level rises, maintaining over time the Bay-adjacent estuarine-terrestrial transition zone (Att. A, Figure 5). Vegetation in the upland transitional areas will be limited to herbaceous, low non-woody and semi-woody plants, and possibly shallow-rooted shrubs; it will be otherwise unmanaged, except to control invasive plants from establishing.

Ponds A12 and A18 Tidal Restoration: Ponds A12 and A18 are proposed for the first phase of restoration because they have experienced the greatest degree of subsidence, and Pond A12's bottom elevation is too low to support intertidal marsh vegetation. Restoring tidal action to Ponds A12 and A18 maximizes the potential for the sites to accrete sediment transported from the Bay on flood tides. Pond A12's bottom elevation is so low that, after it is restored to tidal action, several feet of sediment deposition from sediment transported on flood tides will be needed before the pond bottom reaches a sufficient elevation to support colonization by marsh vegetation. The sedimentation process is expected to proceed at rates determined in part by suspended solids concentrations in the South Bay as well as factors causing re-suspension of sediment, such as wave action and tidal currents, in the South Bay and breached pond (ESA PWA 2012; HTH 2012). After Pond A12 is breached, the anticipated sediment deposition is expected to raise its bottom elevation sufficiently to support colonization by intertidal marsh vegetation. Internal pond dike breaches will be conducted to reconnect historical channels and restore hydrologic connections to the innermost ponds in the Project footprint. Breach sizes will be consistent with *Design Guidelines for Tidal Wetland Restoration in San Francisco Bay* (PWA 2004).

Pilot channels will be constructed on the outboard side of the pond dikes, where the breaches will occur, to facilitate and concentrate flow into the pond when the dikes are breached. Each pilot channel will be located along the locations of historical tidal channels (Att. A, Diagrams 2 and 3).

Ditch blocks will be constructed in areas within the inboard edge of the pond to direct flow away from undesirable locations and towards desired locations. The blocks will be constructed within borrow ditches along the inboard perimeter of the ponds. Once the dikes are breached, the

ditch blocks will be located in strategic areas around the inboard edge of the pond to inhibit incoming flow through the existing borrow ditches and redirect flow towards the remnant historical channels to promote scour and restore their form and function. The ditch blocks are also expected to provide some initial pickleweed habitat in locations where elevations are suitable for such growth. Without the ditch blocks, the incoming flow from the breached dikes would take a preferential path through the borrow ditches around the inboard perimeter and reduce the likelihood that historical tidal channels would be restored to form complex dendritic channels. Complex dendritic channels in the ponds are a critical hydrodynamic component and serve ecological functions such as foraging by special-status species.

To prepare Pond A12 for breaching, berms will be constructed between Pond A12 and Ponds A11 and A13. These berms will be temporarily (i.e., until tidal action is restored to Ponds A11 and A13) raised to provide flood protection for ponds A11 and A13 when Pond A12 is breached. Starter channels will then be excavated within Pond A12 to facilitate restoration of the historical tidal channels within the pond. This will improve water and sediment circulation in the pond and help accelerate marsh restoration. If determined to be suitable, surplus material excavated from pond preparation would be used to contribute to other in-pond construction activities that require material, such as raising of internal dikes. Pond A18 will be prepared for breaching by using a procedure similar to Pond A12's breaching preparation.

Following restoration of tidal flows to Ponds A12 and A18, monitoring will be conducted to measure physical and ecological processes and conditions, such as tidal exchange, sediment accretion, and vegetation establishment. If necessary, corrective measures will be implemented, consistent with the procedure described in the Monitoring and Adaptive Management Plan (MAMP). A period of approximately ten years has been planned for monitoring and adaptive management of the pond areas, but monitoring and adaptive management will continue until at least 2048.

11. **Phase II (2027)**: Phase II is the fifth construction event and consists of restoring Ponds A9, A10, and A11 to tidal action. Ponds A9, A10, and A11 will be prepared for breaching in a similar fashion as Ponds A12 and A18 during Phase I, with the application of lessons learned from monitoring Ponds A12 and A18 after they were restored to tidal action. The decision to breach these ponds will be based on the MAMP and the most up-to-date version of the Ecotone and Pond Monitoring Plan (EPMP) (see Provision 35) prior to commencement of Phase II, and the decision framework in the SBSPRP MAMP. These decisions involve monitoring populations of pond-associated birds and monitoring of sediment accretion in the South Bay, among other factors.

    Preparing the Phase II ponds for breaching will be conducted in a similar manner as Phase I, but lessons learned from Phase I will be incorporated into the pond preparation sequence to improve the restoration of tidal action. Pond A11 will be connected to Ponds A10 and A12 with inboard berm breaches, but it will not be breached directly to Alviso Slough. Two breaches to Alviso Slough are planned in Pond A10, and one breach each to Alviso Slough and Coyote slough are planned for Pond A9. Internal berms between Ponds A9 and A11 and Ponds A13 and A14 will be temporarily raised (i.e., until breaching of ponds A13 and A14 in 2032) to provide flood protection for Ponds A13 and A14.

12. **Phase III (2032)**: Phase III is the sixth construction event and consists of restoring Ponds A13, A14, and A15 to tidal action. Pond preparation for Ponds A13, A14, and A15 will be implemented based on the lessons learned from the mitigation and monitoring conducted for previously restored ponds. Similar to the Phase II breaching, the data collected, as described in MAMP and supporting documentation, from post-construction monitoring of previous phases will be used to decide if these ponds should be breached and restored to tidal marsh, subject to public and Regional Water Board review as described herein.

    Prior to breaching the ponds restoring them to tidal action, a single pilot channel will be excavated and ditch blocks will be constructed. Only one outboard breach is planned for tidal restoration in these three ponds; this breach will connect Pond A15 to Coyote Creek along a major historical channel. Inboard berm breaches at the locations of historical sloughs will provide connections to Ponds A13 and A14 from the surrounding ponds (A9, A11, A15, and A12).

Future Project Considerations and Permitting

13. **Future Project Design Decisions.** The Discharger has identified a conceptual FRM levee alignment for the levee beyond Reaches 1 to 3, from Artesian Slough to its terminus at Coyote Creek. All future Project components require additional investigation by the Discharger, including supplemental analysis for each reach, collection of monitoring and maintenance data, and collection of monitoring and maintenance data to the Project area. This Order sets forth a process by which an acceptable levee alignment and other design details can be determined. The following are significant alignment and design issues to be considered:

    Artesian Slough Crossing: The FRM levee will need to cross Artesian Slough in order to connect the Alviso (Reach 3) and RWF (Reach 4) segments. Artesian Slough is currently used by the RWF to discharge treated wastewater and meet its effluent requirements under its Regional Water Board-issued National Pollution Elimination Discharge System (NPDES) permit. The mixing and dilution for the RWF's discharges cannot be affected in a way that would cause non-compliance with the RWF's current NPDES permit, and the design must address the RWF's need to discharge treated wastewater to the Bay.

    The Discharger's proposed Artesian Slough crossing design is intended to protect the RWF from stormwaters and tidal surges that flood the Slough and back up into the RWF during extreme storm events. The proposed location of the tide gate would be at least 300 feet bayward of the existing RWF outfall for treated water at the Slough. The gates would only be closed during extreme storm events. When the gates are closed, the RWF would need to pump treated wastewater over the proposed tide gate or provide internal excess water storage during a storm event. With or without the Project, the RWF will develop a plan to pump or store waters during such events because of increases in Bay water levels that correspond with future SLR scenarios. To best meet the general operation requirements for the RWF and allow for discharge during storm events, the tide gate will be designed in coordination with RWF engineers. This Order requires the Discharger to submit additional information regarding the crossing's proposed design and to obtain Executive Officer approval prior to constructing that component.

Reach 4 to 5 FRM Levee Alignment (RWF Segment): The Discharger's proposed levee alignment east of Artesian Slough along the RWF segment would result in a net loss of waters of the U.S. That proposed alignment would follow, in part, the Pond A18 levee that runs west to east in a stair-step pattern.

Landward Levee Alignment East of Artesian Slough: Regional Water Board staff provided feedback to the Discharger, prior to its application submittal, about opportunities to reduce Project impacts to waters of the U.S. Regional Water Board staff described a potential levee alignment east of Artesian Slough (Reaches 4 and 5) that is landward of both (a) existing mitigation wetlands north of the RWF and (b) approximately 100 acres of the RWF's legacy biosolid ponds. Regional Water Board staff provided the Discharger with technical evidence (Att. C) that this or a similar landward levee alignment east of Artesian Slough likely would reduce the volume of earthwork, be cheaper and easier to construct, reduce or potentially eliminate the immediate net loss of waters of the U.S., increase the acreage, function, and value of tidal wetlands in the area, and provide an opportunity for the City of San Jose to close the legacy biosolid ponds at the RWF. The Discharger described this proposed alignment in its application as the Pond A18 Alternative.

Material Stockpiling: Two of the largest constraints to success of the Project are the need to secure a sufficient amount of suitable fill at an acceptable cost and the need for sufficient area to stockpile the millions of cubic yards of soil required to construct all reaches of the FRM levee and the A12, A13, and A18 ecotones. Phase I, Reach 1 addresses the need for a suitable stockpiling area by allowing stockpiling in the future ecotone footprints in Ponds A12, A13, and the easternmost portion of A18, adjacent to the existing berm along the active biosolids ponds, during the initial construction activities (Att. A, Figures 7a and 7b). Material stockpiling in Ponds A12, A13, and A18 may be restricted to the future ecotone footprint within the ponds. Prior to stockpiling fill material, Ponds A12, A13, and A18 may be dewatered to facilitate dry stockpiling conditions. Water in Ponds A12 and A13 may be pumped out of the ponds to lower the water levels temporarily. Pond A18 may be passively dewatered by gravity flow through existing water control structures on Artesian Slough as much as possible, but the pond may also be pumped to reduce water levels to an appropriate height in areas where passive dewatering will not be effective (e.g., borrow ditches, former marsh channels). The stockpiling is limited to a maximum height of 17 feet, which is approximately the height of the City's sludge pond berm.

14. **Project Alternatives Analysis**: While the overall Project design for the FRM levee along Reaches 1 to 5 has not been finalized, the Discharger has demonstrated that the currently proposed alignment along Reaches 1 to 3 is the least environmentally damaging practicable alternative along those reaches, and the Reach 1 to 3 alignment is not expected to change. The Discharger evaluated overall Project alternatives, including specific reach alignments for the FRM levee, in the *Clean Water Act Section 404(b)(1) Determination, South San Francisco Bay Shoreline Phase I Study, Santa Clara County, California* (HDR, July 1, 2015) (404(b)(1) Determination) as an appendix to the FEIR. The Discharger submitted a brief discussion of the alternatives considered in the FEIR and the Regional Water Board-proposed landward levee alignment in Reaches 4 and 5 in the application with an emphasis on the FRM levee alignment across Artesian Slough and along the RWF segment. This Order acknowledges the need to fully evaluate and reevaluate alternative levee alignments east of Reach 3 (i.e., for the crossing of Artesian Slough and Reaches 4 and 5) as designs are finalized, in order to optimize the tidal

marsh restoration opportunities while further reducing impacts to waters of the U.S., while acknowledging (in Attachment C) some of the constraints of that alternative alignment (including various departments and the City of San Jose).

15. **Authorization Process for Future Project Phases.** This Order requires supplemental applications that contain additional or revised information, including supplemental analysis and design plans for future Project work with supporting documentation that demonstrates the Project maximizes ecosystem restoration and minimizes the net fill of waters of the U.S., before construction of future Project components may commence. The future submittals will be subject to public review and approval by the Regional Water Board or the Executive Officer (see below). In addition, depending on overall Project impacts and tidal restoration success, this Order may be modified to require compensatory mitigation beyond that now required herein.

    This Order requires that the supplemental analysis for Reaches 4 and 5 quantitatively address the impacts of alternative levee alignments on (a) anticipated rates and extent of post-breach establishment of vegetated tidal marsh; (b) long-term water management operations, water quality, and habitat functions/values in the City and landfill mitigation marshes given anticipated SLR (Att. C, Figures 1 and 3); and (c) anticipated attenuation of wave energy by vegetated tidal marsh bayward of the ecotone.

    Supplemental analysis will also include additional information and designs for the Artesian Slough crossing, ecotones in Ponds A12, A13, and A18, and pond breaching. The current Pond breaching approach is generally suitable. If initial post-construction monitoring data indicate a high likelihood of success, the Pond breaches may be authorized by the Executive Officer, subject to applicable public review (see below).

    Executive Officer Approval: This Order requires that supplemental applications provide supporting documentation to refine the Project as presented herein, including a range of alternative landward alignments along Reaches 4 and 5 that maximize ecosystem restoration opportunities and reduce overall Project cost. Those supplemental applications must be submitted to the Executive Officer for review and approval. Supporting documentation includes 30, 60, 90, and 100 percent design plans and the supplemental analysis described above (see Table 4).

Table 4: Summary of the subsequent Project work and information needed for approval.

Phase	Construction Event	Construction Activity	Supplemental Application Requirements
I	Second	FRM Levee, Reaches 2 and 3	Engineering Designs
	Third	FRM Levee, Reaches 4 and 5	Engineering Designs and Supplemental Analysis
	Fourth	Tidal Action Restoration to Ponds A12 and A18	Engineering Designs and Supplemental Analysis
II	Fifth	Tidal Action Restoration to Ponds A9, A10, and A11	Engineering Designs and Supplemental Analysis
III	Sixth	Tidal Action Restoration to Ponds A13, A14, and A15	Engineering Designs and Supplemental Analysis

Any Project changes that deviate from the Project described herein, not including the landward alignment along Reaches 4 and 5, or a similar alignment that would reduce the Project's impacts, are considered significant and will be presented to the Regional Water Board for review and approval prior to implementation. Significant changes include, but are not limited to, any increase in net fill of waters of the U.S., failure to complete the Project as described herein, and any Artesian Slough crossing design that may alter the RWF's ability to meet mixing requirements described in its NPDES permit.

In addition to supplemental applications, any changes to the Project that reduces the ecosystem restoration amount, thereby reducing the Project's compensatory mitigation amount, must be approved by the Executive Officer before those changes can be implemented (see Findings 21 and 22).

Habitat and Pond Breaching Considerations

16. **Ecosystem Restoration and Benefits of Tidal Marsh Restoration and Ecotones**: Implementation of the proposed ecosystem restoration is expected to result in a significant contribution to tidal wetland restoration in the San Francisco Bay region. Tidal marsh restoration was recommended in multiple regional reports, including, but not limited to, *The Baylands and Climate Change: What We Can Do. Baylands Ecosystem Habitat Goals Science Update 2015,* prepared by the San Francisco Bay Area Wetlands Ecosystem Goals Project, California State Coastal Conservancy, 2015 (Goals Project), and the San Francisco Estuary Partnership's *Comprehensive Conservation and Management Plan* (CCMP) (1993; updated 2007 and 2016); both reports encourage the restoration of salt ponds to tidal marsh where feasible.

Restoring tidal wetland functions to former salt ponds will improve water quality in the South San Francisco Bay Estuary on a spatially significant scale with large contiguous habitat to maximize ecotonal or estuarine-terrestrial transitional habitat and minimize non-native vegetation (if appropriate management efforts are taken to control non-native species) (Goals Project). In addition to habitat and water quality benefits, tidal marsh restoration will also help protect communities from floods, storms, and SLR by attenuating wave energy and buffering storm surges. Marsh systems that are tidally-connected to the estuary improve water quality by filtering, fixing, and transforming pollutants. Marsh systems also protect beneficial uses by: providing nursery habitat and protection from predation for native fish species; creating significant biological productivity in estuarine and pelagic waters; and providing habitat for rare and endangered species such as the salt marsh harvest mouse (*Reithrodontomys raviventris*) and the California Ridgway's rail (*Rallus obsoletus*). Successful Project restoration would provide shallow open-water habitat for resident and migrating shorebirds such as Forster's terns, American avocets, Caspian terns, black-necked stilts, and the federally-threatened western snowy plovers, and resident and migratory waterfowl such as mallards, greater and lesser scaup, northern shovelers, pintail, canvasback, and others.

Broadly speaking, tidal salt marshes in San Francisco Bay are currently in dynamic equilibrium with water levels in the Bay. The surfaces of these marshes can keep pace with rising sea levels if the Bay's suspended sediment supply remains relatively high, subsidence rates remain low, and restoration activities begin soon. While suspended sediment concentrations in the South Bay are relatively high, there has been an observed decrease in suspended sediment concentrations estuary-wide, beginning in 1999. At the same time, rates of SLR along the California coast are projected to increase in the future. This purpose of the Project is to help address the uncertainty surrounding the future resiliency of vegetal tidal wetlands in the Estuary and provide the necessary flood protection to support an acceleration of tidal wetland restoration.

The proposed opening of salt ponds to tidal action is expected to restore tidal marsh on a large scale. Larger marshes tend to develop much more extensive networks of tidal channels, which provide habitat for fish and aquatic birds. These tidal channels also allow for the development of more diverse vegetative communities due to accumulation of sediment, and thus higher ground, along larger channels. Such diverse habitat with abundant internal high tide refugia will support much larger and more resilient populations of species such as the State and federally-endangered Ridgway's rail and salt marsh harvest mouse, and these animals are expected to have higher reproductive success and survivorship in larger, more heterogeneous marshes. In addition, having an established marsh in front of the FRM infrastructure will increase the resiliency of the shoreline to SLR.

The restoration will also provide more and higher quality estuarine-upland transitional habitat (ecotone) along the proposed levees in Ponds A12, A13, and A18. This habitat, located where tidal marshes transition into uplands with increasing elevation, provides habitat for a broad range of special-status plant species, increases habitat resiliency by providing space for marshes to retreat inland in the face of SLR and provides refugia for animals such as the California Ridgway's rail and salt marsh harvest mouse when the marsh plain is inundated during very high tides.

Consistent with the above, the tidal marsh restoration and ecotone creation require the conversion of existing managed pond habitat. If undesired impacts are observed during the monitoring and adaptive management period, Phases II and III may be modified by adaptive management recommendations or conversion of pond habitat to tidal marsh may stop. This Order requires any modifications to Phase II and III implementation to be submitted to the Executive Officer for review and approval (see Finding 15 and Provision 1).

17. **Sea Level Rise (SLR)**: Climate change is expected to have dramatic effects on the regional sea level in San Francisco Bay. The National Research Council projects regional SLR in San Francisco Bay to reach 0.92 ± 0.30 feet (range of 0.4 to 2.0 feet) by mid-century (2050) and 3.02 ± 0.83 feet[2] (range of 1.39 to 5.46 feet) by the end of the century (2100) (Goals Report). Under even the most modest projections, rising seas will likely change the existing coastal habitat by flooding lower elevation habitat, such as mudflats and marshes, while occupying higher elevation terrain landward (Goals Report). SLR will also reduce drainage opportunities for tidally-controlled water management infrastructure (e.g., tide gates) by raising the elevation of the lowest tides.

18. **Pond Restoration**: Ponds will be breached in specific locations to facilitate flow of water into and through the ponds, allow the tides to carry sediment into the breached ponds, and allow for the restoration of remnant channels in the pond bottoms. The following ground preparation actions will be involved in converting ponds to tidal marsh:

    - Drain the pond to the extent feasible. Each pond will be drained passively, so it may take several months to dry out; pumping would expedite the process and may be considered. Due to historic pond subsidence, some pond areas cannot be drained completely passively. This step is also dependent on temporal proximity to the western snowy plover nesting season and/or if access to the area can be obtained without impacts to plovers, as dried pond areas may invite snowy plover nesting. This Order identifies potential impacts to wildlife, including special status species such as the snowy plover, and requires the Discharger to implement appropriate protective measures.

    - Construct wetland-upland transitional habitat (described in Findings 10 and 16).

    - Remove vegetation where needed (i.e., around the breach locations) to discourage salt marsh harvest mice from using the impact areas.

    - Excavate pilot channels on the outboard side of the pond dikes.

    - Construct ditch blocks.

    - Breach the outboard dikes.

19. **Ponds A9-A15 Internal Pond Breaching**: Tidal restoration activities in Ponds A9-A15 are similar to those described for Pond A18 in Phase II. However, the internal berms in Ponds A9 to A15 require the reconnection of historical channels and restoration of hydraulic connections to

[2] Projections include one standard deviation (85% confidence interval)

the innermost ponds in the Project footprint. The breaches in Ponds A9 to A15 will be sized in a similar manner to those applied to the outboard dikes and will extend beyond the dike into the remnant historical channels. Existing internal berms may be lowered in some areas during the breach excavation to create wave breaks to limit wave action, enhance sedimentation, and create vegetated marsh habitat on the berm crests in the short term, while the ponds develop from mudflat to vegetated marsh. As Ponds A9-A15 are breached during Phases II and III, berms in adjacent ponds that have not been breached yet will be temporarily raised to provide increased flood protection inboard of the ongoing pond breaching actions. Assuming no slowdown between phases based on the MAMP, the current schedule will see the internal pond dikes breached throughout A19-A15 by the end of 2032.

Impacts and Mitigation

20. **Project's Fill of Waters of the U.S.** The Project area contains approximately 2,916 acres of waters of the U.S., comprised of tidal salt marsh, tidal brackish marsh, muted tidal/diked marsh, tidal freshwater marsh, seasonal wetland, tidal open water, batch pond, managed pond, mud flat, and former salt ponds. In total, approximately 132.2 acres of permanent, fill-based impacts to waters of the U.S. will occur from the Project's construction activities. The permanent fill impacts include the FRM levee construction, ecotone creation, and ditch block placement (see Table 5).

Table 5: Summary of the Permanent Fill-Based Impacts by Project Component.

Feature	Permanent Impacts		
	Area (Acres)	**Length (Feet)**	**Fill (CY)**
FRM Levee and Artesian Slough Bridge	39.53	19,775	326,000
Stockpile Area within Future Ecotone Footprint (Ponds A12, A13, and A18)	41.61	5,980	702,000[3]
Ecotone Creation, Outside of Stockpile Area (A12, A13, and A18)[4]	49.91	5,747	1,232,000
Ditch Blocks	1.15	--	8,000
Total	**132.2**	**19,775**	**2,268,000**

The Project work will also modify waters of the U.S. without permanent placement of fill, including berm excavation, outboard dike breaches and lowering, anticipated habitat conversion

[3] This amount is the maximum volume anticipated by the Discharger. The final volume may be less than what is stated in this Order, depending on available suitable material.

[4] This is the future ecotone area not accounted for within the stockpile footprint. Since the ecotone will run parallel to the FRM levee, the stockpile impact length overlaps with the FRM levee impact length.

from former salt ponds to tidal marsh after tidal action is restored to the ponds, and establishment of a permanent FRM levee maintenance area (see Table 6).

Table 6: Summary of the Project's Non-Fill-Based Impacts, Including Restoration Actions.

	Permanent Non-Fill Impacts		
Feature	**Area (Acres)**	**Length (Linear Feet)**	**Fill (Cubic Yards)**
Phase I: Pond A12 southeastern berm excavation	0.740	19,607	0
Phase I: Pilot Channel	7.8	4,373	-62,920
Phase I: Pond A12 and A18 outboard dike breaches and internal berm lowering	18.5	16,050	-89,105
Phase I: Restoration of tidal action to Ponds A12 and A18	1,120	--	--
Phase II: Ponds A9-A11 outboard dike breaches and internal berm lowering	20.0	--	0
Phase II: Restoration of tidal action to Ponds A9-A11	900	--	--
Phase III: Ponds A13-A15 outboard dike breaches and internal berm lowering	20.0	--	0
Phase III: Restoration of tidal action to Ponds A13-A15	880	--	--
Phases I to III: Permanent FRM Maintenance Easement	5.32	19,451	0
Total	**2,972.36[5]**	**35,657[6]**	**-152,025**

Excavation activity in Pond A12 is necessary to eliminate two 90-degree bends in the levee and results in less FRM levee fill. This excavation work will permanently impact Pond A12 because approximately 0.74 acre of the existing levee will be removed. The inboard and outboard berm breaches during ecosystem restoration construction will cause permanent impacts, but these impacts will facilitate the return of tidal action to the former salt ponds. Additionally, a 5.32-acre area along the landward side of the new levee will be used as a permanent maintenance easement for the FRM levee following Project construction.

[5] This amount includes overlapping areas.
[6] Since the ecotone will run parallel to the FRM levee, the stockpile impact length overlaps with the FRM levee impact length.

21. **Project's Net Loss of Waters of the U.S.** As stated previously, constructing the FRM levee prior to breaching the ponds is necessary to provide adequate flood protection before tidal action is restored to the ponds. In addition, sequenced pond breaching will facilitate tidal restoration by maximizing sediment accretion and hydraulic connectivity at strategic pond locations. The phasing will result in a net loss of waters starting in Phase I due to the lag time between the initiation of construction activities and the eventual return of tidal action to the ponds, ecotone creation, and anticipated tidal marsh restoration. After Phase I is completed, including Ponds A12 and A18 breaching, there will be an approximate 76.96-acre net loss of waters of the U.S., not including SLR mitigation credit. After the 14-year Project is completed, there will be an approximate 8.76-acre net loss of waters of the U.S., with the currently proposed FRM levee alignment, although the currently projected loss could turn into a net gain of waters of the U.S. with an alternative landward alignment along Reaches 4 and 5 (see Att. C) (see Table 7).

Table 7: Summary of the Total Net Loss of Waters of the U.S. by Project Phase.

Created waters of the U.S.		Total Net Loss of waters of the U.S. after creation (acres)[7]
Description	**Area (Acres)**	
Pond A12 southeastern berm excavation	0.740	131.5
Ecotones below high tide line[8]	36.0	95.46
Phase I Pond A12 and A18 outboard dike breaches and berm lowering	18.5	76.96
Phase II Ponds A9-A11 outboard dike breaches and berm lowering	20.0	56.96
Phase III Ponds A13-A15 outboard dike breaches and berm lowering	20.0	36.96
50 years of SLR	28.2	8.76
Total	**123**	**8.76[9]**
Total with landward alignment		**-61.24[10]**

This Order specifies minimum required mitigation the Discharger is required to complete to compensate for Project impacts and deadlines for completing the mitigation (see Finding 22). Due to the need to phase construction activities and the uncertainty in the final levee alignment and associated impacts, final mitigation amounts may be greater or less than the minimum specified herein. To facilitate Project construction, the Order sets forth a process to determine final mitigation requirements as plans for future Project phases are further developed.

[7] The values in this column reflect the running net loss total starting with 132.2 acres of fill-based impacts.
[8] This area is being counted as new created waters because it has not historically existed in this area.
[9] This is the current total net loss estimate. Further investigation during future Project phase development may yield a larger or smaller amount.
[10] This amount reflects approximately 70 acres of vegetation marsh that would be restored within the footprint of the former inactive sludge ponds (see Att. C). The negative shows there would be net gain of waters of the U.S.

If there is a minimal net loss of waters of the U.S. from the final FRM levee alignment, then the tidal restoration and ecotone creation, if fully implemented consistent with the deadlines in this Order, will serve as sufficient compensatory mitigation for the impacts from Project construction activities. If there is a net loss of waters of the U.S. from the final FRM levee alignment that is greater than the amount described above in Table 7, the Order requires the Discharger to update the Project's impact quantities, and propose and implement additional compensatory mitigation as described in the Provisions (see Provisions 17, 35, and 36). Pursuant to an agreement between the Corps, District, and Conservancy, the Coastal Conservancy is responsible for complying for the requirements of Provision 17, regarding preparation and implementation of a Contingency Mitigation and Monitoring Plan.

When the Discharger submits supplemental applications for future Project work, total Project impacts will be taken into account to calculate the impacts to waters of the U.S., including temporary and permanent losses.

22. **Project Mitigation.** The Discharger will mitigate the Project's fill-based impacts by restoration actions that include creating jurisdictional waters of the U.S. and restoring tidal action to existing jurisdictional waters. As detailed in Finding 21 and summarized below, the Project will create approximately 59 acres of new jurisdictional waters from lowering and removing berms, and 36 acres of created ecotone habitat will be immediately below the high tide line, while another 28 acres of created ecotone will become jurisdictional by 2067 from estimated SLR. The anticipated restoration of tidal action to the Project's ponds is expected to provide water quality improvements, habitat for rare and endangered species and resident and migratory shorebirds and waterfowl, more and higher-quality estuarine-upland transitional habitat (ecotone) along the proposed levees in Ponds A12, A13, and A18 than is currently available, protect beneficial uses, and increase shoreline resiliency. In addition, restoring tidal marsh and creating estuarine-upland transitional habitat is consistent with the Goals Report and CCMP.

However, the mitigation requirement may change as designs for the FRM levee alignment east of Artesian Slough are further developed, which may reduce the Project's fill-based impacts. As discussed in Findings 13 to 15, the Discharger is evaluating an alternative FRM levee alignment east of Artesian Slough that would reduce the Project cost and maximize ecosystem restoration opportunities. The other uncertainty in the final mitigation requirement is the ecosystem restoration's degree of success. The anticipated tidal marsh habitat acreage may not be successful if observed sediment accretion rates in the South Bay are significantly less than anticipated rates, or mitigation and monitoring results from the first set of breached ponds do not lead to a recommendation to breach Ponds A9-A15. Since berm lowering and removal in Phases II and III are expected to create jurisdictional features that will reduce the Project's net fill amount to the currently projected 8.76 acres, there is uncertainty associated with future tidal marsh restoration and its sufficiency as mitigation for Project impacts. Therefore, the mitigation for the Project's total impacts will become more certain as the designs for future Phases are further developed and the monitoring results provide more information about the likelihood of success for the restoration activities. To account for the uncertainty in the Project's ecosystem restoration success and FRM levee alignment east of Artesian Slough, the Order sets forth a mechanism to account for, and, as needed, adjust the Project's impacts and compensatory mitigation amounts authorized by this Order (see Provisions 17, 31, 35, and 36).

Mitigation for Fill-Based Impacts and Habitat Conversion: The Project's impacts that cause a net loss of waters of the U.S. will be mitigated by the Discharger as required in this Order and described in the Findings and Provisions. The Project will create new waters of the U.S. and convert the existing ponds to restored tidal marsh and created ecotones in Phases I, II, and III (Att. A, Figures 8 and 9).

The new waters of the U.S. created by the Project will mitigate the Project's permanent fill-based impacts. Removal of the existing berm at the southeast corner of Pond A12 will create approximately 0.74 acre of new open waters that will eventually be restored to tidal marsh. Approximately 18.5 acres of new wetlands will be created from breaching Ponds A12 and A18. The created ecotones will result in approximately 28 acres of new waters of the U.S. based on the high SLR estimates calculated by the Discharger. In addition, pond breaching and berm lowering in Phases II and III will create approximately 40 acres of waters of the U.S. that are expected to become colonized with wetland vegetation. These non-fill-based impacts reduce the Project's overall net loss of waters of the U.S. as described in Findings 20 and 21.

In addition, the Project will restore up to 2,900 acres of tidal marsh by 2032 and create approximately 91.52 acres of ecotone by 2022, if the proposed restoration is successfully implemented. The anticipated tidal marsh and ecotone habitat are regionally scarce, and their restoration and creation, respectively, are recommended in the Habitat Goals report (see Finding 16). The ecotone area will convert approximately 91.52 acres of current salt pond habitat to wetland-upland transitional habitat. The conversion will facilitate a tidal wetlands restoration that mimics historical San Francisco Bay landforms. The net benefit is an increase in tidal marsh habitat and its associated beneficial uses and functions and a corresponding decrease in salt ponds. This habitat conversion is consistent with the Regional Water Board's Basin Plan Wetland Fill Policy and California Wetlands Conservation Policy (see Findings 32 and 33). However, the habitat conversion's success and consistency with these policies is contingent upon the completion of all three Project phases, including the Project's ecosystem restoration components. The remaining temporal loss of waters of the U.S. from fill-based impacts will be mitigated by the anticipated 1,120 acres of converted habitat (i.e., tidal marsh and ecotone) in Ponds A12 and A18 at the end of Phase I (see Table 8).

Table 8: Summary of Restored Tidal Marsh and Ecotone Creation by Project Phase.

Phase	Maximum Anticipated Tidal Marsh Habitat Restored (Acres)[11]	Ecotone Created (Acres)	Anticipated Construction (Year)
I	1,120[12]	91.52[13]	2022
II	900	0	2027
III	880	0	2032
Total	**2,900**	**91.52**	**--**

Mitigation for Non-Fill-Based Impacts: The Project's non-fill-based impacts will be mitigated by the corresponding conversion of pond habitat to restored tidal marsh and created ecotone, similar to the mitigation for the remaining fill-based temporal impacts (see above). The restored tidal marsh and created ecotones will mitigate the Project's non-fill based impacts because the habitat's expected quality and associated benefits are sufficient to offset non-fill based impacts that may result from loss of managed pond habitat and any temporal loss of functions and values that will occur from the time fill-based impacts occur to when the restoration is implemented and becomes fully established. Similar to the fill-based impact mitigation, the non-fill-based mitigation in each phase is associated with and contingent upon completion of the respective Project phase, including the proposed tidal and wetland restoration (i.e., Phase I pond conversion impacts are mitigated by the anticipated tidal and wetland restoration in the Phase I ponds, and similarly, impacts associated with the restoration in Phases II and III are mitigated by the restoration in Phases II and III).

II. Reaches 1 to 3.

The following sections discuss three of the five FRM levee reaches. The FRM levee alignment along Reaches 1 to 3 is generally acceptable, and additional design plans and documentation will be submitted to the Regional Water Board for approval prior to the initiation of construction (see Finding 15). In addition to the FRM levee alignment along Reaches 1 to 3, the stockpiling locations in Ponds A12, A13, and A18 are generally acceptable. Conceptual drawings for the FRM levee alignment along Reaches 1 to 3 and the stockpiling areas have been submitted to the Regional Water Board (Att. A).

23. **Reaches 1 to 3 Project Site.** Reach 1 is located in the southwestern corner of the Project site. Reach 2 continues at the end of Reach 1 where the levee reaches the southern portion of Pond A13 and turns east. Reach 3 continues east until Alviso Slough. Reaches 1 to 3 make up the Alviso FRM levee segment.

[11] These amounts are for the converted habitat onsite, not created jurisdictional waters. Mitigation credit for this conversion is only being given for the temporal loss of waters of the U.S. and functions and values of existing beneficial uses that result from the Project's fill-based impacts.

[12] Under the FRM levee landward alignment for Reaches 4 and 5, this amount would be increased by a maximum of 70 acres to approximately 1,190 acres, which would bring the total anticipated tidal marsh restoration amount to 2,970 acres.

[13] Approximately 55.52 acres of the created ecotone will initially be above the high tide line after construction. After 50 years of SLR, about 27.32 acres will be above the high tide line. The ecotone above the high tide line will enhance beneficial uses associated with tidal marshes by providing high tide refugia for special-status species.

24. **Reaches 1 to 3 Construction Activities.** This Order authorizes levee construction, including excavation, dewatering, and fill placement, and the creation of ecotones in Ponds A12, A13, and A18, including the use of the ecotones' footprints in these ponds as staging/stockpiling areas.

Levee Construction: Levee construction timing and duration are constrained by weather conditions and listed species construction windows. The FRM levee will be constructed along approximately 9,345 linear feet of Reaches 1 to 3 (see Table 9).

Table 9: Summary of Reaches 1 to 3 Impacts Related to FRM Levee Construction.

Phase	Reach	Length (Linear Feet)	Description	Construction Event	Anticipated Construction (Year)
I	1	4,250	Alviso Marina to UPRR (Pond A13)	First	2018
	2	2,120	UPRR to Artesian Slough (Pond A16 & New Chicago Marsh)	Second	2019
	3	2,975			
Total		**9,345**		**--**	**--**

The design elevation for the new levee is 15.2 feet NAVD after settlement. The earthen levee will increase the existing dike's height by approximately 10 feet (after settlement) and double the existing width. Upland fill material, or dredge material, will be used to construct the FRM levee and will originate from locations outside the Project area. Any dredge material used onsite will meet established screening criteria. Where the levee crosses the active UPRR line between Ponds A13 and A16, railroad floodgates will be installed. Concrete barriers will be installed on either side of the railroad right-of-way and tied into the earthen levees. Metal floodgates will be connected to the barriers and remain open during normal conditions and closed during flood conditions.

Ecotone Creation and Staging Area/Fill Stockpiling in Ponds A12, A13, and A18: The staging area and stockpiling area for fill material will be located in the future ecotone footprints in Ponds A12, A13, and A18. The fill used to construct the FRM levee will be imported from local sources and delivered by truck to the staging area. The water level in Pond A12 will be temporarily lowered during one construction season to dewater the stockpile footprint. Existing dike roads will be used as ingress and egress truck routes for the stockpiling areas. Any additional stockpile locations will be proposed in future permit applications.

The ecotones in Ponds A12 and A13 will be constructed after the adjacent FRM levee along Reaches 1 and 2 are completed. Under the current construction timeline, the ecotones in Ponds A12 and A13 will be constructed during Phase I's second and third construction event. The

future ecotone in Pond A18 will not be created until the adjacent FRM levee along Reaches 4 and 5 is completed during the fourth construction event.

Dewatering: It is anticipated that the work area will need to be temporarily dewatered to construct the levee. If dewatering is necessary, dredge-locks or cofferdams may be constructed using earth levees or sheet piling. When possible, amphibious excavators, vibratory pile drivers, and other less-impactful equipment will be used.

Excavation: The existing dikes will be excavated below the mudline to meet FEMA levee standards. The excavator will place excavated dike and other fill material on both sides of the future Reach 1 alignment to create temporary dikes for dewatering the entire Reach 1 levee footprint. The excavator will proceed along the top of the dike for the entire length of Reach 1.

III. Maintenance and Management

25. **Replace and Realign Selected Utilities Infrastructure.** The only known utility crossing near the Reach 1 FRM levee alignment was identified as a storm drain. The storm drain is owned and operated by the City of San Jose. The storm drain's depth, diameter, and material are currently unknown. Prior to construction, the storm drain's location and condition will be identified. The storm drain will be protected in place during construction.

26. **Operation and Maintenance Plan.** The Discharger will prepare an Operation, Maintenance, Repair, Replacement, and Rehabilitation (O&M) Plan to describe ongoing activities that will be implemented along the entire FRM levee and ecotones. The District will be responsible for implementing the O&M Plan for the FRM levee after the levee construction is complete. The O&M Plan will include FRM levee O&M activities that will be performed in order to meet the Corps' levee safety program standards and FEMA certification requirements. The following O&M activities will be performed on the FRM levees:

- Trash and anthropogenic debris removal along levee slopes and where it is causing obstruction in culverts or other problems
- Repairs on levees due to damage by small burrowing mammals, runoff/erosion, storm activities, or other factors
- Repairs along concrete flood wall structures (if included in the plan) and other features, such as bridges and culverts
- Levee inspections
- Graffiti removal
- Access improvements and upkeep
- Vector monitoring (presence of mosquitos and their larvae)
- Vegetation management—the levee design will include vegetation to control erosion on the bayward and landward side slopes, but some mowing will be needed on the levee side slopes

within 12 to 15 feet of the levee crown. In addition, within a narrow 15-foot or less strip of ecotone fill along the edge of the exposed levee crest, vegetation will be managed on the ecotone in a similar manner as on the FRM levee. The following vegetation management activities will be performed by the Discharger on the FRM levee and ecotones:

a) Regular mowing of the levee side slopes. Regular mowing will be performed annually. Mowing will proceed from the top, close to the crown, where habitat is of lowest quality, downward toward high-quality habitat so that wildlife that may be using the mowed area are encouraged to move downslope from the noise and movement of the mower.

b) No woody plant species greater than two inches in diameter will be allowed to become established on the levees, to prevent roots from damaging the structural integrity of the levee and prevent mature woody plants from serving as raptor perches. Any woody vegetation that germinates in the higher-elevation mowing zone will be managed by mowing. Below the mowing zone, any wood plant removal that becomes necessary will be performed by hand; such hand-removal is expected to be necessary about once every few years.

27. **Monitoring and Adaptive Management Plan (MAMP).** The *South San Francisco Bay Shoreline Study, Monitoring and Adaptive Management Plan for Ecosystem Restoration* (Corps, September 2015) (MAMP) provides a feasibility-level monitoring and adaptive management plan for the Project. The MAMP identifies potential monitoring activities, outlines generally how results from the monitoring will be used to assess Project success, provides estimated costs, and recommends adaptive management actions, if such actions are necessary to achieve the desired ecosystem restoration objectives. The MAMP also specifies the parties responsible for monitoring and adaptive management activities. The MAMP is presented in four steps that capture the iterative adaptive management process:

    1) Adaptive management planning;
    2) Monitoring;
    3) Regular assessments; and
    4) Decision-making.

The adaptive management process outlined in the MAMP incorporates all four of these steps to arrive at a decision that increases the likelihood of achieving the desired habitat restoration success given Project uncertainties. The iterative process that will be used in adaptive management is shown graphically in the MAMP (Att. C, Figure 2). The MAMP used the SBSPRP's Adaptive Management Plan conceptual ecological model that provided a linkage between Project actions and expected system response.

Adaptive Management Planning: The MAMP lists the Project objectives, known constraints and considerations, and identifies related uncertainties in future conditions. The Project uses the SBSPRP tidal habitat conceptual model, which is directly relevant to the Project's desired habitat type and ecosystem restoration objectives.

Monitoring: The purposes of monitoring are to assess progress towards Project objectives, detect early signs of potential problems, and reduce uncertainties. The following primary monitoring topics were developed to address the Project's key uncertainties that were identified in the

MAMP: 1) Sediment dynamics; 2) Bird use of changing habitats; 3) Non-avian species; 4) Invasive and nuisance species; and 5) Ecotones. For each key uncertainty, restoration targets (success criteria) were also developed to identify the desirable outcome. Monitoring metrics were then defined to measure each restoration target. A complete list and description of the monitoring topics, targets, and metrics associated with ecosystem restoration objectives are shown in Appendix B, Table 2. In addition, each monitoring metric is detailed in terms of monitoring methods, locations, frequency, and duration in order to develop a cost estimate, as shown in Appendix B, Table 3. The MAMP acknowledges that the monitoring method summaries were intended to provide reasonable cost estimates but do not fully describe the monitoring regime. Consistent with MAMP Sections 3.1 and 3.3, this Order requires the Discharger to develop a monitoring plan with detailed triggers, metrics, methods, protocols, timing, and responsible parties prior to the start of monitoring (see Provision 35). This Order also requires the Discharger to monitor and adaptively manage the ponds that are restored to tidal action to ensure the Project's ecosystem restoration component is successful and mitigates the Project's permanent impacts to waters of the U.S. and to submit reports to the Executive Officer for approval.

To guide long-term management of the ponds, this Order requires that the Discharger continue to implement and report on applied studies. These studies will focus on the sources of uncertainty associated with ecosystem restoration, flood risk management, and public access that were identified in the MAMP (Att. B, Section 2.4). These sources of uncertainty were previously identified so that monitoring could be targeted to reduce these uncertainties and guide future actions, including adaptive management. This Order requires the Discharger to submit monitoring reports to the Executive Officer for the following monitoring topics and categories identified in the MAMP.

Regular assessments will be used to compare the results of the monitoring efforts to the desired Project performance targets to the corresponding management trigger. Each management trigger is a threshold that indicates, when reached, that the Project may be diverging from a restoration target. The triggers are intended to act as a warning signal before significant impacts to the system occur. This advance notice will provide the time needed to investigate the causes of the divergence and take action, as necessary, to put the system back on track. The management triggers and restoration targets will be reviewed and updated regularly as additional information becomes available during the monitoring period.

The MAMP outlines the assessment process, acceptable variances between monitoring results and targets, the frequency and timing for comparison of monitoring results to the selected targets, and assessment documentation. If the regular assessments indicate the ecosystem restoration system is not performing well, as defined by the restoration targets, then the corresponding management trigger may lead to adaptive management action. This Order requires revisions to the regular assessments and management triggers to be submitted to and approved by the Executive Officer.

Adaptive management actions will be implemented when the ecosystem restoration areas are not progressing towards the restoration targets and a management trigger has been reached. The first action will typically be to assess available monitoring data and consult with external and internal experts to inform subsequent management actions. Potential management actions are

categorized in the MAMP as the following: 1) as-needed assessments; 2) construction (adjustments to the design); and 3) changes to operations and maintenance. Changes to the restoration phasing (adaptive implementation) are also a potential outcome, but those actions are not included as cost-shared activities; and 4) additional data and analysis. This Order requires any adaptive management actions to be clearly detailed and presented with relevant supporting documentation, including monitoring data, restoration targets, management triggers, and a detailed description of the proposed actions, to the Executive Officer for review and acceptance prior to implementation (see Provisions 1 and 35).

28. **Construction General Permit.** The Discharger is required to seek coverage under and comply with, or oversee that its contractors seek coverage and comply with, the statewide General Permit for Discharges of Storm Water Associated with Construction Activities (Order No. DWQ-2009-0009, as amended, and as may subsequently be reissued) (Construction General Permit).

29. **Monitoring and Technical Reports.** All monitoring and technical reports required in this Order are required pursuant to CWC section 13267. The burden of preparing these reports, including costs, bears a reasonable relationship to the benefits to be obtained from the reports and monitoring. Specifically, the monitoring and technical reports will demonstrate protection of beneficial uses during construction and maintenance projects and verify the success of efforts to mitigate impacts. The technical reports will be used in combination with the MAMP to inform future actions and opportunities to maximize tidal restoration acreage and likelihood of restoration success.

IV. Other Findings

Laws, Regulations, and Policies

30. **California Environmental Quality Act (CEQA).** CEQA requires all discretionary projects approved by public agencies to be in full compliance with CEQA and requires a lead agency to prepare an appropriate environmental document for such projects. The District, as the lead agency, certified a combined Interim Feasibility Study and Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) (Joint EIS/EIR) (HDR, July 2015) for the Project on March 22, 2016.

    The Joint EIS/EIR found several potential impacts that are under the Regional Water Board's purview and jurisdiction. These include potential impacts to: (1) geology and soils; (2) hydrology and water quality; (3) aquatic biological resources; (4) terrestrial biological resources; and (5) hazardous materials. The Joint EIS/EIR also found that significant impacts identified therein, including FRM levee O&M activities and ecosystem restoration monitoring and adaptive management, would be reduced to less than significant levels by implementing the mitigation measures, with the exception of the Project's pond conversion impact. When the District certified the Joint EIS/EIR, it identified the Project's pond conversion as a significant unmitigated impact. Significant impacts that were identified in the Joint EIS/EIR include the following:

    - HYD-01: Alter existing drainage patters in a manner that would result in scour that could cause substantial erosion or siltation.

- WAT-01: Result in a violation of any water quality standard or WDRs.

- TBR-2: Have an effect on candidate, sensitive, or special-status species.

- HAZ-1: Create a significant hazard to the public or environment through transport, use, or disposal of hazardous materials or though reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

- HAZ-3: Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment.

The Regional Water Board, as a responsible agency under CEQA, has considered the Joint EIS/EIR and finds that, in combination with the requirements of this Order, impacts during the construction, post-FRM levee construction O&M activities, and post-pond breaching monitoring and adaptive management actions of the Project, including any potential FRM levee alignment changes along Reaches 4 and 5 that are landward of the currently proposed alignment, that are within the Regional Water Board's purview and jurisdiction have been identified and will be mitigated to less-than-significant levels. This Order includes conditions and mitigation measures that will substantially lessen the Project's impacts on the environment. The need to provide compensatory mitigation for impacts from the Project design is addressed in this Order.

31. **Water Quality Control Plans.** The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) was duly adopted by the Regional Water Board and approved by the State Water Resources Control Board (State Water Board), U.S. EPA, and the Office of Administrative Law where required. The Basin Plan is the Regional Water Board's master water quality control planning document. It designates beneficial uses of receiving waters, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed by the Plan.

Existing and potential beneficial uses of waters within the Project area include the following:

- **Alviso Slough:** Estuarine Habitat (EST), Fish Migration (MIGR), Preservation of Rare and Endangered Species (RARE), Water Contact Recreation (REC-1), Noncontact Water Recreation (REC-2), and Wildlife Habitat (WILD);

- **Artesian Slough:** EST, RARE, REC-1, REC-2, and WILD;

- **San Francisco Bay:** Section 2.2.1 of the Basin Plan indicates that the beneficial uses of any specifically identified water body generally apply to its tributary streams. Because the former salt ponds are hydrologically connected to San Francisco Bay, the beneficial uses that are identified for San Francisco Bay also apply to the former salt ponds. These beneficial uses are: Commercial and Sport Fishing (COMM), EST, Industrial Service Supply (IND), MIGR, Navigation (NAV), RARE, REC-1, REC-2, Shellfish Harvesting (SHELL), Fish Spawning (SPWN), and WILD; and

- **Tidal Wetlands:** COMM, EST, MIGR, RARE, REC-1, REC-2, SPWN, and WILD.

32. **Basin Plan Wetland Fill Policy.** The Basin Plan Wetland Fill Policy (Fill Policy) establishes that there is to be no net loss of wetland acreage and value, and a long-term net gain, when a project and any proposed mitigation are evaluated together, and that mitigation for wetland fill projects is to be located in the same area of the region, whenever possible, as the project. The Fill Policy further establishes that wetland disturbance should be avoided whenever possible and, if not possible, should be minimized and only after avoidance and minimization of impacts should mitigation for lost wetlands be considered. The Regional Water Board incorporated U.S. EPA's Section 404(b)(1) Guidelines into the Basin Plan for determining the circumstances under which dredging or filling of wetlands, streams, or other waters of the U.S. may be authorized. The Regional Water Board must ensure that all projects meet State water quality standards, including, but not limited to, water quality objectives, existing and potential beneficial uses, and the State's Anti-degradation Policy. Requirements of this Order implement the Fill Policy.

33. **California Wetlands Conservation Policy.** Requirements of this Order implement the California Wetlands Conservation Policy. The goals of the California Wetlands Conservation Policy (Executive Order W-59-93, signed August 23, 1993) include ensuring "no overall net loss" and achieving a "…long-term net gain in the quantity, quality, and permanence of wetland acreage and values… ."

    Senate Concurrent Resolution No. 28 states that "[i]t is the intent of the legislature to preserve, protect, restore, and enhance California's wetlands and the multiple resources which depend on them for benefit of the people of the State." Section 13142.5 of the CWC requires that the "highest priority shall be given to improving or eliminating discharges that adversely affect…wetlands, estuaries, and other biologically sensitive areas."

    The Regional Water Board applies the California Wetlands Conservation Policy to waters that have the potential to be restored or converted to tidal marsh and related tidal marsh refugia in part because 79 percent of tidal marsh (150,000 acres) and 42 percent of tidal flats (21,000 acres) in San Francisco Bay were lost to diking and filling between 1800 and 1998 (Goals Project).[14]

34. **California Anti-Degradation Policy.** In the Basin Plan, the Anti-Degradation Policy (State Water Board Resolution No. 68-16: Statement of Policy with Respect to Maintaining High Quality of Waters in California) is applied to cases where water quality is better than that prescribed by the Basin Plan's water quality objectives. This policy is aimed at protecting relatively uncontaminated aquatic systems where they exist and preventing further degradation. The State's Anti-Degradation Policy is consistent with the federal Anti-degradation Policy. This Order complies with the federal and State anti-degradation policies because it will enhance the water quality of waters in the Project area by creating tidal marshes (see Finding 16) and ensures protection of existing water quality by requiring compliance with Basin Plan water quality objectives.

[14] The amount of tidal marsh and tidal flats lost between 1900 and 1998 are from the Goals Report.

35. **Endangered Species Acts.** This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). The Discharger is responsible for meeting all requirements of the applicable Endangered Species Acts. As applicable, the Discharger shall utilize the appropriate protocols, as approved by USFWS and stated in the USFWS Coordination Act Report and required in this Order, to ensure that Project activities do not adversely impact water quality or the beneficial uses of Alviso Slough, Artesian Slough, and other waters of the U.S. as referenced in Finding 32.

36. **Special-Status Species.** The Discharger requested formal consultation with USFWS, pursuant to section 7 of the federal Endangered Species Act (ESA), regarding the Project's impacts to the federally-endangered California clapper rail (Rallus longirostris obsoletus), the endangered salt marsh harvest mouse (Reithrodontomys raviventris), the threatened Pacific coast population of the western snowy plover (Charadrius alexandrines nivosus), and the endangered California least tern (Sternula antillarum brown). USFWS responded to the Discharger's consultation request in the Biological Opinion on the South San Francisco Bay Shoreline Phase 1 Study in Santa Clara County, California (BO), dated April 27, 2015. The BO included Conservation Measures, Reasonable and Prudent Measures, Terms and Conditions, and an Incidental Take Statement that the Corps, Coastal Conservancy, District, and City will comply with during Project construction and adaptive management activities.

    The Discharger requested written concurrence from the National Marine Fisheries Service (NMFS), pursuant to section 7 of the ESA, regarding the Project's impacts to the federally-threatened Central California Coast steelhead (*Oncorhynchus mykiss*) and North American Green Sturgeon southern Distinct Population Segment (*Acipenser* medirostris) and their critical habitat. NMFS responded to the Discharger's consultation request in the *Endangered Species Act Section 7(a)(2) Concurrence Letter and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the South San Francisco Bay Shoreline Phase I Study,* dated May 19, 2015. In its response to the Discharger's concurrence request, NMFS agreed with the Discharger's assessment that the Project is not likely to adversely affect ESA-listed fish and designed critical habitat. Part of NMFS' finding is based on the proposed measures to protect listed fish and the aquatic environment.

Public Noticing, Records, and Fees

37. **Notification of Interested Parties.** In accordance with CWC sections 13263(a) and 13241, the Regional Water Board, after considering this matter at a public hearing, has prescribed requirements as to the nature of the proposed discharge. These requirements implement the Regional Water Board's relevant water quality control plans and policies and take into consideration the beneficial uses to be protected, the water quality objectives reasonably required for that purpose, other waste discharges, and the need to prevent nuisance. The Regional Water Board has notified interested parties of its intent to issue WDRs and water quality certification for this discharge.

38. **Public Review.** Upon receipt of future applications for additional Project construction activities, including additional Phase I, II, and III activities, a public notice will be provided for a 30-day

period. The public notice of the applications will be posted on the Regional Water Board's website: http://www.waterboards.ca.gov/sanfranciscobay/public_notices/

39. **Consideration of Public Comment.** The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Additional public meetings to hear and consider all comments pertaining to future discharges may be scheduled when supplemental applications for future discharges are received by the Regional Water Board (see Finding 15).

40. **Records Management.** This Project file is maintained at the Regional Water Board under CIWQS Place No. 813084 and Regulatory Measure No. 413855.

41. **Fees for Dredge and Fill Projects.** The fee amount for this Order shall be in accordance with the current fee schedule, per 23 CCR, Division 3, Chapter 9, Article 1, section 2200(a)(3). The Regional Water Board understands, based on information from the Corps and the Non-Federal Sponsors, that the Non-Federal Sponsors are responsible for the fee.

42. **Waste Discharge Requirements (WDRs).** Pursuant to 23 CCR sections 3857 and 3859, the Regional Water Board is issuing WDRs and water quality certification for the activities proposed in this Order. Pursuant to CWC section 13263 and 23 CCR section 3857, the Regional Water Board is issuing WDRs to regulate the proposed discharge of excavation, dredge, and fill into waters of the U.S. The Regional Water Board considers WDRs necessary to adequately address impacts and mitigation to beneficial uses of waters of the U.S. from the Project, to meet the objectives of the California Wetlands Conservation Policy (Executive Order W-59-93), and to accommodate and require appropriate changes over the life of the Project, including during its construction and in subsequent phases.

43. **Water Quality Certification.** Any discharge from the Project consistent with the Corps' application and as conditioned in this Order will comply with the applicable provisions of CWA sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards) and with other applicable requirements of State law. The Project will result in discharge of dredge and fill materials into waters of the U.S. and of the State. The CWA (33 U.S.C. §§ 1251-1387) was enacted "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." (33 U.S.C. § 1251(a).) Section 401 of the CWA (33 U.S.C. §1341) requires every applicant for a federal license or permit that may result in a discharge into navigable waters to provide the licensing or permitting federal agency with certification that the Project will be in compliance with specified provisions of the CWA, including water quality standards and implementation plans promulgated pursuant to CWA section 303 (33 U.S.C. § 1313). CWA section 401 directs the agency responsible for certification to prescribe effluent limitations and other limitations necessary to ensure compliance with the CWA and with any other appropriate requirement of state law. CWA section 401 further provides that state certification conditions shall become conditions of any federal license or permit for the Project.

IT IS HEREBY ORDERED that, pursuant to the provisions of CWA 401 and Division 7 of the CWC, related regulations, and guidelines adopted thereunder, the Discharger, its agents, successors, and assigns shall comply with the following:

A. **Discharge Prohibitions.**

1. The discharge of wastes, including debris, rubbish, refuse, or other solid wastes into surface waters or at any place where they would contact or where they would be eventually transported to surface waters, including floodplains, is prohibited.

2. The discharge of floating oil or other floating materials from any activity in quantities sufficient to cause deleterious bottom deposits, turbidity, or discoloration in surface waters is prohibited.

3. The discharge of silt, sand, clay, or other earthen materials from any activity in quantities sufficient to cause deleterious bottom deposits, turbidity, or discoloration in surface waters is prohibited, except as otherwise described herein.

4. The fill activities subject to these requirements shall not cause a nuisance as defined in CWC section 13050(m).

5. The groundwater in the vicinity of the Project shall not be degraded as a result of the Project activities or placement of fill for the Project.

6. The discharge of materials, which are not otherwise regulated by a separate NPDES permit or allowed by this Order, to waters of the U.S. is prohibited.

7. This Order prohibits any dewatering, diversion, or discharge before the Executive Officer accepts, in writing (including via electronic mail), a Dewatering Plan that meets the requirements of this Order.

8. This Order prohibits the alignment of any utilities, or maintenance of existing utility lines in the Project area, in a manner that will create an obstacle to flow or destabilize the ponds or adjacent creeks.

9. Equipment shall only be operated within the footprint documented in the work zone described herein and as approved by the Executive Officer. No fueling, cleaning, or maintenance of vehicles or equipment shall take place within any areas where an accidental discharge to waters of the U.S. may occur, except as described in the SPCP (see Provision 11).

B. **Provisions.**

1. The Discharger shall comply with all Prohibitions and requirements of this Order immediately upon adoption of this Order or as otherwise provided below. The Discharger shall fully implement all requirements of this Order, including all plans accepted by the Regional Water Board or the Executive Officer. Any significant alterations to the Project, as defined in Finding 15, shall be submitted to the Executive Officer, or this Regional Water Board, for review and approval prior to their implementation. If the Regional Water Board does not accept a significant alteration to the Project prior to its implementation, the Discharger will be considered in violation of this Order and may be subject to Regional Water Board enforcement actions.

2. All plans and reports required under this Order shall be submitted and acceptable to the Executive Officer.

3. The Project shall be constructed in conformance with the description herein, the Project application materials, and the 100 percent Design Plans that shall be submitted prior to the initiation of Project construction.

4. All work performed within waters of the U.S. shall be completed in a manner that minimizes impacts to beneficial uses and habitat. Measures shall be employed to minimize disturbances that will adversely impact the water quality of waters of the U.S.

5. Disturbance or removal of vegetation shall not exceed the minimum necessary to complete Project implementation. The Project site shall be stabilized through incorporation of appropriate BMPs, including the successful establishment of native grass vegetation, to compensate for impacts to wildlife habitat values and to prevent and control erosion and sedimentation. The Discharger shall revegetate Reach 1 based on the 100 percent Design Plans and Planting Plan.

6. The discharge shall not cause a violation of any water quality standard for receiving waters adopted by the Regional Water Board or State Water Board as required by the CWA and regulations adopted thereunder. If more stringent water quality standards are promulgated or approved pursuant to CWA section 303, or amendments thereto, the Regional Water Board may revise or modify this Order in accordance with the more stringent standards. Pond dewatering discharges, accumulated groundwater or stormwater removed during dewatering of excavations, and diverted pond and stormwater flows shall not be discharged to waters of the U.S. without meeting the receiving water objectives in the Basin Plan.

7. **Construction General Permit**. The Discharger shall seek coverage under and comply with, or ensure that its contractors seek coverage and comply with, the statewide General Permit for Discharges of Storm Water Associated with Construction Activities (Order No. DWQ-2009-0009, as amended by Order Nos. 2010-0014-DWQ and 2012- 006-DWQ), and as may be subsequently amended or reissued. All work performed within waters of the U.S. shall be completed in a manner that minimizes impacts to water quality and the beneficial uses of Alviso Slough, Artesian Slough, tidal wetlands, and other waters of the U.S.

8. **Receiving Water Limitations.** Dewatering discharges, accumulated groundwater or stormwater removed during dewatering of excavations, and diverted creek and stormwater flows shall not be discharged to waters of the U.S. without meeting the following discharge and receiving water limitations. All monitoring records at the Project site shall be maintained at a location to be designated in the Dewatering Plan and shall be made available upon request by Regional Water Board staff.

    a. pH - the instantaneous discharge pH shall be in the range of 6.5 to 8.5, and controllable water quality factors shall not cause changes greater than 0.5 units in receiving water pH levels.

b. Discharge Dissolved Oxygen - the discharge dissolved oxygen concentration shall be no less than 5.0 milligrams per liter (mg/L).

c. Discharge Dissolved Sulfide - the discharge-dissolved sulfide shall not be greater than 0.1 mg/L.

d. Receiving Water Turbidity - the discharge turbidity shall not be greater than 10 percent more than receiving water turbidity, measured as nephelometric turbidity units (NTU), in areas where natural turbidity is greater than 50 NTU (daily average). In areas where natural turbidity is less than or equal to 50 NTU, the discharge shall not cause an increase in receiving water turbidity of greater than 5 NTU (daily average). All Project discharge plans shall identify an acceptable location or locations at which to measure background turbidity. The Discharger shall monitor receiving water and discharge turbidity at least one time every 8 hours on days when discharges from excavations or any other dewatering processes may occur.

e. Receiving Water Temperature - the receiving water shall not be increased by more than 5°F (2.8°C) above natural receiving water temperature.

f. Nutrients - the receiving waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.

9. **Dewatering Plan**. The Discharger shall prepare a Dewatering Plan acceptable to the Executive Officer. The plan shall be submitted to the Executive Officer at least 30 days prior to each Project phase in which dewatering is proposed or may be needed. The plan shall include the area to be dewatered, timing of dewatering, and method of dewatering to be implemented. All temporary dewatering methods shall be designed to have the minimum necessary impacts to waters of the U.S. to isolate the immediate work area. All dewatering methods shall be installed such that natural flow is maintained outside the Project area. Any temporary dams or diversions shall be installed such that the diversion does not cause sedimentation, siltation, or erosion within or upstream or downstream of the Project area. All dewatering methods shall be removed immediately upon completion of Project activities. The Discharger shall implement, or ensure that its contractor implements, the Dewatering Plan and the discharge requirements throughout the Project site.

10. **Groundwater Management Plan**. The Discharger shall prepare a Groundwater Management Plan (GMP) acceptable to the Executive Officer. The GMP shall be submitted to the Executive Officer no later than 90 days prior to start of any construction event in which groundwater dewatering is planned or needed. In construction areas that have a likelihood of encountering groundwater that may be contaminated, the GMP shall meet the standards of the Regional Water Board's VOC and Fuel General NPDES Permit.

11. **Spill Prevention and Containment Plan**. The Discharger shall prepare a Spill Prevention and Containment Plan (SPCP) acceptable to the Executive Officer. The SPCP shall be submitted to the Executive Officer no later than 90 days prior to start of any construction event in which construction equipment is planned or needed. The plan shall describe the preventative spill

measures that shall be implemented, including equipment leak prevention, and what actions shall be taken in the event of a spill. In the event of a containment spill, the Discharger shall take appropriate steps, including immediately halting the construction work, containing and mitigating the spill, and immediately notifying appropriate authorities, including Regional Water Board staff. Containers for storage, transportation, and disposal of containment absorbent materials shall be provided onsite.

12. **Directional Drilling Plan**. If directional drilling is necessary at the Project site, the Discharger shall prepare a Directional Drilling Plan acceptable to the Executive Officer. The plan shall be submitted to the Executive Officer at least 30 days prior to each Project phase in which directional drilling is proposed or may be needed. The Directional Drilling Plan shall contain boring plans that include the following items: a sketch of the approximate locations of drill entry and exit points; the proposed depth of bore and a statement of waterbody conditions that supports the proposed depth of the bore; approximate length of the proposed bores; type and size of boring equipment to be used; estimated time to complete the bore; list of lubricants and muds to be used; name(s) of contractor and cell phone numbers of the construction supervisor(s)and monitor(s); name(s) of the environmental and biological monitor(s); site-specific monitoring conditions; monitoring protocols; and a containment and cleanup plan. The drill mud pressure and volume shall be monitored at all times during drilling to ensure that hydrofracture or other loss of drill muds has not occurred. In the event of a sudden loss in pressure or volume, the Discharger shall take appropriate steps, including immediately halting the drilling operation, to ensure that drilling muds are not discharged to waters of the U.S. All drilling muds, slurries, oils, oil-contaminated water, and other waste materials removed from the bore hole or otherwise used during the Project shall be disposed of at a permitted landfill, other appropriately permitted site, or at an upland site approved in advance by the Board's Executive Officer.

13. **Quality Assurance Project Plan (QAPP and Fill Quality Report)**. The Discharger shall prepare and implement a Quality Assurance Project Plan (QAPP) acceptable to the Executive Officer. The QAPP shall provide procedures and screening guidelines to reuse imported soil at the Project area. Existing guidance for the beneficial reuse of sediments establishes numeric screening guidelines for the placement of sediments in direct contact with water or the burial of sediments beneath a cover layer. The QAPP shall be submitted to the Executive Officer for review and approval not later than 90 days before Phase I construction is initiated.

    The Discharger shall characterize the quality of all fill material proposed for use as fill prior to placement at the Project area. The Discharger shall not import contaminated soil for use at the Project area nor reuse any contaminated soil excavated within the Project area that does not meet acceptance screening level criteria for its intended reuse (see below). Soil to be transported offsite shall be for non-hazardous or hazardous landfill disposal, as appropriate.

    Not later than 60 days prior to placing any imported or excavated soil fill material at the Project area, including all placement of fill in the ecotones' footprints, on levees, and at any other location where the fill is a discharge to or has the potential to discharge to any waters of the U.S. in the Project area, the Discharger shall submit a technical report acceptable to the Executive Officer. The technical report shall demonstrate that the chemical concentrations in

the imported or excavation soil fill comply with the protocols specified in the following documents that are appropriate to each source of material:

- *Upland Soil*: If upland soil from upland borrow sites is imported for use in future Project areas, the following conditions shall apply and be subject to Executive Officer approval: (i) Imported soil from upland borrow sites must be determined suitable based on the procedures and screening guidelines contained in a QAPP approved by the Executive Officer; and (ii) if the materials are proposed for levee construction, a report characterizing the material's suitability for levee construction shall be submitted at least 30 days prior to material placement in the stockpile areas.

- *Riverine Material*: The Regional Water Board May 2000 staff report *Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines*, or the most current revised version. Regional Water Board staff shall review and approve data characterizing the quality of all material proposed for use as fill prior to placement of fill at any of the levee, marsh, or channel areas at the Project site. Modifications to these procedures may be approved by the Executive Officer on a case-by-case basis, pending the Discharger's ability to demonstrate that the imported fill material is unlikely to adversely impact beneficial uses. Soil originating from non-Bay locations shall modify the toxicity tests set forth in the Guidelines for Implementing the Inland Testing Manual in the San Francisco Bay Region (DMMO Reuse Guidance) so that the measured toxicity is representative of the conditions that will be present in the areas where sediment reuse is proposed. Any proposed modifications to toxicity tests set forth in the DMMO Reuse Guidance shall be submitted to the Executive Officer for review and acceptance prior to implementation.

- *Dredged Material*: If dredged sediment is imported for use in future Project areas, the following conditions shall apply and be subject to Executive Officer approval: (i) Regional Water Board staff shall review and approve data characterizing the quality of all dredged material (Bay sediments) proposed for use as fill prior to placement at any Project area. Sediment characterization shall follow the protocols specified in the DMMO Reuse Guidance, including case-by-case modifications approved by the Executive Officer (see above); (ii) if the material is proposed for levee maintenance, a levee inspection report shall be submitted at least 30 days prior to dredge material placement; and (iii) if applicable, a work plan and schedule for making any repairs or improvements shall also be submitted prior to dredge material placement.

- *Inactive Legacy Biosolids*: If legacy biosolids from the RWF legacy ponds (where placement in ponds dates from 1962-1974) are used for the ecotone construction or stockpiling within the ecotone footprint, the following conditions shall apply and be subject to Executive Officer approval: (i) biosolids used in the ecotones shall not be exposed; (ii) biosolids used in the ecotones shall be covered with a minimum of 3 feet of suitable cover material and engineered to ensure burial; (iii) biosolids to be reused in ecotone construction shall meet or be below the "foundation material" screening levels for contaminants (e.g., metals, TPH, VOCs, SVOCS, PCBs) in the DMMO Reuse Guidance and be at or below leachability for non-landfill conditions; and (iv) any biosolids not reused in the ecotones or that do not meet screening levels shall be

consolidated and capped within the existing inactive RWF pond area, subject to the Regional Water Board action now covered by this Order.

14. **Maintenance**. Construction activities necessary for the on-going maintenance of existing levees and infrastructure may include the following activities: trash and anthropogenic debris removal; repairs on levees due to damage by small burrowing mammals, runoff/erosion, storm activities, or other factors; levee inspections; graffiti removal; access improvements and upkeep; vector monitoring (presence of mosquitos and their larvae); or vegetation management.

Mitigation and Monitoring Requirements

15. **Pond and Ecotone Monitoring**. The ponds and ecotones shall be monitored for a minimum 10-year period following each pond-breaching event, as specified in the MAMP, to ensure they are performing as anticipated, and to allow for adaptive management if necessary.

16. **Annual Monitoring Reports**. The Discharger shall prepare annual letter reports (both electronic and hard copy) acceptable to the Executive Officer. The annual reports shall be submitted to the Regional Water Board by January 31 each year over the 10-year monitoring period that follows each pond-breaching event. The reports shall document the ponds' progress towards achieving full tidal marsh restoration and meeting wetland mitigation progress towards achieving the final success criteria specified in MAMP, as revised. The report shall address any signs of insufficient hydrology, poor survival or growth of vegetation, and excessive erosion or deposition of sediment in and around the wetland and ecotone areas. If the annual report indicates the final success criteria in MAMP may not be achieved, the Discharger shall submit a Corrective Action Plan to the Regional Water Board. If an annual report indicates the recommended corrective action may be to discontinue pond breaching and future Phases, then the Discharger shall revise the CMMP to mitigate the Project's unmitigated permanent fill impacts to waters of the U.S. and submit the revised CMMP to the Executive Officer for review and acceptance;

17. **Contingency Mitigation and Monitoring Plan (CMMP)**. The Coastal Conservancy shall prepare and implement a Contingency Mitigation and Monitoring Plan (CMMP) acceptable to the Executive Officer. The CMMP shall be submitted not later than January 31, 2020 (the year that construction along Reaches 4 and 5 is anticipated). If the Project is delayed and construction along Reaches 4 and 5 has not begun by 2021, the CMMP shall be submitted in the same year that construction along Reaches 4 and 5 is rescheduled to occur. The CMMP shall provide for a minimum mitigation amount sufficient to demonstrate consistency with the Basin Plan Wetland Fill Policy and the California Wetlands Conservation Policy (Findings 32 and 33). This shall include an analysis of issues such as ensuring no net loss of area and function, including temporal loss, of waters of the U.S. resulting from the Project. Updates to the CMMP shall be submitted if all or a portion of the Project's ecosystem restoration components is not implemented. Any updates to the CMMP shall be submitted to the Executive Officer no later January 31 in each year that changes to the Project described in the Order are proposed. If the Project's impacts described herein are reduced or increased, a description of the impacts and the difference in acreage from the quantities described herein shall be submitted to the Executive Officer. If the updated impacts reflect a net loss of zero

acres of jurisdictional waters, then the CMMP shall consist of the Project described herein. Otherwise, the CMMP shall include the following:

a. An analysis of the Project's consistency with the Basin Plan Wetland Fill Policy and the California Wetlands Conservation Policy, as described above, and including a description of any changes to Project components or impacts as compared to the Project description in this Order.

b. Consistent with the analysis, a mitigation proposal, workplan, monitoring plan, performance standards, and other information, as appropriate, sufficient to provide appropriate mitigation of permanent and temporal losses of functions and values of waters of the U.S. resulting from Project implementation.

   At a minimum, the CMMP shall propose additional mitigation to address delays of greater than five years between the timing of impacts and construction of restoration from the schedules listed in the Findings in implementation of the Project's tidal restoration.

   The Regional Water Board may require a lesser or greater amount of area than the currently anticipated net loss of waters of the U.S. based on changes in the factors listed in Findings 21 and 22, such that the size and scope of the mitigation project shall be appropriate for the Project's impacts.

c. The mitigation proposal, work plan, monitoring plan, and performance standards shall contain, but are not necessarily limited to, the following:

   i. Annual performance criteria and final success (metrics) that may be used to assess establishment of the mitigation area's vegetation and hydrology. Annual performance criteria may include, but are not limited to, the following: percent cover, maximum percent cover for non-native species, percent survival of plants, and target plant heights. Final success criteria are used to assess the mitigation project's success at the end of a monitoring period. Additional metrics may also be considered;

   ii. A summary of maintenance activities, including irrigation, weeding, and replanting of dead or missing vegetation; a schedule for implementing maintenance activities; the plant palette selected for replanting, including pounds per acre of seeds, numbers and sizes of container plants, and sources of all plant material; and

   iii. Contingency measures to be implemented in the event that annual performance criteria or final success criteria are not attained or mitigation wetlands do not attain jurisdictional status at the end of the initial monitoring period.

The CMMP shall incorporate the reporting requirements in Provisions 15, 16, 18, and 19 to 29.

18. **Log of Impacts**. The Discharger shall maintain an Impacts Log to track Project activities including the start dates of impacts to waters of the U.S. and the associated mitigation activities. The Discharger shall make the Impacts Log available for review by Regional Water

Board staff upon request. The Impacts Log shall include, but not be limited to, the start dates of the following Project milestones:

a. Excavation and grading;

b. Pond dewatering;

c. Groundwater management;

d. Completion of each Project component as described in Findings 10 to 12; and

e. Hydroseeding.

Reporting Requirements

19. **Reports**. All reports pursuant to these Provisions shall be prepared under the supervision of suitable professionals registered in the State of California.

20. **Water Quality Monitoring**. The Discharger shall report any water quality monitoring data that are not in compliance with this Order to the Regional Water Board within 24 hours via telephone and shall follow up with a written report within 14 days. The written report shall provide the following:

    a. Discharge and receiving water measurements for the water quality parameter(s) collected during the non-compliance event;

    b. The location, duration, and likely cause of the non-compliance event;

    c. All actions taken to remedy non-compliance immediately after identifying the non-compliance event and to mitigate for any adverse impacts caused or contributed to by the non-compliance event; and

    d. All actions taken to prevent a similar non-compliance event in the future.

21. **Technical Advisory Committee (TAC)**. A TAC shall be organized and convened through a public process by the Discharger and shall, at a minimum, invite representatives from the Regional Water Board, the Bay Conservation and Development Commission, Coastal Conservancy, Corps, USFWS, and NMFS. The purpose of the TAC shall be to assess progress of the Project's ecosystem restoration by reviewing monitoring data and to suggest adaptive management strategies. Results of the data analysis shall be presented to the TAC at least biennially, for discussion and comment.

22. **California EcoAtlas**. The Discharger shall use the standard California Wetlands Form to provide Project information describing impacts and restoration measures not later than 14 days from the date of completion of Project construction activities. An electronic copy of the form can be downloaded from: http://www.waterboards.ca.gov/sanfranciscobay/certs.shtml. The completed form shall be submitted electronically to habitatdata@waterboards.ca.gov or shall be submitted as a hard copy to both (1) the Regional Water Board, to the attention of

EcoAtlas, and (2) the San Francisco Estuary Institute, 4911 Central Avenue, Richmond, CA 94804, to the attention of EcoAtlas.

Project: Future Phase I activities and Phases II and III

23. **Photo-Documentation Report**. To document levee and Pond conditions immediately at the Project site, the Discharger shall establish a minimum of four photo-documentation points at the Phase I Reach I location, eight photo-documentation points at locations for future Phase I construction events that include ecotone creation, and eight photo-documentation points at locations for each Project construction event for which berms are lowered and tidal action is restored, including the last Phase I construction event. These photo-documentation points should be selected to depict the pre- and immediate post-Project conditions where impacts to waters of the U.S. occur, including the FRM levee, Ponds A9 to A15, ecotone areas, stockpiling areas, and the adjacent areas. The Discharger shall prepare site maps with the photo-documentation points clearly marked. Prior to implementing each phase, the Discharger shall photographically document the condition of each site. These photo-documentation points shall be clearly marked and identified on a map that shall be included in the as-built reports.

24. **As-Built Plans**. The Discharger shall prepare an as-built report acceptable to the Executive Officer. The as-built report shall be submitted to the Executive Officer not later than 180 days after each Project phase, or construction event, is completed. The report shall describe the areas of actual disturbance during Project construction. The report shall clearly identify and illustrate the Project site and the locations of permanent and temporary impacts. Any deviations from the submitted 100 percent design plans, including impact quantities, shall be depicted in the as-built report. These deviations shall be displayed with reference to the 100 percent design drawings, and any installed structures or alterations to waters of the State shall be shown as the actual elevations in the as-built report. If the as-built report indicates that impacts were greater than those authorized in this Order, the Executive Officer may require enforcement and additional action by the Discharger, including but not limited to compensatory mitigation. The as-built report shall be submitted in both digital format and hard copy of at least 11-inches by 17-inches to the Regional Water Board. The as-built report shall be submitted either by electronic mail to staff or by uploading it to the Regional Water Board's FTP internet site. Instructions for uploading documents to the FTP internet site are available at http://www.waterboards.ca.gov/sanfranciscobay/publications_forms/documents/FTP_Discharger_Guide-12-2010.pdf. If the as-built report is submitted by uploading it to the FTP internet site, the Discharger shall notify the Regional Water Board case manager via electronic mail. For purposes of this Order, the definition for construction completion shall be the final date when construction contractors (excluding contractors for revegetation activities) are in the Project site.

25. **Notice of Mitigation Completion**. When the Discharger has determined that a mitigation area achieved the performance standards and final success criteria specified in the MAMP, a notice of mitigation completion shall be submitted to the Executive Officer. After acceptance of the notice of mitigation completion in writing by the Executive Officer, the Discharger's submittal of mitigation monitoring reports for that mitigation component is no longer required.

26. **Project Completion Report**. The Discharger shall notify the Regional Water Board by electronic mail or by hard copy of Project completion upon transfer of the Project, including the FRM levee and ecosystem restoration components, to the Non-Federal Sponsors. This notification, known as a Project Completion Report, shall consist of the following information: (a) the CIWQS Place ID for this Project (i.e., CWIQS Place ID 813084); (b) the date Project construction activities were completed; and (c) the completion date of mitigation plantings. Project construction activities for the purpose of this condition are defined as activities associated with construction of the Project, establishing native grass vegetation on the banks, and any plug plantings as per the Planting Plan. The Project Completion Report shall be submitted to Tahsa Sturgis at tahsa.sturgis@waterboards.ca.gov, Christina Toms at christina.toms@waterboards.ca.gov, and Brian Wines at brian.wines@waterboards.ca.gov or the current Regional Water Board staff members assigned to the Project.

Reach 1

27. **Reach 1 100 Percent Design**. The Discharger shall prepare 100 percent design plans for Phase I, Reach 1 acceptable to the Executive Officer. The 100 percent design plans for Phase I, Reach 1 shall be submitted to the Executive Officer for review and acceptance not later than 90 days prior to construction of Phase I, Reach 1. The plans shall describe the areas of anticipated disturbance during Project construction. The plans shall clearly identify and illustrate the Project site and the locations of permanent and temporary impacts. Any deviations from the submitted 90 percent design plans, including impact quantities, shall be depicted.

28. **Reach 1 Completion Report**. The Discharger shall notify the Regional Water Board by electronic mail or by hard copy when construction of Reach I is completed. This notification, known as the Reach I Completion Report, shall consist of the following information: (a) the CIWQS Place ID for this Project (i.e., CWIQS Place ID 813084); and (b) the date Project construction activities were completed. Project construction activities for the purpose of this provision are defined as activities associated with construction of Reach I. The Reach I Completion Report shall be submitted to Tahsa Sturgis at tahsa.sturgis@waterboards.ca.gov, Christina Toms at christina.toms@waterboards.ca.gov, and Brian Wines at brian.wines@waterboards.ca.gov or the current Regional Water Board staff members assigned to the Project.

29. **Final Operations and Maintenance Manual**. The Discharger shall prepare a workplan for the Project's Operation, Maintenance, Repair, Replacement, and Rehabilitation (O&M) Plan acceptable to the Executive Officer. The workplan shall be submitted to the Executive Officer for review and acceptance prior to the beginning of development of the O&M Plan. The workplan shall include collaborative review of a draft O&M Plan by a workgroup including the TAC members listed above. The Discharger shall submit the final O&M Plan to the Executive Officer for review and acceptance upon transfer of the Project to the local non-federal sponsor.

Deliverables for Future Project Phases

30. **Annual Status Updates**. The Discharger shall prepare and submit a status update report to the Executive Officer not later than January 31 of each year until the Project is completed. Once

monitoring activities begin, the status update report shall be submitted with the annual reports (see Provision 16). Each report shall describe the Project's progress, the status of each Project component, the status or anticipated change to Project funding for each component, and all other information, as appropriate.

31. **Project component 30 Percent Designs**. The Discharger shall prepare 30 percent design plans for subsequent Project work, including future Phase I construction activities, acceptable to the Executive Officer. The 30 percent design plans shall be submitted to the Executive Officer for review and acceptance not later than 12 months prior to the anticipated construction initiation date.

32. **Project component 60 Percent Designs**. The Discharger shall prepare 60 percent design plans for subsequent Project work, including future Phase I construction activities, acceptable to the Executive Officer. The 60 percent design plans shall be submitted to the Executive Officer for review and acceptance not later than 8 months prior to the anticipated construction initiation date. At a minimum, the 60 percent design plans shall include all components that were deemed acceptable in the Phase I, Reach I 60 percent design submittal.

33. **Project component 90 Percent Designs**. The Discharger shall prepare 90 percent design plans for subsequent Project work, including future Phase I construction activities, acceptable to the Executive Officer. The 90 percent design plans shall be submitted to the Executive Officer for review and acceptance not later than 6 months prior to the anticipated construction initiation date. The plans shall describe the areas of anticipated disturbance during Project construction. The plans shall clearly identify and illustrate the Project site and the locations of permanent and temporary impacts.

34. **Project component 100 Percent Designs**. The Discharger shall prepare 100 percent design plans for subsequent Project work, including future Phase I construction activities, acceptable to the Executive Officer. The 100 percent design plans shall be submitted to the Executive Officer for review and acceptance not later than December 15 in the year prior to the anticipated construction initiation date. The plans shall describe the areas of anticipated disturbance during Project construction. The plans shall clearly identify and illustrate the Project site and the locations of permanent and temporary impacts.

35. **Mechanism for approval of subsequent Project work.** The Discharger shall prepare supplemental applications for subsequent Project work, including the remaining Phase I construction events, Phase II, and Phase III, acceptable to the Executive Officer. The supplemental applications shall be submitted to the Executive Officer for review and acceptance not later than 12 months prior to the anticipated construction initiation date. The supplemental application shall consist of the following:

    - A complete CWA section 401 Water Quality Certification Application and Report of Waste Discharge.
    - A revised CMMP that reflects the current net loss of waters of the U.S. and corresponding compensatory mitigation options.
    - Engineering design plans (see Provisions 31 to 34).

- A supplemental analysis that demonstrates the impacts have been reduced to the maximum extent practicable and ecosystem restoration has been optimized (see Provision 36).
- Prior to Phase I's second construction event, an Ecotone and Pond Monitoring Plan (EPMP) shall be submitted, along with the supplemental application, to the Executive Officer for review and acceptance. The EPMP document shall contain information that details how the Project's ecosystem restoration will be monitored, including monitoring targets, metrics, and methods, to ensure there is not a loss in existing functions, values, or habitat. The supplemental document may contain and reference the MAMP but shall also provide additional information, including monitoring activities for mitigation identified in this Order for the Project's fill impacts (see Findings 20 to 22) and an ecotone module. This additional information regarding monitoring is consistent with the anticipated development specified in MAMP Sections 3.1 and 3.3. The EPMP may be submitted with, and coordinated with, the South Bay Salt Pond Phase 2 Project ecotone addendum monitoring plan. The following are the minimum requirements for additional information that shall be included in the supplemental document:

  i. A complete pond and ecotone module that provides detailed methods, protocols, timing, performance and final success criteria, and Non-Federal Sponsors' roles for all pond and ecotone monitoring activities, including baseline monitoring, that will be implemented after each pond breach occurs. Since the pond monitoring in Phases II and III will reflect lessons learned from monitoring previously breached ponds, the pond and ecotone module shall undergo future revisions. All future revisions to the monitoring plan shall be submitted to the Executive Officer for review and acceptance by January 31 in the year that pond breaches or adaptive management actions are proposed.

  ii. Clearly defined monitoring roles and responsibilities for the Non-Federal Sponsors, including updated monitoring cost estimates and contributions by the Non-Federal Sponsors during each pond's monitoring period.

  iii. Consistent with Section 3.1 and 3.3 of the MAMP, a summary of the updated MAMP methods, triggers, and actions. The summary shall provide a technical justification for each trigger and action. The summary shall be updated as needed prior to each future pond-breaching event. Updated summaries shall be submitted to the Executive Officer by January 31 in the year that pond breaches or adaptive management actions are proposed. Updated MAMP methods, triggers, and actions shall address:

     - The timing and duration of pressure transducer deployment to monitor water levels in the ponds
     - The locations of transects or Surface Elevation Tables to monitor sedimentation rates in ponds
     - Methods for monitoring suspended sediment concentrations within tidal source waters and restoring ponds

- Additional detail re: the timing of aerial photography flights and the types of products that will be collected (e.g., natural color, infrared, normalized vegetation difference index)

- Methods for assessing the acreage and geographic distribution of high tide refugia within and along the ponds

- Methods, triggers, and actions for addressing the percent cover and species richness of native plants on FRM levee side slopes, ecotone side slopes, restored marsh areas, and lowered pond levees, as well as for minimizing the establishment and spread of invasive species[15] throughout the site. Please note that the Regional Water Board typically requires corrective action when invasive species make up 20% of the relative cover or 5% of the absolute cover in a given area.

iv. The Regional Water Board is a lead agency in the development and implementation of a San Francisco Bay Regional Wetland Monitoring Program (Wetlands RMP), a proposed coordinated and comprehensive long-term monitoring program with the goal of monitoring bayland wetlands to ensure their on-going management, restoration, and protection. Development and implementation of a Wetlands RMP is also called for the in the CCMP, also called the Estuary Blueprint. It is expected that the Discharger may choose to comply with any requirement of this Provision through a collaborative effort (i.e., Wetlands RMP) to conduct or cause to be conducted the required monitoring.

v. A mechanism to verify that SLR is occurring at the rate assumed in the application materials.

- Appropriate CEQA documentation for any impacts not previously considered in the Joint EIS/EIR.

36. **Impact Reduction and Environmental Benefit Optimization**. The Discharger shall prepare supplemental analysis for subsequent Project work acceptable to the Executive Officer. The supplemental analysis shall be submitted to the Executive Officer not later than 12 months prior to the anticipated initiation date for that activity. When the Regional Water Board reviews project alternatives to determine the least environmentally damaging practicable alternative (LEDPA), all State water quality standards must be met. Supplemental analysis shall demonstrate that impacts to waters of the U.S. have been reduced to the maximum extent practicable and the Project's environmental benefit has been optimized. The supplemental analysis shall be submitted to the Executive Officer for review and approval with the corresponding supplemental application (see Finding 35). If the Executive Officer finds that the supplemental analysis may cause a significant alteration to the Project, as defined in Finding 15, then the supplemental analysis may be presented before the Regional Water Board for review and approval prior to implementation. Each supplemental analysis shall contain relevant technical documents that demonstrate each phase results in the optimized alignment that reduces impacts and increases restoration acreage.

[15] Invasive species include those listed by the California Invasive Plant Council at http://www.cal-ipc.org/ip/inventory/

The following are technical documents that shall be included in the supplemental analysis, as appropriate:

- Comparison of how alternate FRM levee alignments along Reaches 4 and 5, east of Artesian Slough, including the alignment proposed by the Regional Water Board (see Att. C), would affect long-term water management, water quality, and habitat functions/values of the City and landfill mitigation marshes, given projected SLR and the need for these marshes to continue to provide suitable habitat for State and federally-listed tidal wetland species (Att. C, Figures 1 and 3);

- Comparison of projected short-term (0 to 10 years post-breach) and long-term (10+ years post-breach) establishment of vegetated tidal marsh plain bayward of the FRM levee under alternate levee alignments east of Artesian Slough;

- Profiles for Artesian Slough and Coyote Creek option;

- Cross-sections representing existing and future conditions by reach;

- Soil suitability reports for the landward levee alignment east of Artesian Slough;

- Demonstration of land acquisition for alternative levee alignments; and

- Demonstration that the Artesian Slough crossing design will not affect mixing rates and dilution for the RWF's discharges.

37. **Public Notice**. The Regional Water Board will public notice supplemental applications. If public commenters request a public hearing, or if there are other issues meriting a hearing before the Regional Water Board, the Board will consider approval of the supplemental application at its regular meeting. In the absence of a request or other issues, the Executive Officer may approve the supplemental application administratively.

Other Requirements

38. The Discharger shall immediately notify the Regional Water Board by telephone whenever an adverse condition occurs as a result of this discharge. Such a condition includes, but is not limited to, a violation of the provisions of this Order, a significant spill of petroleum products or toxic chemicals, or damage to control facilities that would cause noncompliance. A written notification of the adverse condition shall be submitted to the Regional Water Board within two weeks of occurrence. The written notification shall identify the adverse condition, describe the actions necessary to remedy the condition, and specify a timetable, subject to the modifications of the Executive Officer, for the remedial actions.

39. The Discharger shall notify the Regional Water Board, in writing or via electronic mail, at least 30 days prior to actual start dates for each Project component (i.e., prior to the start of grading or other construction activity for any Project component, including the compensatory mitigation components).

40. The Discharger shall at all times fully comply with the prohibitions, specifications, mitigation and monitoring requirements, engineering plans, specifications, and technical reports

submitted with the Corps' application and the plans and reports required by this Order (e.g., Provisions 7 to 13, 16 to 18, 19, 20, and 22 to 36), which, together, serve as the basis for the Project description this Order covers.

41. The Discharger shall be responsible for work conducted by its consultants, contractors, and subcontractors on the Project.

42. The Discharger is considered to have full responsibility for correcting any and all problems that arise in the event of a failure that results in an unauthorized release of waste or wastewater. The discharge of any hazardous, designated, or non-hazardous waste as defined in Title 23, Division 3, Chapter 15 of the California Administrative Code, shall be disposed of in accordance with applicable State and federal regulations.

43. The Discharger shall remove and relocate any wastes that are discharged at any sites in violation of this Order.

44. The Discharger shall maintain a copy of this Order at the Project site at all times during construction of the Project and be made available to Regional Water Board staff upon request. All foremen and other employees responsible for overseeing that construction of the Project complies with permitting requirements shall have access to and be familiar with the Order requirements.

45. The Discharger shall permit the Regional Water Board or its authorized representatives at all times, upon presentation of credentials:

    a. Entry onto Project premises, including all areas on which fill of wetlands or other waters will occur or on which fill is located or mitigation is occurring or in which records are kept.

    b. Access to copy any records required to be kept under the terms and provisions of this Order.

    c. Inspection of any treatment equipment, monitoring equipment, or monitoring method required by this Order.

    d. Sampling of any discharge or surface water covered by this Order.

46. This Order does not authorize commission of any act causing injury to the property of another or of the public; does not convey any property rights; does not remove liability under federal, State, or local laws, regulations or rules of other programs and agencies; nor does this Order authorize the discharge of wastes without appropriate permits from other agencies or organizations.

47. The Discharger shall timely pay all fees associated with this Order. The fee amount for this Order shall be in accordance with the current fee schedule, per California Code of Regulations, Division 3, Chapter 9, Article 1, section 2200(a)(3). The fee payment shall indicate the Order

number, the CIWQS Place ID no. 813084, the Regulatory Measure ID no. 413855, and the applicable season.

48. This Order is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to CWC section 13330 and 23 CCR section 3867.

49. The Regional Water Board may add to or modify the conditions of this Order, as appropriate, to implement any new or revised water quality standards and implementation plans adopted and approved pursuant to the CWC or CWA section 303 or in response to new information concerning the conditions of the Project. Additionally, the Regional Water Board reserves the right to suspend, cancel, or modify and reissue this Order, after providing notice to the Discharger, if the Regional Water Board determines that the Project fails to comply with any of the conditions of this Order, or when necessary to implement any new or revised water quality standards and implementation plans adopted or approved pursuant to the CWC or CWA section 303 (33 U.S.C. § 1313).

50. This Order is not intended and shall not be construed to apply to any discharge from any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent Project materials for the Order were filed pursuant to 23 CCR subsection 3855(b) and those Project materials specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.

51. The Regional Water Board may consider rescission of this Order upon Project completion and the Executive Officer's acceptance of notices of completion of mitigation for all mitigation, creation, and enhancement projects required or otherwise permitted now or subsequently under this Order.

I, Bruce H. Wolfe, Executive Officer, do hereby certify that the foregoing is a full, complete and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region on December 13, 2017.

_____
Bruce H. Wolfe
Executive Officer

Attachments

Attachment A:	Project Figures
Attachment B:	Monitoring and Adaptive Management Plan (MAMP)
Attachment C:	Landward Levee Alignment East of Artesian Slough Memo
Attachment D:	Phase I, Reach I 60 Percent Design Plans

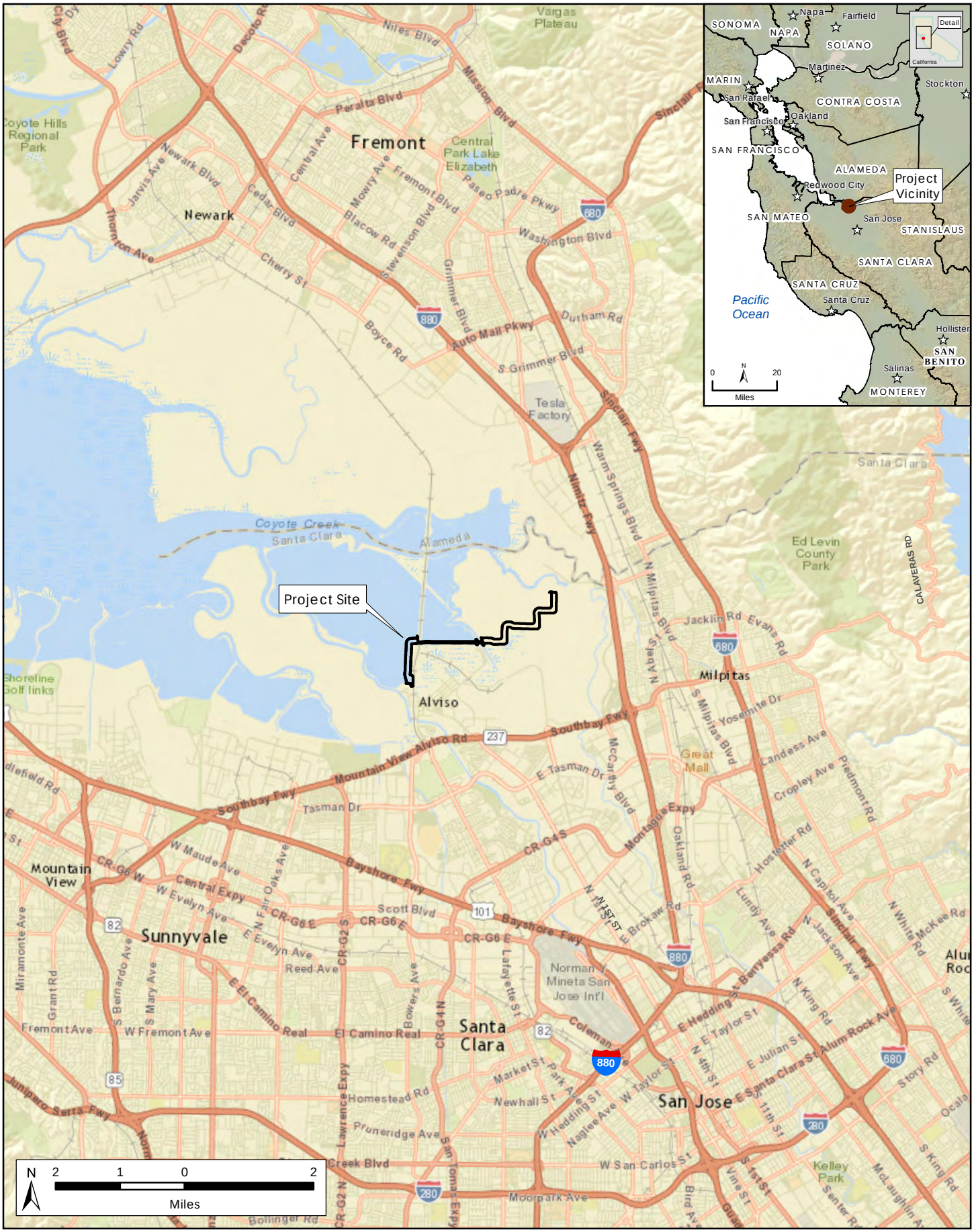
Attachment A:
Project Maps

Project Maps are from the
401 Water Quality Certification Application
Materials received from June 16, 2017,
through September 2017

South San Francisco Bay
Shoreline Project

City of San Jose
Santa Clara County

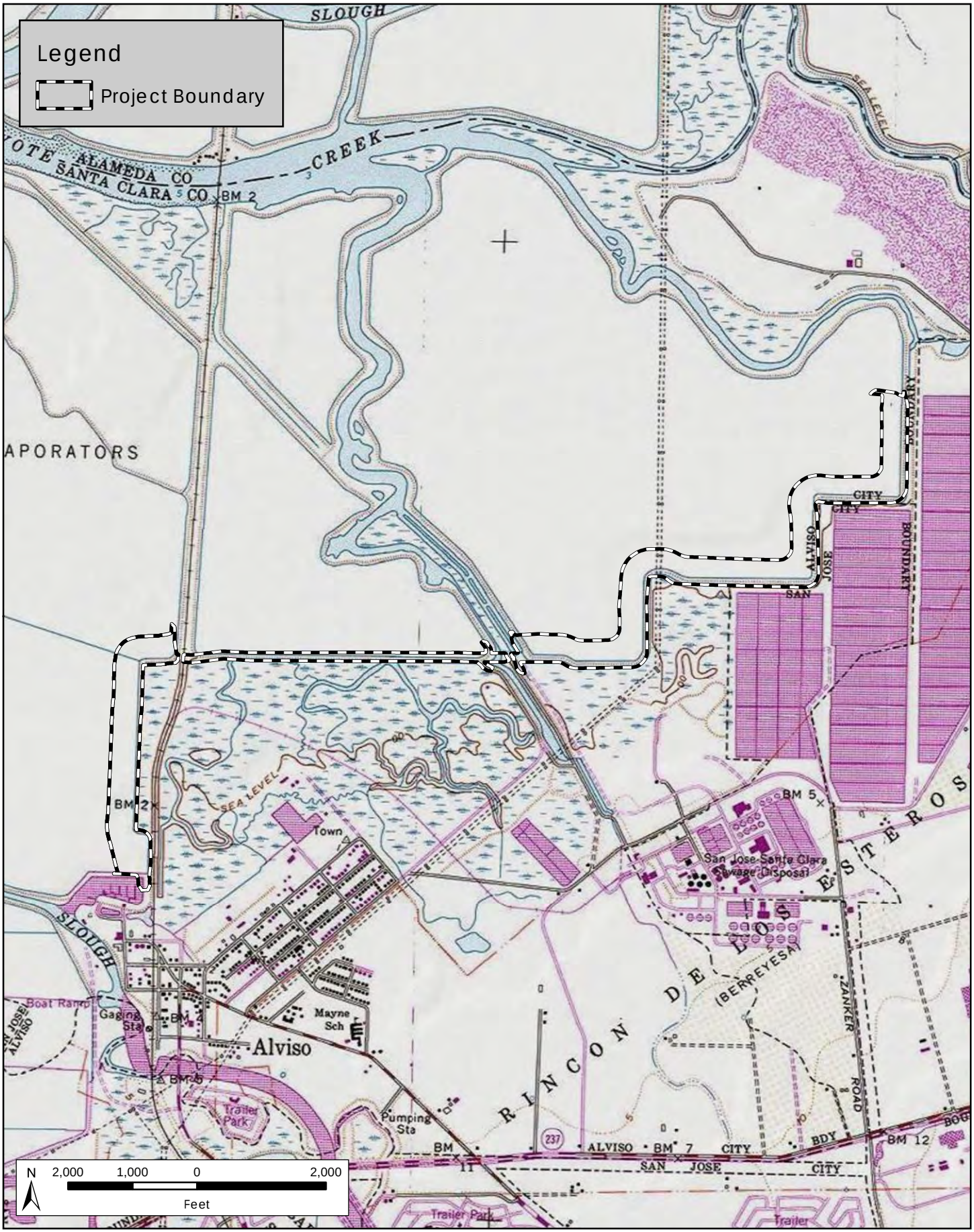
December 2017



N:\Projects\2606-01 Shoreline Study\03\Reports\USACE Shoreline Project\Fig 1 Vicinity Map.mxd mlagarde

H. T. HARVEY & ASSOCIATES
Ecological Consultants

Figure 1. Vicinity Map
USACE Shoreline Project - Section 401 Permit Application (2606-03)
June 2017



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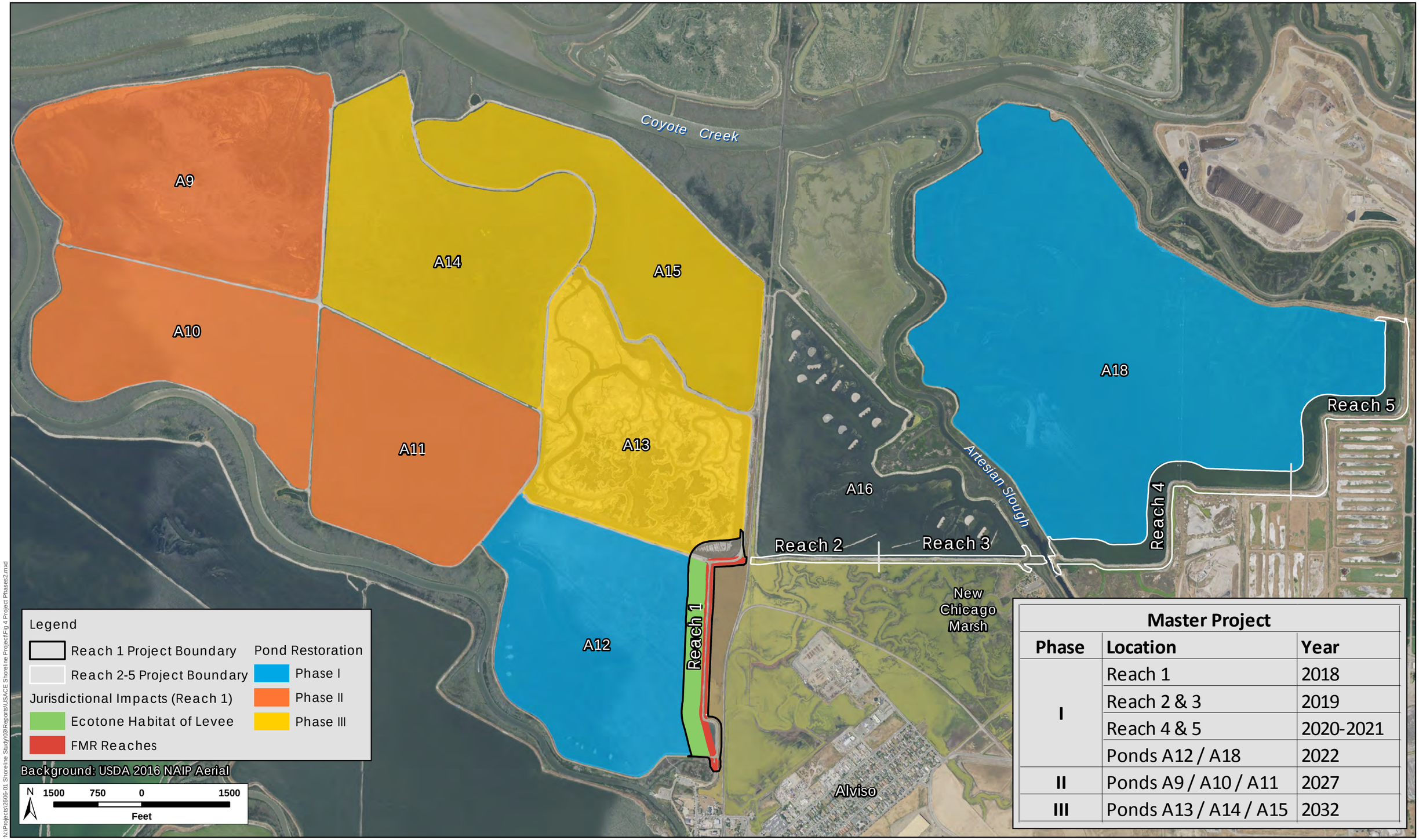
H. T. HARVEY & ASSOCIATES
Ecological Consultants

Figure 2. USGS Topographic Map
USACE Shoreline Project - Section 401 Permit Application (2606-03)
June 2017

N:\Projects\2606-01 Shoreline Study\03\Reports\USACE Shoreline Project\Fig 3 Project Site and Aerial Photograph.mxd mlagarde

H. T. HARVEY & ASSOCIATES
Ecological Consultants

Figure 3. Project Site and Aerial Photograph
USACE Shoreline Project - Section 401 Permit Application (2606-03)
June 2017



Master Project

Phase	Location	Year
I	Reach 1	2018
	Reach 2 & 3	2019
	Reach 4 & 5	2020-2021
	Ponds A12 / A18	2022
II	Ponds A9 / A10 / A11	2027
III	Ponds A13 / A14 / A15	2032

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H. T. HARVEY & ASSOCIATES
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Figure 4. Project Phases
USACE Shoreline Project - Section 401 Permit Application (2606-03)
June 2017

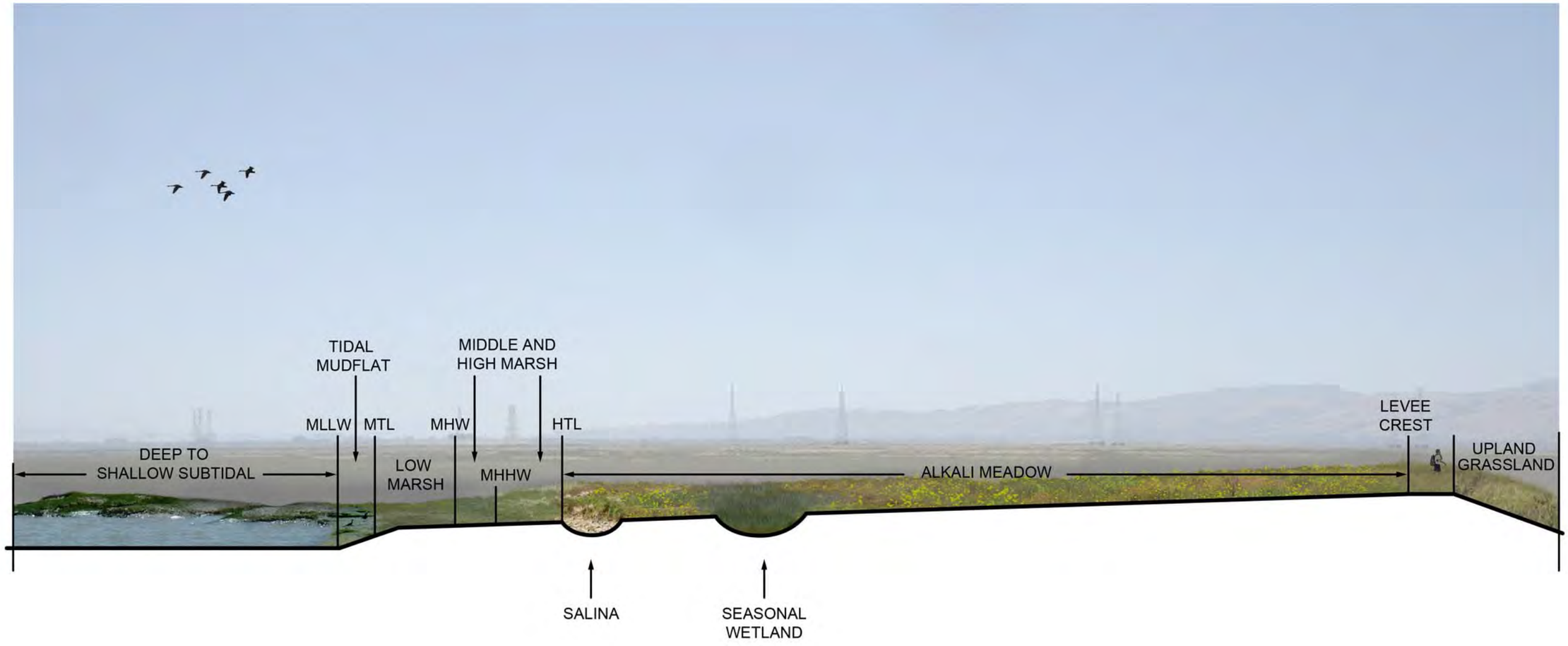

FIGURE 5

SOUTH BAY SHORELINE PROJECT TRANSITION ZONE—TYPICAL CROSS SECTION

USACE SOUTH SAN FRANCISCO BAY SHORELINE PROJECT (2606-03)

JUNE 2017

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Ecological Consultants

N:\Projects\2606-01 Shoreline Study\03\Reports\USACE Shoreline Project\Fig 5 Existing Habitats at Phase I Levee Sites.mxd

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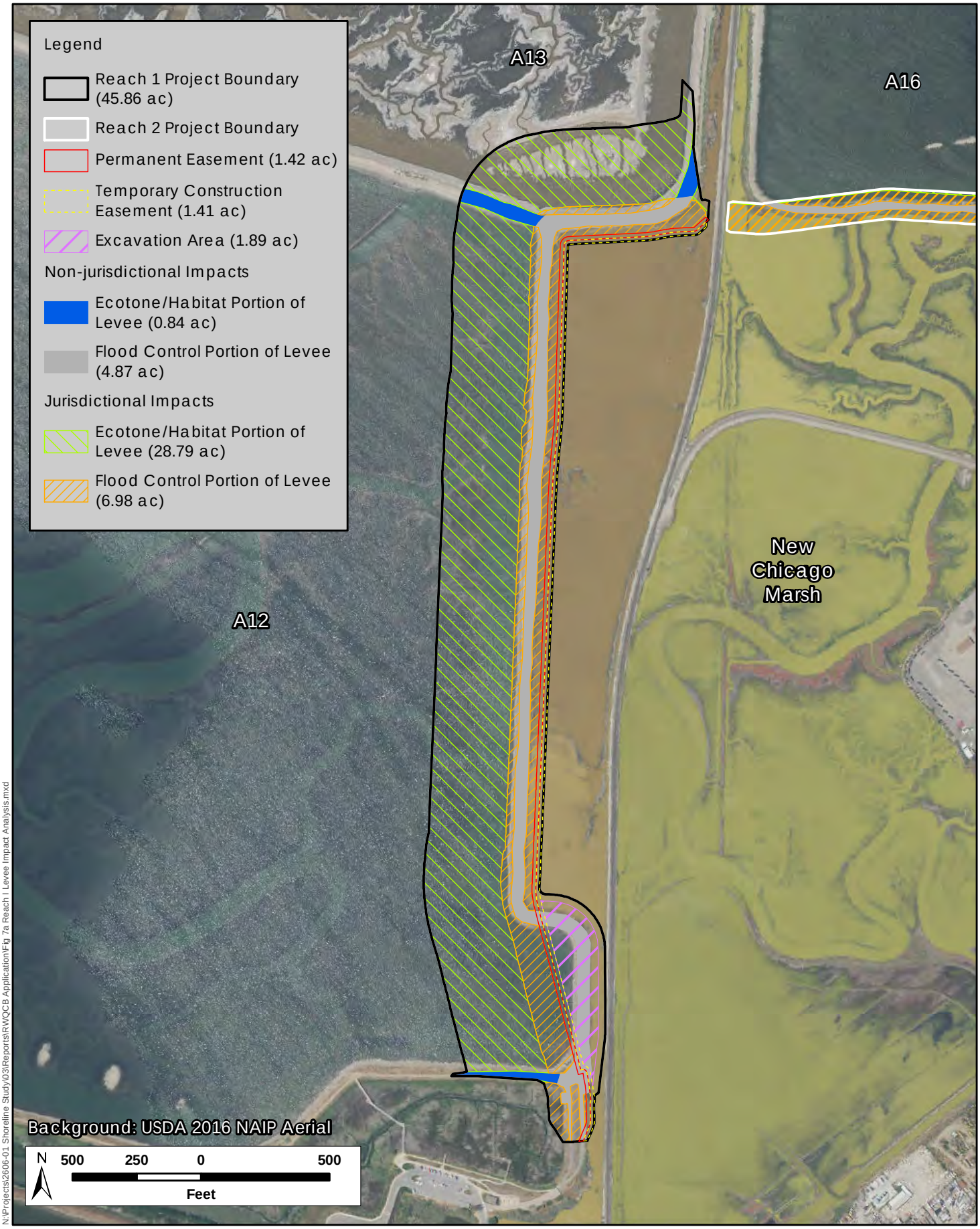
Figure **6**. Existing Habitats at Phase I Levee Sites

USACE Shoreline Project - Section 401 Permit Application (2606-03)
June 2017



N:\Projects\2606-01 Shoreline Study\03\Reports\RWQCB Application\Fig 7a Reach I Levee Impact Analysis.mxd

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Figure 7a. Reach I Levee Impact Analysis

USACE Shoreline Project - RWQCB Application (2606-03)

August 2017

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Figure 7b. Reach 5 Levee Impact Analysis

USACE Shoreline Project - RWQCB Application (2606-03)

August 2017

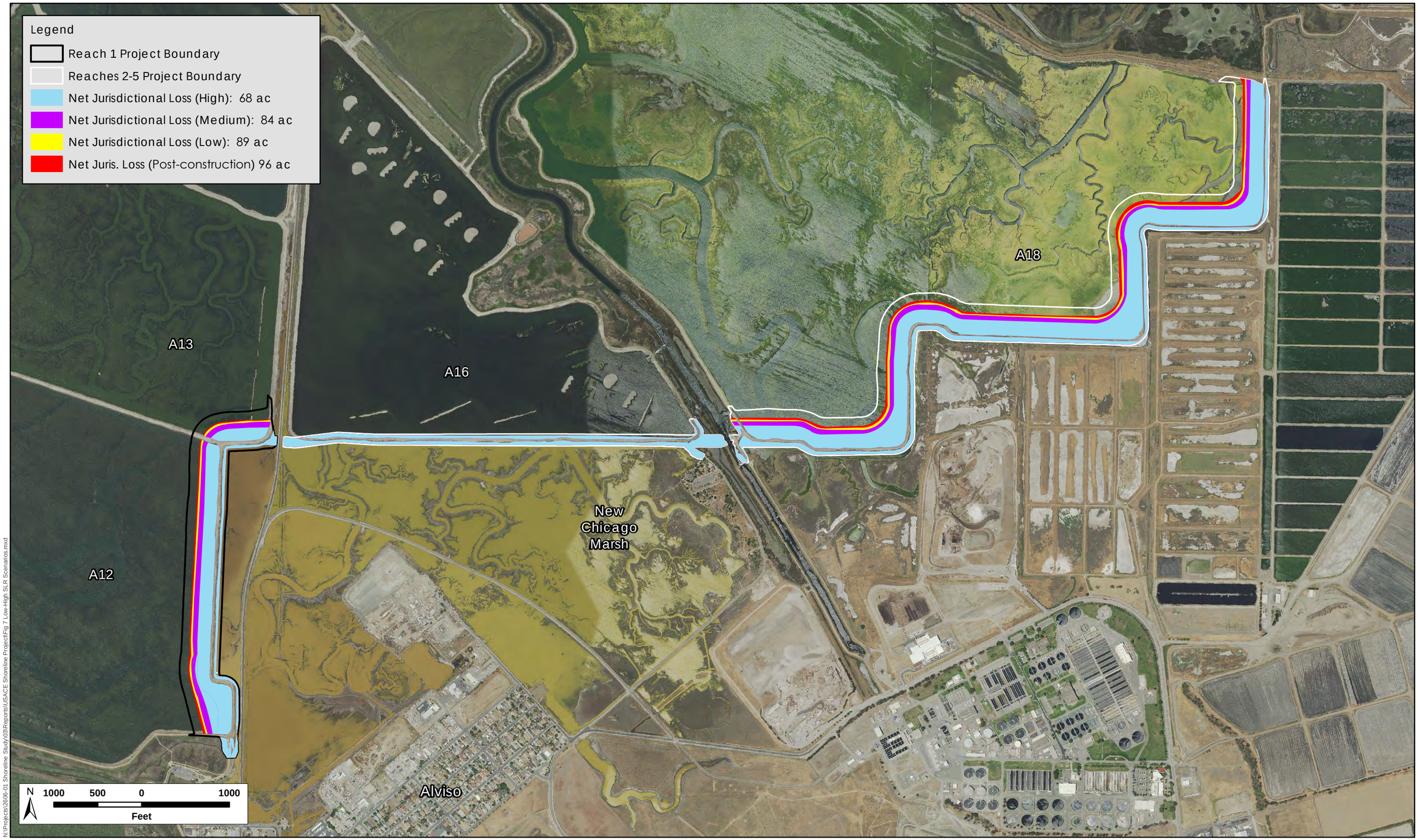

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Figure **8**. Levee Impact Analysis - Low, Medium and High SLR Scenarios

USACE Shoreline Project - Section 401 Permit Application (2606-03)
June 2017

20-40 acres of new jurisdction from Phase 2 and 3 breach faces and berm lowering

20-40 acres of new jurisdction from Phase 2 and 3 breach faces and berm lowering

Coyote Creek

18.5 acres of new jurisdiction from Phase 1 berm breach faces and berm lowering

A9

A10

A11

A12

A13

A14

A15

A18

Artesian Slough

19 acres of RWQCB jurisdiction immediately restored as similar upland levee slope below top-of-levee

New Chicago Marsh

36 acres of filled areas at toe of ecotone will be below HTL immediately, and 7-28 more acres will be juridictional after 50 years of sea level rise

0.74 acres of new RWQCB jurisdiction from removed berm

Legend

FRM Levee and Ecotone

Pond Restoration

- Phase I
- Phase II
- Phase III

Existing Levee

Range of fill above HTL under various SLR scenarios

Background: USDA 2016 NAIP Aerial

N 1500 750 0 1500

Feet

N:\Projects\2606-01 Shoreline Study\03\Reports\RWQCB Application\Fig 9 Project Jurisdiction Changes and Net Loss.mxd

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Ecological Consultants

Figure 9 Project Jurisdiction Changes and Net Loss

USACE Shoreline Project - RWQCB Application (2606-03)

August 2017

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Figure 10. Reaches 2-3 Levee Impact Analysis

USACE Shoreline Project - RWQCB Application (2606-03)
August 2017

Diagram 2. In-Pond Preparation for Breaching of Pond A12.

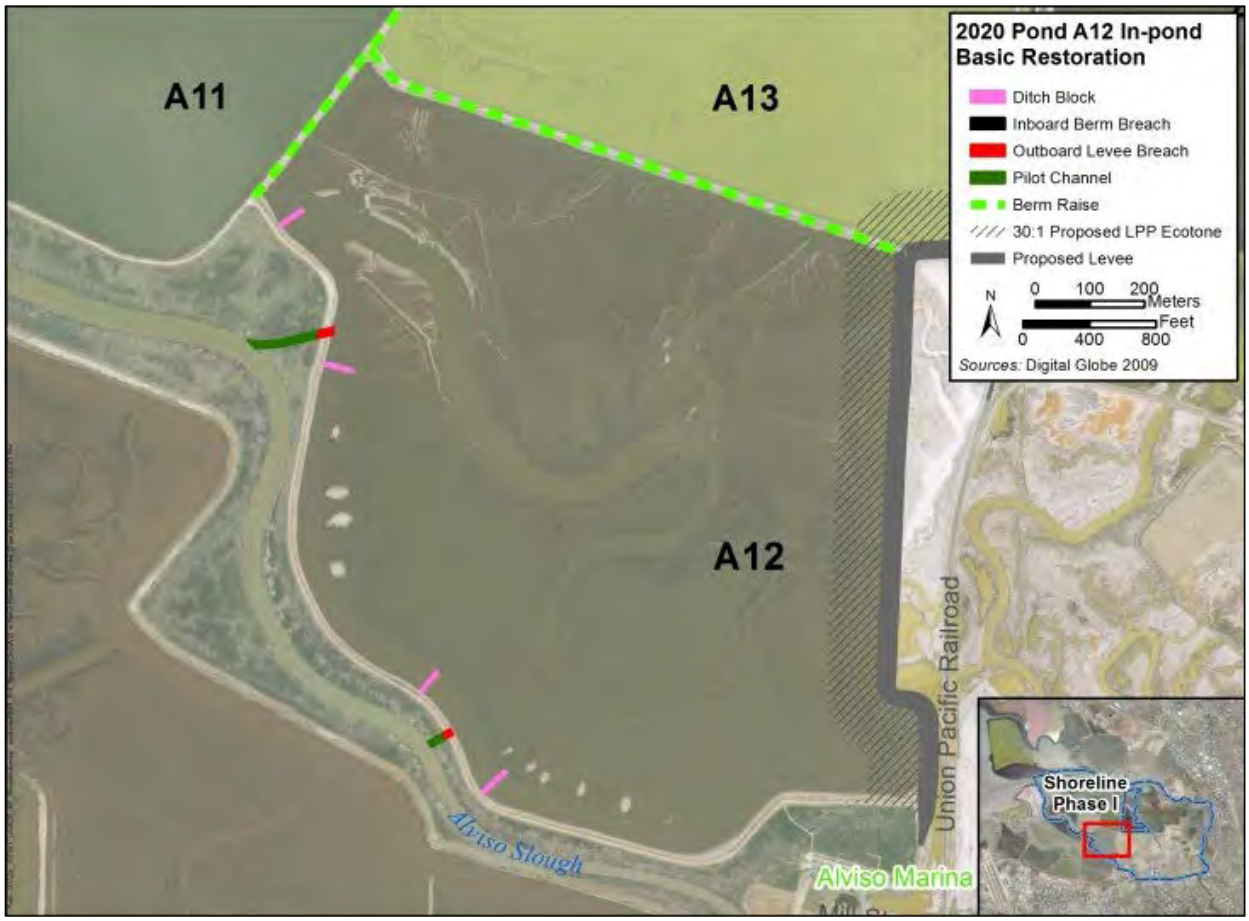
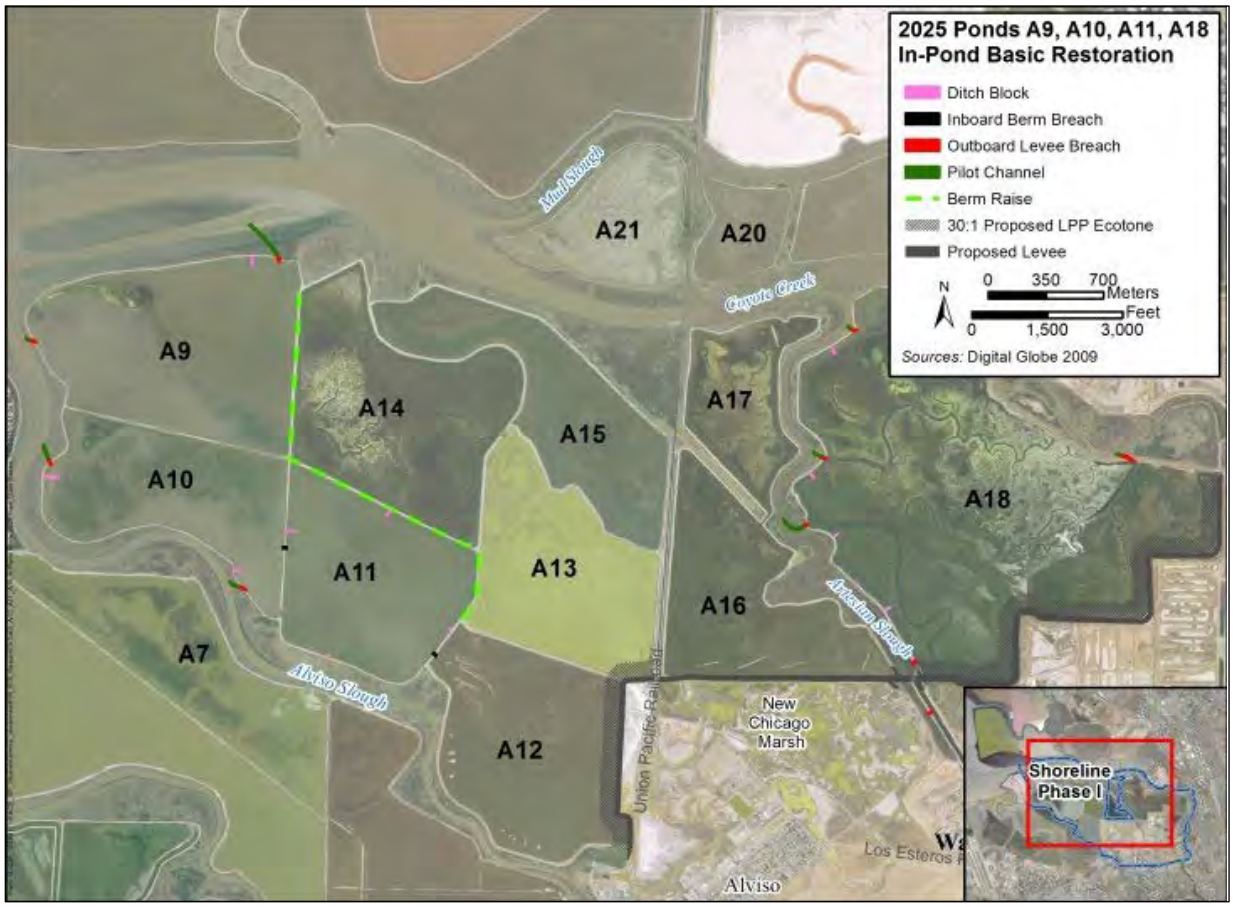


Diagram 3. In-Pond Preparation for Ponds A9, A10, A11, and A18



Attachment B:
Monitoring and Adaptive Management Plan (MAMP)

MAMP is from the
401 Water Quality Certification Application Materials
received from June 16, 2017,
through September 2017

South San Francisco Bay
Shoreline Project

City of San Jose
Santa Clara County

December 2017

SOUTH SAN FRANCISCO BAY SHORELINE STUDY

Monitoring and Adaptive Management Plan for Ecosystem Restoration

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TABLES

FIGURES

GLOSSARY

Adaptive management action. Actions undertaken to improve performance if restoration targets are not met. Actions may consist of assessments, construction, phasing, and operations and maintenance.

Conceptual Model. A simple, qualitative model that describes general functional relationships among essential components of a system.

Consideration. A statement of conditions the alternative plans should avoid, minimize, or mitigate, as possible. Considerations are less restrictive than constraints.

Constraint. A restriction that limits the extent of the planning process. It is a statement of things the plan should avoid.

Monitoring metric. A measure for assessing change with respect to a specific restoration target. Each restoration target has at least one metric that would be measured during monitoring and is expected to provide insight into the project's progress towards that target.

Objective. Statement of project purpose.

"Staircase." Terminology adopted from the SBSP Restoration Project. The SBSP Restoration Project uses a "staircase" analogy to describe the proposed project, with each step on the staircase representing one phase of tidal restoration implementation. Adaptive management determines how far up the "staircase" the project proceeds. The "staircase" issues are those that determine whether the Shoreline Study proceeds through the later phases, or halts before all phases are completed.

Target. A performance measure that provides quantifiable restoration metrics used to assess project performance with respect to project objectives, constraints, and considerations.

Trigger. Management triggers identify the point at which the system may not be performing or progressing as expected.

Uncertainty. Disagreement or lack of knowledge about how a system functions, specifically, how a restoration action may or may not result in the desired outcome.

1. Introduction

This document provides the feasibility-level monitoring and adaptive management plan for the South San Francisco Bay Shoreline Study (Shoreline Study). The Shoreline Study is a flood risk management and ecosystem restoration effort that is recommending a project to reduce tidal flood risk and restore tidal marsh habitat along southern San Francisco Bay.

This plan identifies potential monitoring activities, outlines how results from the monitoring would be used to assess project success and, if needed, adaptively manage the project to achieve the desired ecosystem restoration objectives. The plan specifies who would be responsible for monitoring and adaptive management activities and provides estimated costs.

1.1 Authorization for Monitoring and Adaptive Management

Section 2039 of WRDA 2007 directs the Secretary of the Army to ensure that, when conducting a feasibility study for a project (or component of a project) for ecosystem restoration, the recommended project includes a plan for monitoring the success of the ecosystem restoration. The implementation guidance for Section 2039 (USACE 2009) specifies that ecosystem restoration projects include plans to track and improve restoration success through monitoring and adaptive management.

1.2 Relation to South Bay Salt Pond Restoration Project Adaptive Management and Monitoring

The non-Federal sponsors for the Shoreline Study are currently collaborating to implement the South Bay Salt Pond (SBSP) Restoration Project, which encompasses 15,100 acres in the South Bay and includes the USFWS-owned parts of the Shoreline Study area. In 2009, the SBSP Restoration Project completed program-level planning, program-level NEPA compliance, and program-level permitting for the entire 15,100 acres, including the Shoreline Study project area. The USFWS was the lead agency for NEPA; the USACE was a cooperating/responsible agency.

Adaptive management is an integral component of the SBSP Restoration Project (EDAW et al 2007). The SBSP Restoration Project identifies a range of potential implementation and habitat outcomes, with the endpoint to be determined through phased implementation guided by adaptive management. One of the fundamental project trade-offs is the conversion of existing waterfowl and shorebird habitat in the former salt ponds to tidal wetland habitat for a range of native marsh-dependent species. The two defined project endpoints are a 50:50 ratio of tidal and managed pond habitats or a 90:10 ratio, depending on how successfully the restored and enhanced ponds are able to maintain existing populations of waterfowl and shorebirds. The final habitat mix may be at either endpoint, or somewhere between the two.

The SBSP Restoration Project uses a "staircase" analogy to describe the proposed project, with each step on the staircase representing one phase of tidal restoration implementation. Adaptive implementation determines how far "up the staircase" the project proceeds. Before proceeding with each subsequent phase, the SBSP Restoration Project decision makers would consider the staircase issues. If the restoration is not transpiring as expected and no other solutions (through construction, operations, maintenance, or phasing) are feasible, the decision could be made to halt the project before continuing to subsequent phases.

The SBSP Restoration Project Management Team includes members of the Shoreline Study project delivery team (PDT), who represent the specific needs of the Shoreline Study and its project area. The goals and objectives for the Shoreline Study and the SBSP Restoration Project are very similar; however the geographic footprint of the two efforts is not identical. The Shoreline Study is being conducted as a series of interim feasibility studies, the first of which focuses on Ponds A9-A15 (owned by USFWS) and Pond A18 (currently

owned by the City of San Jose and not within the SBSP Restoration Project footprint). Because the current interim feasibility study includes a subset of ponds within the SBSP Restoration Project, this report draws from the monitoring and applied studies being conducted by the larger SBSP Restoration Project.

1.3 Procedure for Drafting the Monitoring and Adaptive Management Plan

This Monitoring and Adaptive Management and Monitoring Plan (MAMP) was prepared by members of the Shoreline Study PDT and SBSP Restoration Project – including staff from the U.S. Army Corps of Engineers (USACE) San Francisco District, staff from the California State Coastal Conservancy, the SBSP Restoration Project Executive Project Manager, and the SBSP Restoration Project Lead Scientist – and staff from the consulting firms ESA PWA and HT Harvey & Associates, under contract to the California State Coastal Conservancy.

The Shoreline Study MAMP is consistent with the plan developed for the SBSP Restoration Project (2007), but reflects Shoreline Study-specific goals, objectives, and geography. The Shoreline Study MAMP was developed to be consistent with the framework for adaptive management in the previously mentioned USACE implementation guidance (USACE 2009).

1.4 Rationale for Adaptive Management

The primary incentive for implementing an adaptive management program is to increase the likelihood of achieving desired project outcomes given project uncertainties. All ecosystem restoration projects face uncertainty due to incomplete understanding of relevant ecosystem structure and function, resulting in imprecise relationships between project actions and corresponding outcomes. Flood protection projects, too, face engineering uncertainties. Given these uncertainties, adaptive management provides an organized and coherent process that suggests management actions in relation to measured project performance compared to desired project outcomes. Adaptive management establishes the critical feedback among project monitoring, and informed project management, and learning through reduced uncertainty.

In the case of the Shoreline Study, cost-shared monitoring and adaptive management will focus on the constructed ecosystem restoration elements of the project to ensure their success. However, the Shoreline Study also fits within the larger context of the SBSP Restoration Project, which examines larger-scale (regional) effects that set the context for site-specific analysis of implemented restoration projects. These include:

- Determining species presence and landscape/ecosystem evolution in response to restoration activities,
- Signaling that the phased restoration can proceed or determine that additional actions are necessary before moving forward, and
- Determining if and when tidal marsh restoration should halt due to undesired consequences on the natural system.

The future project recommended by the Shoreline Study would implement tidal restoration of existing managed ponds in phases. While the expectation is that all phases will be constructed, there are landscape-scale uncertainties that could cause implementation of future restoration features to halt because of undesired changes to ecosystems and populations outside of the project area. In addition, the presence of mercury in the sediments and risk of increasing bioaccumulation of mercury in the food web within the study area is a key project constraint that may delay or halt the restoration of certain ponds. The significance of this risk will be unknown until project implementation is begun. Monitoring for the "phased implementation" and mercury-related aspects of the project are not included as part of the cost-shared Shoreline Study monitoring and adaptive management program, but rather will be conducted by the SBSP Restoration Project.

For flood risk management and public access components of the project, cost-shared monitoring and adaptive management activities are not recommended. Minor adjustments to these features will be covered as routine operation and maintenance performed by the non-Federal sponsors. Major adjustments to such features to adjust to changed conditions after project implementation would require a post-authorization-change process.

Adaptive Management Team

Under the SBSP Restoration Project's organizational structure, the Adaptive Management Team (AMT) is the group responsible for making decisions about adaptive management. The AMT consists of a subset of the SBSP Restoration's Project Management Team (PMT) members. Figure 1 (SBSP Restoration Project Organizational Structure and Functions) shows the participants in the adaptive management process for the SBSP Restoration Project, who would also make adaptive management decisions for the future project recommended by the Shoreline Study.

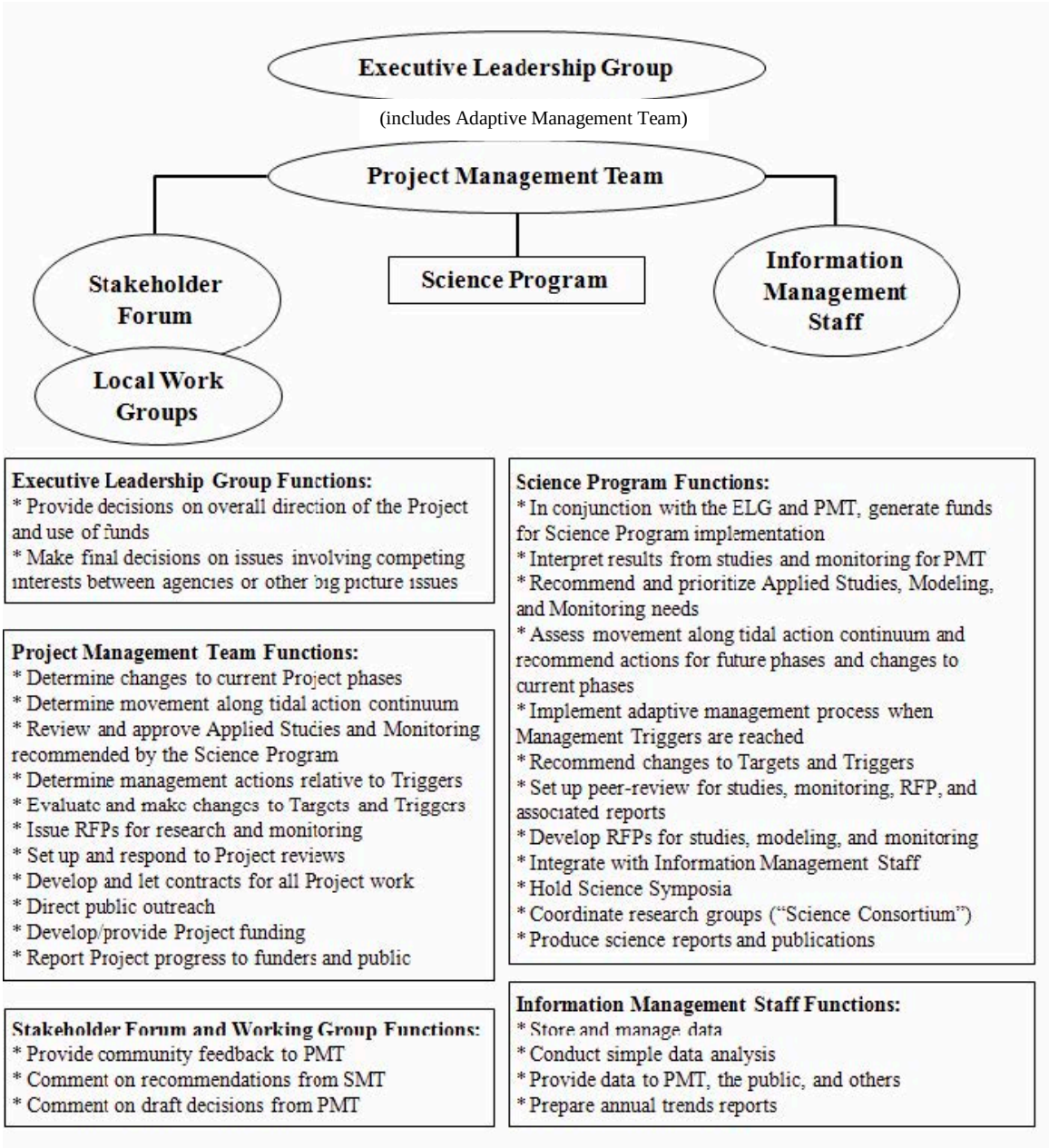

Figure 1. SBSP Restoration Project Organizational Structure and Functions

The AMT considers input from the Science Team (through the Lead Scientist), Stakeholder Forum, and Local Work Groups, as necessary, when making decisions. The Executive Leadership Group provides decisions on overall direction of the future project and on issues involving competing interests between agencies. Information Management Staff provide data management services for the AMT.

Participants in each group are listed below for the SBSP Restoration Project. The SBSP Restoration Project AMMP (2007) provides a detailed description of each group. For the Shoreline Study specifically, the landowners are USFWS and the San Jose/Santa Clara Water Pollution Control Plant, the local flood control district is the Santa Clara Valley Water District, and the Stakeholder Forum and Local Work Groups include only participants relevant to the Shoreline Study project area.

Executive Leadership Group = heads of the Project Management Team agencies, consisting of the California State Coastal Conservancy (SCC), the landowning and management agencies, local flood control districts, the Army Corps of Engineers, and Project funders.
AMT = U.S. Fish & Wildlife Service, California Department of Fish & Wildlife, SCC, local flood control districts, USACE, Lead Scientist, some regulatory staff, and other involved organizations.
Science Program = science directors and contractors, with a Lead Scientist responsible for coordination with the PMT.
Information Management = San Francisco Estuary Institute (or equivalent entity) as a contractor to the SCC.
Stakeholder Forum = core stakeholders with demonstrated, ongoing interest in South San Francisco Bay ecosystem restoration (local business and land owners, environmental orgs, public access/recreation, infrastructure, advocates and institutions, flood management, public works/health), local government staff and elected officials.
Local Work Groups = associated with each pond complex

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Overview of Adaptive Management

Adaptive management is an iterative process that uses regular monitoring and assessments to determine whether follow-up actions are necessary to keep the project on track towards its objectives. For the purposes of this plan, monitoring and adaptive management are presented in four steps. These steps are shown graphically in Figure 2 (Adaptive Management Process) and discussed in the following sections.

Adaptive management planning (Section 4)
Monitoring (Section 5)
Regular assessments (Section 6)
Decision making (Section 7)

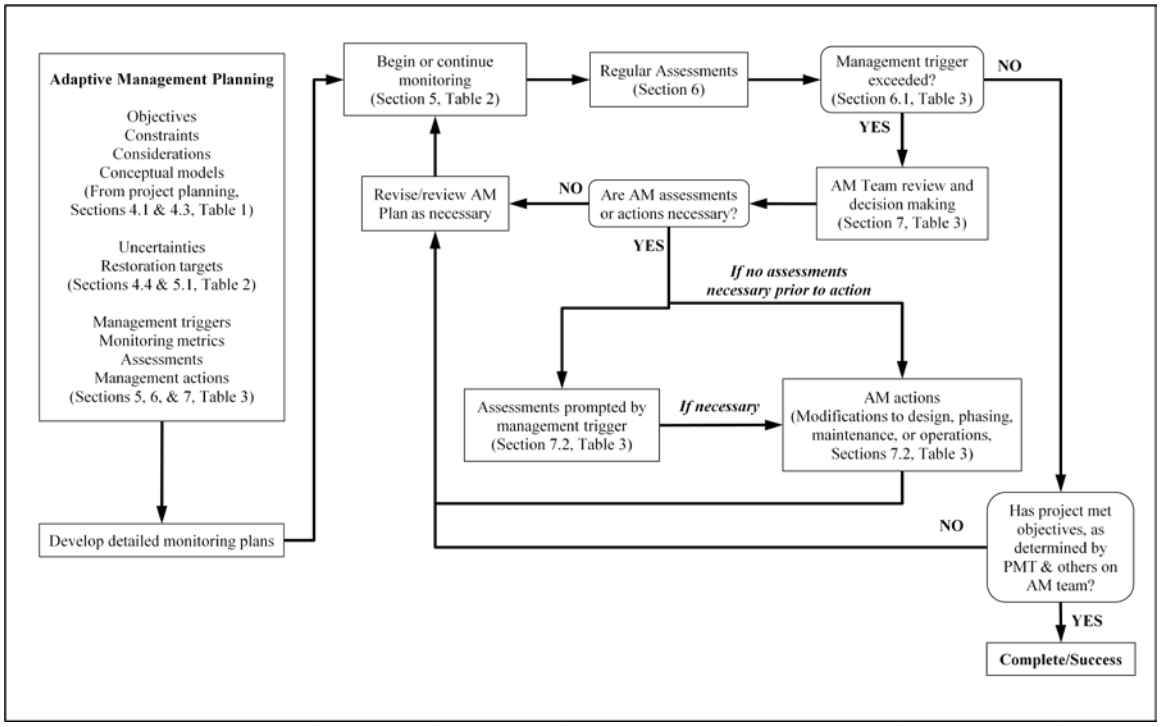

Figure 2. Adaptive Management Process

Adaptive management planning consists of identifying project objectives, constraints, and considerations; describing conceptual models; and identifying key uncertainties. Adaptive management planning sets the stage for determining what monitoring is required to assess whether the project is progressing toward the desired outcome. Regular assessments check monitoring results against restoration targets (desired outcomes) and management triggers (negative outcomes). The decision-making process determines if and when adaptive management actions should be implemented.

The adaptive management steps described in the sections below will be flexible to accommodate lessons learned from the monitoring results. For example, as new information becomes available, the Adaptive Management Team will update the conceptual models and may revise the monitoring metrics and methods to better address the remaining uncertainties. In the event that unanticipated uncertainties are identified, the adaptive management process will be adjusted as needed to support decision-making, so the Adaptive Management Team can continue to steer the project towards the desired outcome.

2. Adaptive Management Planning

This section: (1) identifies objectives, constraints, and considerations identified for the Shoreline Study, (2) outlines ecosystem restoration actions included in the recommended plan, (3) presents conceptual models that relate project actions (and potential adaptive management actions) to desired project outcomes, and (4) lists sources of uncertainty.

2.1 Project Objectives, Constraints and Considerations

During the initial problem identification phase of the feasibility study, the PDT, with stakeholder input, identified planning objectives, constraints, and considerations that would guide the development of ecosystem restoration, flood risk management, and recreation aspects of the future project (Table 1. Planning Objectives, Constraints, Considerations, and Uncertainties).

For these objectives, constraints, and considerations, the team also identified related uncertainties in future conditions, which are described in Section 4.4 below.

Table 1. Planning Objectives, Constraints, Considerations, and Uncertainties

Objectives			Uncertainties
1.	Reduce potential economic damages due to tidal flooding in areas near the South Bay shoreline in Santa Clara County.		• Flood and infrastructure performance • Climate change
2.	Reduce the risk to public health, human safety and the environment due to flooding from tidal sources along the South Bay shoreline in Santa Clara County.		• Flood and infrastructure performance • Climate change
3.	Increase contiguous marsh to restore ecological function and habitat quantity, quality, and connectivity (including transition zones) in the study area for native, resident plant and animal species including special-status species such as steelhead trout, Ridgway's rail, and salt marsh harvest mouse.		• Sediment dynamics • Effects on non-avian species • Ecotones • Climate change
4.	Provide opportunities for public access, education, and recreation in the study area.		• Public access & wildlife
Constraints			Uncertainties
1.	Do not jeopardize any listed species.		• Bird use of changing habitats • Sediment dynamics
2.	Do not significantly increase the potential for bioaccumulation of mercury in the food web within the study area.		• Mercury
3.	Recreational features must be compatible with ecosystem restoration objectives and flood risk management objectives.		• Public access and wildlife
4.	Comply with applicable regulatory requirements.		• No major uncertainties
5.	Do not negatively impact groundwater quality.		• No major uncertainties
6.	No negative permanent impacts on function of existing major infrastructure (wastewater treatment plant, PG&E, railroad, stormwater pump station, landfill, recycling facilities).		• Flood and infrastructure performance
Considerations (Avoid, minimize, or mitigate)			Uncertainties

1.	Loss of existing outboard marshes and mudflats in the study area.		• Sediment dynamics
2.	Reduction in the quality of existing tidal marsh, including fragmentation and increased edge effects.		• Sediment dynamics
3.	Creation of new tidal areas without transition zones.		• No major uncertainties
4.	Negative impacts to threatened and endangered species.		• Bird use of changing habitats • Effects on non-avian species • Sediment dynamics
5.	Net reduction of total habitat value for major categories of water birds, including shorebirds, waterfowl, and miscellaneous species that use these habitats within the larger SBSP Project area.		• Bird use of changing habitats
6.	Proliferation of nonnative and/or undesirable species in the study area.		• Invasive and nuisance species
7.	Access by predators to special-status species habitat in the study area.		• Invasive and nuisance species
8.	Negative impacts to cultural resources.		• No major uncertainties
9.	Negative impacts to existing recreational infrastructure function within the study area.		• Public access and wildlife
10.	Increases in vector populations in the study area.		• Invasive and nuisance species
11.	Negative impacts to existing water quality and sediment quality in the study area.		• Mercury • Sediment dynamics

2.2 Proposed Ecosystem Restoration Actions

The Shoreline Study proposes to restore approximately 2,900 acres of former commercial salt production ponds to tidal marsh and associated habitats. Tidal habitat restoration will be phased and achieved mainly through restoration of natural physical and ecological processes rather than through constructed physical features or plantings. In addition, the project proposes to construct 3.5 miles of levees to provide coastal flood protection.

The proposed project includes construction of outboard levee breaches and internal berm breaches to introduce tidal flows to the ponds. Some of the outboard levees and internal berms would be lowered to reconnect marsh to mudflat, improving water, sediment, and organism exchange. Pilot channels, starter channels, ditch blocks and side cast natural berms will be used to accelerate evolution of the ponds and enhance habitat.

The ecosystem restoration component of the proposed project would occur as three phases of pond breaches to establish tidal connection, with five years between each set of breaches (Figure 3. Project Implementation Schedule). The first phase would breach Ponds A12 and A18 (in 2020), the second would breach Ponds A9, A10, and A11 (in 2025), and the third would breach Ponds A13, A14, and A15 (in 2030). Under the adaptive implementation concept, design and construction of the later phases may be modified based on what is learned in monitoring of earlier phases. In the unlikely event that the results of the earlier phase(s) indicate undesirable outcomes that cannot be avoided by adaptive management actions, project implementation would be halted prior to construction of the later phase(s).

Through its phased implementation approach, it is possible that the Shoreline Study may cease tidal restoration actions after either the first or second phase. This would only take place if the USACE and the Adaptive Management Team decided, based on the latest monitoring and science available on issues such as

bird use and mercury contamination, that the highest ecological value of those particular ponds were for them to remain as pond habitat for specific guilds of birds. The proposed phases were selected specifically because they could be implemented as separable elements, although with cumulative synergistic benefits. However, regardless of the ultimate endpoint, the Shoreline Study will have implemented a cost effective restoration project and achieve significant ecological benefits as part of a nationally significant restoration effort.

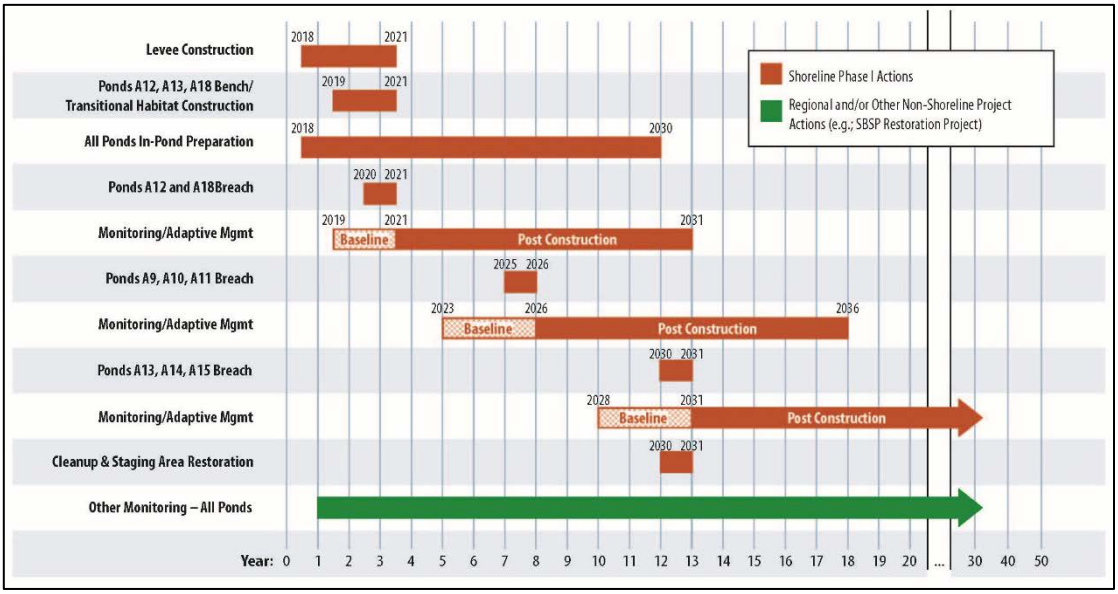

Figure 3 – Project Implementation Schedule

2.3 Conceptual Models

The purpose of the conceptual model is to provide the linkage between project actions and expected system response. Planning for the Shoreline Study used the conceptual ecological model developed for the SBSP Restoration Project (Trulio et al 2007) to represent current understanding of ecosystem structure and function in the project area, identify performance measures, and help select parameters for monitoring. The model illustrates the effects of important natural and anthropogenic activities that result in different ecological stressors on the system. Figures 4, 5, and 6 present the conceptual models for tidal habitat, managed pond habitat, and overall landscape habitat interactions.

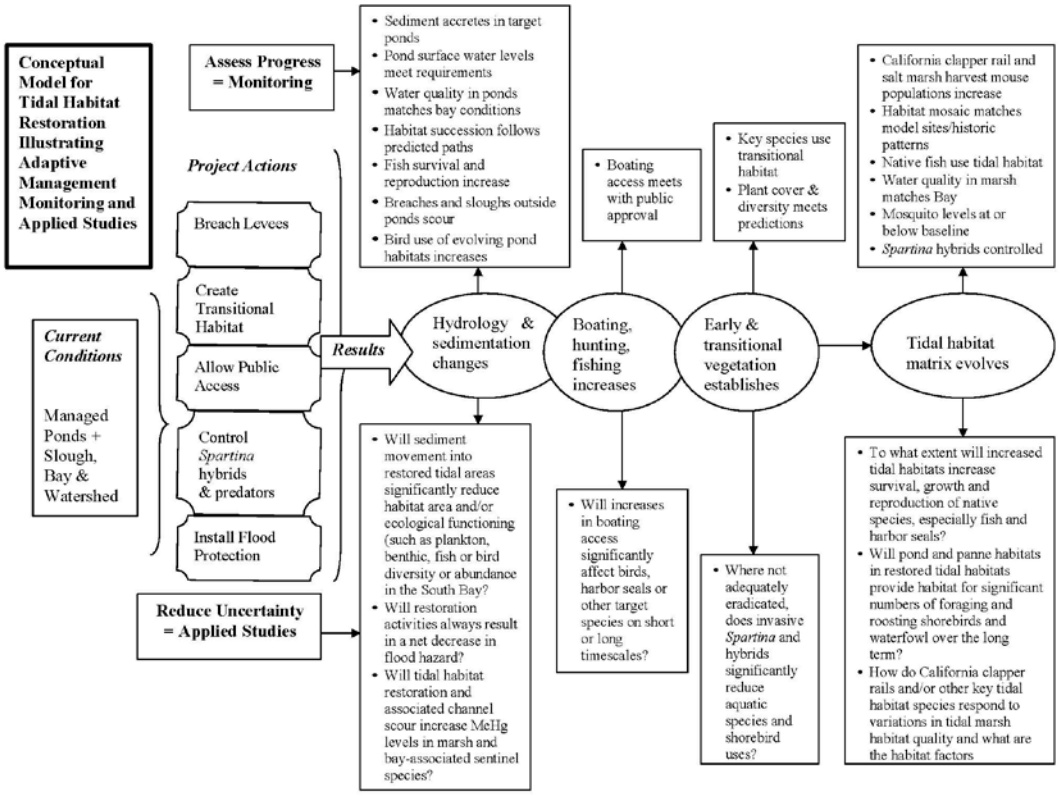

Figure 4. Tidal habitat conceptual model

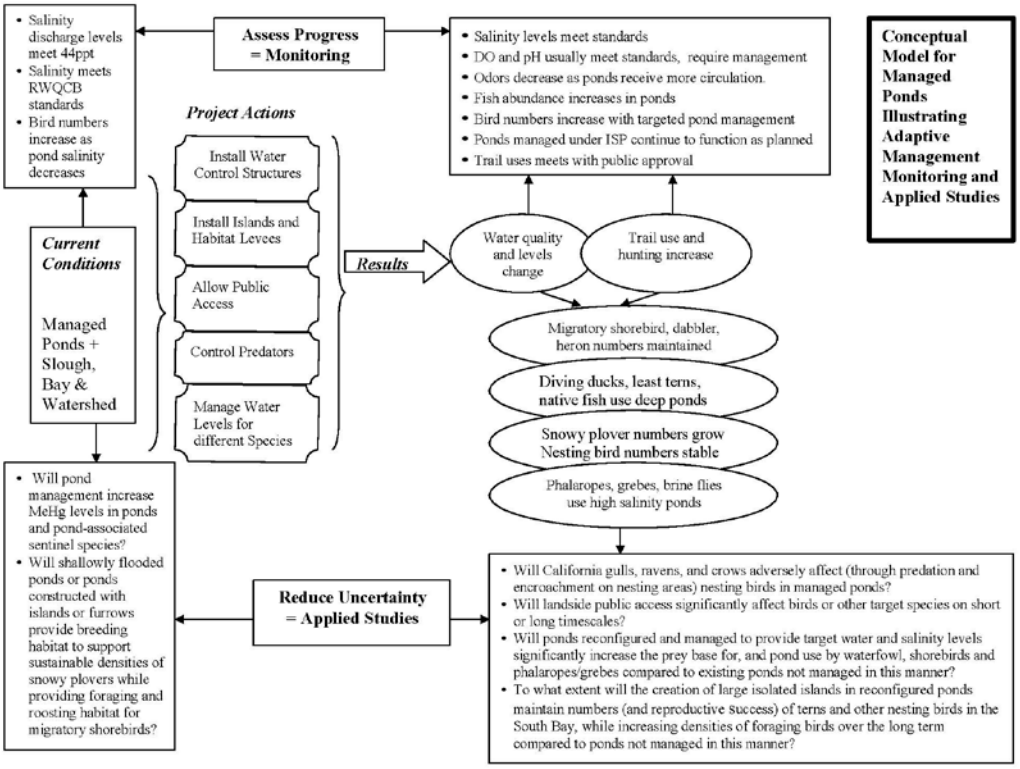

Figure 5. Managed pond conceptual model

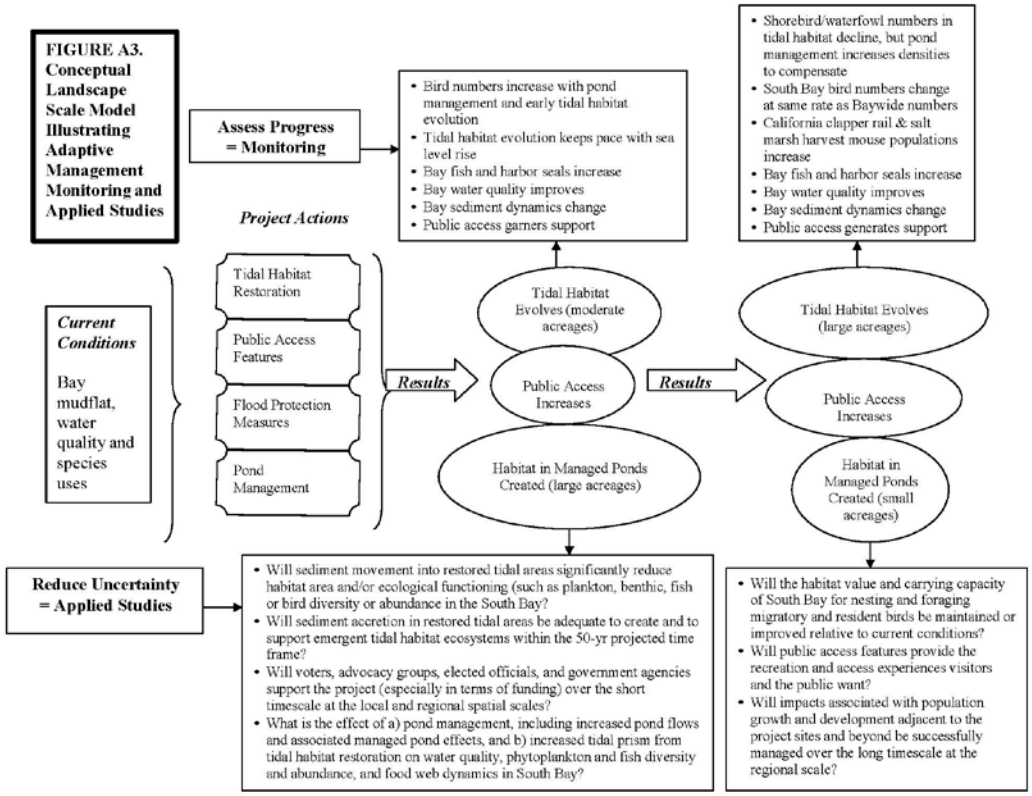

Figure 6. Landscape conceptual model

The tidal habitat conceptual model is directly relevant to the desired habitat type and ecosystem restoration objectives for the Shoreline Study. The managed pond and landscape conceptual models are relevant in that they describe the "staircase" issues (associated with phased implementation), issues that determine whether the project recommended by the Shoreline Study proceeds beyond the first phase of tidal marsh restoration, or halts before all phases are completed (see Section 9).

2.4 Sources of Uncertainty

Gaps in our knowledge about South San Francisco Bay ecosystem function and the landscape-scale effects of restoration actions can influence how we achieve the project objectives over the course of implementation. Key uncertainties associated with ecosystem restoration, flood risk management, and public access were identified so that monitoring could be targeted to reduce these uncertainties and guide future actions, including cost-shared adaptive management.

Sediment dynamics, including the extent to which estuarine sedimentation is sufficient to convert mudflats to vegetated marsh and extent to which tidal habitat restoration might result in the loss of slough and bay tidal mudflat habitat regionally.

Bird use of changing habitats, including the extent to which tidal habitat species can be recovered while maintaining the diversity and abundance of nesting and migratory waterbirds observed during pre-project conditions.

Effects on non-avian species, including the extent to which restoration will affect fish, mammals, and other critical species in the South Bay ecosystem.

Mercury, including the extent to which the future project's ecosystem restoration and other actions might result in an increase in bioavailable mercury in the food chain.

Invasive and nuisance species, including the invasive *Spartina* hybrids, red foxes, California gulls, and mosquitoes.

Public access and wildlife, including the extent to which various forms of public access and recreation can be integrated into the future project without significantly affecting wildlife.

Ecotones, including the extent to which the ecotones (transitional habitat located between tidal marsh and upland habitats) will support desirable vegetation and not support invasive vegetation.

Flood and infrastructure performance, including the extent to which the new infrastructure will perform as designed.

Climate change, including whether sea level rise will be greater than assumed in the design.

Table 1 (Planning Objectives, Constraints, Considerations, and Uncertainties) lists the uncertainties as they relate to each of the project objectives, constraints, and considerations. Some of these uncertainties relate directly to the efficacy of actions being proposed (e.g., ability to meet ecosystem restoration objectives), while others take into account the landscape-scale effects of multiple restoration actions in South San Francisco Bay (thus relating to adaptive implementation).

3. Monitoring

The purposes of monitoring are to assess progress towards project objectives, detect early signs of potential problems, and reduce uncertainties. For each key uncertainty, restoration targets (success criteria) were developed to identify the desirable outcome, and then monitoring metrics defined for measuring each restoration target (Table 2. Monitoring topics, targets, and metrics associated with ecosystem restoration objectives). The monitoring elements included in this table have been limited to activities associated with ecosystem restoration project objectives. The restoration targets and success criteria define how the project will know when ecosystem restoration success has been achieved and monitoring activities can cease.

Table 2. Monitoring topics, targets, and metrics associated with ecosystem restoration objectives

Primary Monitoring Topics		Category	Restoration Targets/Success Criteria	Monitoring Metrics
1.	Sediment dynamics	Sedimentation Inside the Ponds	Water levels inside the ponds are similar to just outside the ponds, allowing full exchange of water and sediments (Years 1-3 of breaching phase only). Accretion rate of the breached ponds is sufficient to reach marsh vegetation colonization elevations within the planning time frame (Years 1-5 of breaching phase only). Initial modeling projects that the ponds will reach marsh plain elevation within 15-20 years after breaching. Since this is beyond the monitoring period for the project, the restoration target for the first 10 years will be that the accretion rates are on a trajectory toward meeting that criterion. Specific elevation targets for each pond will be refined based on the ponds' initial bottom elevation, and the sediment accretion curves developed from the previous restoration of adjacent Ponds A6, A19, A20 and A21.	• Water levels in ponds • Sedimentation rates in ponds • Suspended sediment concentrations in ponds

		Restored Tidal Marsh Habitat (Inside the Ponds)	Tidal marsh vegetation is on a trajectory toward other successful marsh restoration sites in South San Francisco Bay. Native tidal marsh species, including pickleweed (both annual and perennial species) and cordgrass, are expected to begin naturally colonizing the marsh plain within 2 years of pond bottom reaching the appropriate elevations through natural sedimentation (typically an elevation between Mean Tide Level and Mean Higher High Water).	• Tidal marsh habitat acreage in ponds
2.	Bird use of changing habitats	Ridgway's Rail	• Contribute to the recovery of the Ridgway's rail by providing new tidal marsh habitat and ensuring restored marshes are on a trajectory toward vegetated marsh.	• Tidal marsh habitat acreage in ponds (see Item 1 above)
3.	Non-avian species	Salt Marsh Harvest Mouse	• Contribute to the recovery of the salt marsh harvest mouse by providing new tidal marsh habitat by providing new tidal marsh habitat and ensuring restored marshes are on a trajectory toward vegetated marsh.	• Tidal marsh habitat acreage in ponds (see Item 1 above)
4.	Invasive and nuisance species	Invasive and Nuisance Plants	• Habitat trajectory toward native/non-native composition of a reference marsh and other restoration sites. Qualitative inspections for invasive species (especially *Spartina hybrids* and *Lepidium latifolia*) will occur annually, quadrant or transect sampling once marsh has 20% vegetation cover. Any hybrid *Spartina* presence will be reported to the regional control effort, and any marsh containing over 30% *Lepidium* will trigger control activities.	• Abundance of non-native species

5.	Ecotones	Transition zones	• Transition zone habitat comprising wide, gently-sloped vegetated terrain with a diverse habitat mosaic dominated by (>50% relative cover) perennial native grassland and for species interspersed with salt panne and seasonal wetland habitats transitioning along a salinity gradient to native salt marsh community representative of historic transition zone habitats.	• Plant species composition in transition zones

Monitoring activities associated with flood risk management, adaptive implementation, or permit compliance for the recommended project will not be cost shared by the USACE, but will be funded and implemented by the non-Federal sponsor through the SBSP Restoration Project. However, information collected through these types of monitoring activities may result in future cost-shared activities (e.g., changes to the authorized project).

Monitoring and activities that address regional changes from the combined effects of Shoreline Study and SBSP Restoration Project will not be cost shared by the USACE unless they are also linked directly to the Shoreline Study's ecosystem restoration objectives and are conducted within the Shoreline project footprint. These activities related to regional changes will be conducted as the continuation of ongoing activities currently performed under the SBSP Restoration Project. Coordination of the future Shoreline Project with the SBSP Restoration Project will allow for more complete and consistent information to guide decision-making as bay-wide effects are considered. Regional monitoring includes monitoring of changes to mudflat and tidal marsh acreages, changes to bird populations and abundance, and mercury bioavailability.

Each monitoring metric was detailed in terms of monitoring methods, locations, frequency and duration in order to develop a cost estimate (See Table 3. Monitoring Cost Estimate). The monitoring cost estimate is $968,000 (First Cost October 2014 price level).

Although the monitoring cost estimates presented in this document display activities during the proposed ten years of cost-shared monitoring after construction, monitoring will continue beyond the initial ten years, funded by the non-Federal sponsor, if the criteria for ecosystem success have not yet been met (see Table 2. Monitoring topics, targets, and metrics associated with ecosystem restoration objectives).

Table 3. Monitoring Cost Estimate

Restoration Target Category	Monitoring Metric (Brief)	Monitoring Metric & Method	Which Years?	# Years	Cost/Unit (before SS adjustment)	Cost/Unit *	Unit	# Units	Total Cost*	Notes
Sedimentation Inside the Ponds	Water levels in ponds	• Water levels inside the ponds collected using pressure transducers in the ponds and adjacent sloughs. Monitor until no damping observed.	0+, 1, 2 after each phase	9	$ 50,000	$ 50,000	1 phase (3 yrs/phase, 2 wks/yr)	3	$ 150,000	Approximately $16,700 per year for three years per phase (2-3 tide gages). Note: SBSP is not monitoring water levels currently.
Sedimentation Inside the Ponds	Sedimentation rates in ponds	• Sedimentation rates inside ponds: Transects or SETs in breached ponds, annually at first and then less frequently as rates of accretion slow. Consider using Regional Sediment Dynamics monitoring data, such as LiDAR surveys if sufficiently detailed for use inside ponds.	0+, 2, 5, 10 after each phase	12	$ 25,000	$ 25,000	1 event	12	$ 300,000	Assume same methods as at Island Ponds and Pond A6. Investigate using bathymetry or LiDAR inside the breached ponds.
Sedimentation Inside the Ponds	Suspended sediment concentrations in ponds	• Suspended sediment concentration monitoring • See related monitoring in Regional Mudflat Habitat and Sediment Dynamics	10	1	$ 150,000	$150,000	1 event	1	$ 150,000	Estimate is cost for conducting sampling for input variables to model, and running marsh sustainability model. Assume model is run at Year 10, though timing may vary.
Restored Tidal Marsh Habitat (Inside the Ponds)	Tidal marsh habitat acreage in ponds	• Tidal marsh habitat acreage inside the ponds. Collect acreages via remote imagery with limited ground-truthing.	5, 10	2	$ 300,000	$ 54,000	2	1	$ 108,000	Included in Regional Tidal Marsh Habitat. No costs for vegetation community surveys since these will not be conducted within 10 years of breaching.
Ridgway's Rail	Presence of tidal marsh habitat	• Tidal marsh habitat acreage inside the ponds. Collect acreages via remote imagery with limited ground-truthing (as above).							$ -	cost already covered by tidal marsh acreage monitoring
Salt Marsh Harvest Mouse	Presence of tidal marsh habitat	• Tidal marsh habitat acreage inside the ponds. Collect acreages via remote imagery with limited ground-truthing (as above).							$ -	cost already covered by tidal marsh acreage monitoring
Invasive and Nuisance Plants	Abundance of non-native species	• Abundance of non-natives such as non-native Spartina spp. (Qualitative assessments for invasive species will occur annually.)						N/A (see note)	$ -	Covered by SBSP and transition zone monitoring.
Transition zones	Plant species composition in transition zones	• Plant species composition including abundance of native species. • Annual habitat monitoring during a 3-year plant establishment period to ensure establishment of native plant species. • Annual qualitative assessments for invasive species.	0, 1, 2, 5, 7, 10	6	**No Fill** - $8,000 - $10,00/year; **30:1 Fill** - $25,000 - $30,000/yr; **100:1 Fill** $66,000 -	$8,000 - $10,000/year	1 event	6	$ 54,000	6 Years Monitoring (Total) includes habitat monitoring, species composition, and qualitative assessments; Estimate based on total transition zone acreage.
		SUBTOTAL							$ 762,000	
		27% Contingency							$ 205,740	
		TOTAL (First cost Oct 2014 price levels)							$ 967,740	
		AVERAGE ANNUAL COST (APPROX)							$ 48,387	
		*Assumes Shoreline Study cost is 18% of entire cost estimate for SBSP Restoration Project, based on relative acreages to be monitored.								
		Assume project constructed in three phases from 2017 to 2031, with monitoring and adaptive management 2021 to 2041 (10 years following each phase for a total of 20 years).								
		Note: Year 0+ means immediately after breaching.								
		Any monitoring that occurs after 10 years post construction will be a 100% non-Federal responsibility								

3.1 Targets

Table 2 (Monitoring topics, targets, and metrics associated with ecosystem restoration objectives) lists the restoration targets as related to the project uncertainties, which are directly linked to the project objectives, constraints, and considerations (Table 1. Planning Objectives, Constraints, Considerations, and Uncertainties) and indicate how the project will know when ecological success has been achieved and monitoring activities can cease. Typical data sources for developing these targets are the published academic literature, quantitative baseline data, or requirements set by a regulatory agency. Targets include both long-term goals and intermediate conditions as the ecosystem changes. Quantitative targets, such as minimum numbers or ranges of variability, do not yet exist for all restoration targets. These targets will be developed using existing data or regulations and many are expected to evolve as monitoring and assessments are conducted. References to "significant impacts" in the target descriptions are related to National Environmental Policy Act and California Environmental Quality Act significance, which will be identified in the Environmental Impact Statement/Report.

Restoration targets are intended to hold the Shoreline Study to levels of performance that are under the Shoreline Study's control, and not to levels controlled by external factors.

The monitoring is organized by "Restoration Target Categories," which are specific sub-categories within each of the key uncertainties. Categories are the basic elements of the ecosystem that must be monitored to determine whether the project objectives are being met, or are likely to be met in the future. Use of the Restoration Target Categories helps in cross-referencing the monitoring to later assessment and decisions-making steps by allowing cross-referencing between tables.

3.2 Monitoring Metrics

Specific, measureable monitoring metrics, or parameters, to assess change with respect to the restoration targets are presented in Table 2 (Monitoring topics, targets, and metrics associated with ecosystem restoration objectives). Note that while habitat creation for the Federally protected Ridgway's rail (formerly the California clapper rail, *Rallus longirostris obsoletus*) and the salt marsh harvest mouse (*Reithrodontomys raviventris*) is a project objective, the monitoring metrics for these species within this MAMP only includes the establishment of the target habitat. The timing of adequate habitat development to support these species varies greatly between the individual ponds, depending on their initial bottom elevations. For example, in the nearby Pond A21 (restored in 2006), rails were detected using the restored marsh habitat in Year 8 post-restoration.

3.3 Monitoring Methods

Table 3 (Monitoring Cost Estimate) describes the monitoring metrics and methods in additional detail, such as timing relative to restoration phases, spatial extent, and frequency. Each of the three pond breaching phases will have its own timeframe for baseline monitoring, construction, post-construction monitoring and adaptive management, and turnover to the non-Federal sponsor for operation and maintenance. For each phase of pond breaching, baseline monitoring would begin three years prior to breaching and post-construction monitoring would continue until ecological success criteria are met. Extensive monitoring that has already occurred in these areas indicates that bird use has a high degree of inter-annual variability. Therefore, to understand the immediate, as well as cumulative, effects of

the restoration actions, continued baseline monitoring is essential. Although previous and ongoing monitoring results are available and will inform the proposed project, this information provides a general understanding of what will happen within the restored ponds, but the bigger picture of cumulative effects across multiple ponds, is unknown. The period of cost-shared monitoring will not exceed ten years (Figure 3. Project Implementation Schedule). Section 7.3 provides additional discussion of monitoring duration as related to project close out.

The monitoring method summaries in Table 3 (Monitoring Cost Estimate) are described in enough detail to make the approach clear, but do not fully describe the monitoring regime. A monitoring plan with detailed methods, protocols, timing, and responsible parties will be developed prior to start of monitoring, as each monitoring study is contracted.

3.4 Database Management

Database management will be provided by the SCC, who will likely contract with the San Francisco Estuary Institute (SFEI) or other similar entity for this role. The database manager will be responsible for storing final monitoring reports and other Shoreline Study documentation (decisions, agendas, reports) and making them available on the SBSP Restoration Project website. Monitoring reports will be searchable by topic and principle author.

The database will be designed to store and archive the Shoreline Study monitoring data. The format of each monitoring data set will vary as appropriate to the type of monitoring. Therefore, data are expected to be archived separately by study, rather than collated in one master database. Each dataset will include:

- Data and metadata transfer and input policies and standards
- Data validation procedures
- Mechanisms to ensure data security and integrity

Monitoring data sets will be available to the public upon request.

4. Regular Assessments

The assessment phase compares the results of the monitoring efforts to the desired project performance targets. The SBSP Restoration Project Science Program has been the primary group responsible for these assessments, for the regional monitoring and adaptive management effort. The Lead Scientist for the SBSP Restoration Project will facilitate regular communication of assessment results from the Science Program to the AMT, who will make recommendations to the USACE. The USACE will be the decision maker for any adaptive management actions undertaken on projects that it is responsible for constructing.

This section defines the assessment process, acceptable variances between monitoring results and targets, the frequency and timing for comparison of monitoring results to the selected targets, and assessment documentation.

4.1 Assessment Process

The SBSP Restoration Project Science Program will identify methods for comparing the restoration targets/ triggers with monitoring data. These methods will include appropriate statistical comparisons (e.g., hypothesis testing, ANOVA, multivariate methods). The results of these assessments will be documented and stored in the data management system.

The SBSP Restoration Project Science Program members will collaborate with the AMT to define magnitudes of difference (statistical differences, significance levels) between measured and desired values that will constitute variances. These variances will be used to recommend adaptive management actions to the USACE.

Note that, while there are no assessments specific to sea level rise, any predictions of tidal habitat evolution will incorporate the most up-to-date sea level rise information and guidance at the time of assessments.

4.2 Frequency of Assessments

An annual meeting will be held between the AMT and the SBSP Restoration Project Science Team to discuss monitoring and research findings, management triggers, and implications for adaptive management. Assessments may be more frequent, depending on the relevant physical or ecological scale of each restoration target. Table 3 (Monitoring Cost Estimate) includes two columns describing the frequency and timing of monitoring. The temporal scale of the system responses was one of the main considerations in determining frequency and timing of monitoring. For example, inspections for levee erosion should be conducted monthly at first, then annually and after major rainfall and tidal events. In this case the frequency of assessments will be greatest during the first year, with decreasing frequency after the first year.

4.3 Documentation and Reporting

Project assessment documentation will be prepared following each annual meeting in the form of detailed meeting notes. The meeting notes will describe progress towards project objectives as

characterized by the restoration targets. The database manager will be responsible for storing the meeting notes and making them available on the SBSP Restoration Project website.

5. Decision Making

The AMT will receive input from the SBSP Restoration Project Science Team in an annual meeting that will focus on relevant monitoring findings, management triggers, and implications for future project phases. If the AMT believes that small management actions need to happen, they would recommend to the USACE that those actions be implemented immediately. If a larger change to the project approach or a substantial action is necessary, the AMT would vet this change or action publicly through the SBSP Restoration Project's PMT and its working groups such as the Stakeholder Forum, Alviso Regional Working Group, and/or the Regulatory Work Group, depending on the scale and type of issue. The AMT would report the results of the vetting process to the USACE, who will decide whether to take action.

For each management trigger there is a list of potential adaptive management actions the AMT and Science Team might recommend that the USACE take if a management trigger is reached. Table 4 (Adaptive Management Decision Matrix) describes the assessments and potential management actions associated with each restoration target category.

Table 4. Adaptive Management Decision Matrix

Restoration Target Category	Monitoring Metrics	Management Triggers/ Conditions Requiring Assessment	Assessments Prompted by Management Trigger	Potential Management Action
Sedimentation Inside the Ponds	• Water levels in ponds • Sedimentation rates in ponds • Suspended sediment concentrations in ponds	• Projections based on the rate of mudflat accretion suggest vegetation colonization elevations are not likely to be achieved within the planning time frame.	• Convene study session to review findings and assess whether colonization is compromised. [A] • If tidal marsh is not meeting projections, assess biological significance of slower tidal flat evolution. [A]	• If vegetation colonization is compromised and deemed biologically detrimental, widen breaches to encourage better tidal exchange [C] • Adjust to increase pond mudflat accretion. Potential management actions include adding wave breaks, placing fill, or in-bay material placement to "feed" the restored ponds. [C] • Implement management or adjust design (e.g., remove more levees to increase connectivity between ponds and adjacent sloughs) based on study results [C] • Reconsider movement up staircase. [P]
Restored Tidal Marsh Habitat (Inside the Ponds)	• Tidal marsh habitat acreage in ponds	• No vegetation within 10 years of monitoring	• Identify causes of slow vegetation establishment [A] • Review sediment dynamics [A]	• Remove impediment to vegetation establishment. [C] • See Potential Management Actions for Sedimentation Inside the Ponds.
Invasive and Nuisance Plants	• Abundance of non-native species	• Presence of other non-native plant species that is greater than 5% of vegetation cover. • Presence of new invasive plants with high potential to spread. • Presence of non-native *Spartina* or hybrids	• Continue to re-evaluate what is meant by "control" of invasive species and adjust monitoring and management triggers based on the latest scientific consensus [A] • If invasive species cannot be controlled, study biotic response to non-native vegetation [A]	No construction actions proposed. • Control invasive Spartina in future restored tidal marsh [I]
Transition zones	• Plant species composition in upland transition zones	• Dominant native plant species cover does not establish • Invasive species constitute >10% of habitat	No additional assessments proposed.	• Active seeding/planting to revegetated bare areas [C] • Control invasive *Lepidium* in transition zone [I] • Weed control [M]

* A = Assessment; C = Construction; I = Invasive and Nuisance Plants; P = Phasing (not cost shared); M = Operations & Maintenance (not cost shared)

Figure 7 (Adaptive Management Assessment and Decision Making: Sediment Dynamics Example) steps through the decision-making process for one of the Shoreline Study uncertainties: Sediment Dynamics. This example is used to illustrate adaptive management decision making throughout Section 7.

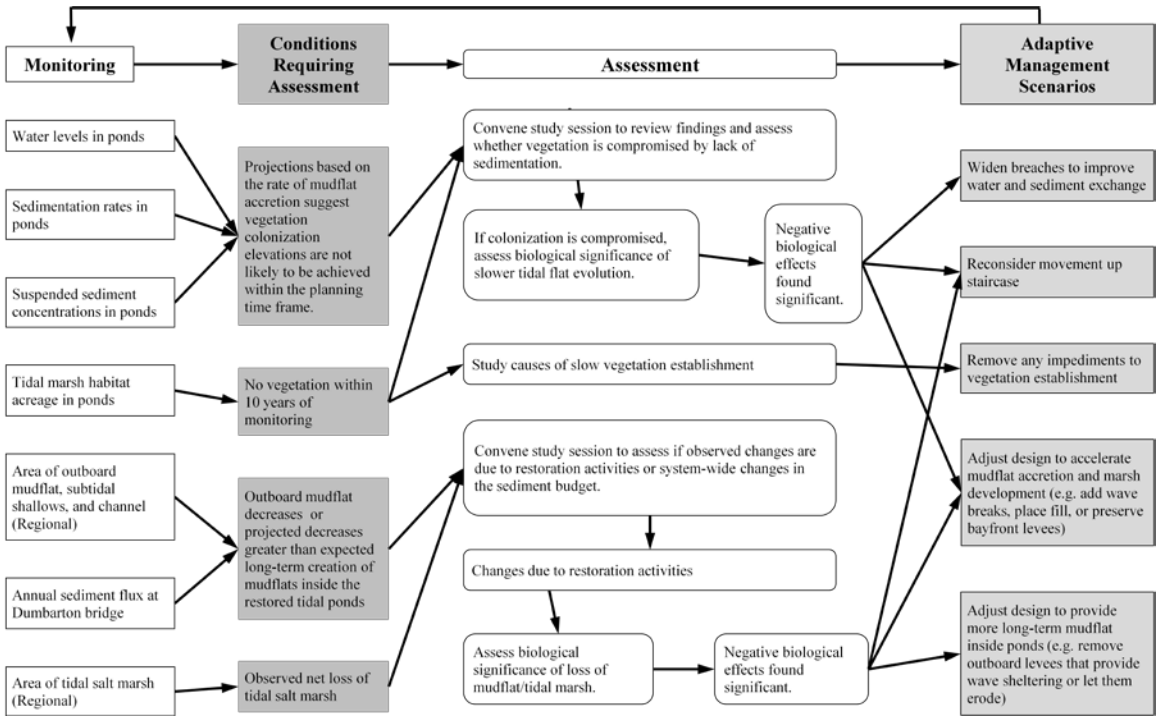

Figure 7. Adaptive Management Assessment and Decision Making: Sediment Dynamics Example

5.1 Triggers

Each restoration target has a management trigger for action if the system is not performing well. A trigger (also known as "Conditions Requiring Assessment") is a threshold that, when reached, indicates that the Shoreline Study may be diverging from a restoration target. The intent of the triggers is to anticipate problems before they cause significant impacts to the system. This advance notice would provide project managers with time to investigate the causes and take action, as necessary, to put the system back on track.

Each management trigger has a corresponding list of potential actions the project team may take if a trigger is reached (discussed in Section 7.2 Potential Adaptive Management Actions). Like the restoration targets, the triggers will be reviewed and updated regularly as additional information becomes available.

5.2 Potential Adaptive Management Actions

Potential management actions are taken when the project is not progressing towards restoration targets as planned and a management trigger has been reached. Typically, the first action would be to conduct an assessment of available monitoring data and consult with external and internal experts to inform subsequent management actions. For this plan, potential management actions are categorized as either (1) as-needed assessments, (2) construction (adjustments to design), or (3) changes to operations, and maintenance. Changes to restoration phasing (adaptive implementation) are also a potential outcome, but those actions are not included as cost-shared activities under the Shoreline Study MAMP.

5.2.1 As-Needed Assessments Triggered by Monitoring

When the cause for tripping a management trigger or the appropriate response is not immediately apparent, these additional assessments use available data (monitoring or other) to better understand what is causing the system to respond differently from target. These assessments typically occur prior to other adaptive management actions and involve convening an assessment team of experts and decision makers to advise the USACE on how to proceed (Table 5. As-needed assessments).

For example, if regular monitoring finds that there is no vegetation establishment within 10 years of monitoring the assessment team would assess whether vegetation establishment is, in fact, caused by sediment dynamics (lack of sedimentation) (Figure 7. Adaptive Management Assessment and Decision Making: Sediment Dynamics Example). If this is the case, the team would assess the biological significance of slower tidal flat evolution. If sediment dynamics is not the cause, the team would examine other potential reasons for slow vegetation establishment.

Table 5. As-needed assessments

Restoration Target Category	Potential Management Action	Type*	Shoreline Study Cost Estimate (unadjusted**)	Cost Estimate *	Notes
Sedimentation Inside the Ponds	• Convene study session to review findings and assess whether colonization is compromised.	A	$ 25,000	$ 4,500	All reviews @$25,000, adjusted by 18%*.
Sedimentation Inside the Ponds	• If tidal marsh is not meeting projections, assess biological significance of slower tidal flat evolution.	A		$ -	Already covered in applied studies
Restored Tidal Marsh Habitat (Inside the Ponds)	• Identify causes of slow vegetation establishment	A	$ 50,000	$ 9,000	
Restored Tidal Marsh Habitat (Inside the Ponds)	• Review sediment dynamics	A		$ -	Already covered in monitoring
California Clapper Rail	• Assess habitat suitability	A		$ -	Already covered in monitoring
Salt Marsh Harvest Mouse	• Assess habitat suitability	A		$ -	Already covered in monitoring
Invasive and Nuisance Plants	• Continue to re-evaluate what is meant by "control" of invasive species and adjust monitoring and management triggers based on the latest scientific consensus	A		$ -	Already covered in monitoring
Invasive and Nuisance Plants	• If invasive species cannot be controlled, study biotic response to non-native vegetation	A	$ 25,000	$ 4,500	All reviews @$25,000, adjusted by 18%*.
	SUBTOTAL			**$ 18,000**	
	27% Contingency			**$ 4,860**	
	TOTAL (First Cost Oct 2014)			**$ 22,860**	

5.2.2 Construction (Adjustments to Design)

Most construction actions involve adjusting the tidal restoration design (e.g. widening breaches or placing fill) when the project is not progressing towards the objectives as planned (Table 6. Adaptive Management Construction Activities). Design adjustments would be tailored to the specific problem as identified through the assessment. The majority of the proposed actions have been implemented elsewhere in San Francisco Bay for similar marsh habitat restoration projects.

For example, if the sediment dynamics study session (described above) finds that slower tidal flat evolution is biologically significant, the design could be adjusted to encourage faster tidal evolution. This might involve widening breaches, placing wave breaks or additional fill, or preserving bayfront levees (Figure 7. Adaptive Management Assessment and Decision Making: Sediment Dynamics Example).

Table 6. Adaptive Management Construction Activities

Restoration Target Category	Potential Management Action	Type*	Cost Est.	Basis for Cost Estimate
Sedimentation Inside the Ponds	• If vegetation colonization is compromised and deemed biologically detrimental, widen breaches to encourage better tidal exchange	C	$ 230,000	Assume 25% widening
Sedimentation Inside the Ponds	• Adjust to increase pond mudflat accretion. Potential management actions include adding wave breaks, placing fill, or in-bay material placement to "feed" the restored ponds.	C	$ 2,610,000	Assume sidecasts are 50% of 36,000 ft of starter channel at $145/LF
Sedimentation Inside the Ponds	• Implement management or adjust design (e.g., remove more levees to increase connectivity between ponds and adjacent sloughs) based on study results	C	$ 840,000	Assume lowering 7,500 ft of levee at $112/ft
Restored Tidal Marsh Habitat (Inside the Ponds)	• Remove impediment to vegetation establishment.	C		
California Clapper Rails	No construction actions proposed.			
Salt Marsh Harvest Mouse	No construction actions proposed.			
Invasive and Nuisance Plants	No construction actions proposed.			
Transition zones	• Active seeding/planting to revegetated bare areas	C	$ 25,000	Assume 20% replating @ $7,000/acre (no irrigation; grassland seeding; plug planting @ 400-500 plants/acre). Estimate does not include any soil amendments, maintenance, or irrigation costs.
	SUBTOTAL		**$ 3,705,000**	
	27% Contingency		**$ 1,000,350**	
	TOTAL (First Cost Oct 2014)		**$ 4,705,350**	

5.2.3 Invasive and Nuisance Plant Control

These adaptive management activities are for the removal of invasive species that may accidentally enter the future restored tidal marsh and transition zones and are beyond the normal operation and maintenance activities that will be performed by the USFWS or non-Federal sponsor. These activities will ensure the establishment of native species, which is a key component of the project's ecosystem restoration objectives.

Monitoring for invasive species will not be cost shared by the USACE, but will performed by existing efforts related to invasive plants and routine operation and maintenance activities.

Within the future tidal marsh areas, this category of proposed cost-shared adaptive management would involve spot control for *Spartina* hybrids whose propogules may enter the project area from the bay through the natural sedimentation that will establish this type of habitat. These spot-control activities will address the possibility that the proposed project will contribute to potential area of infestation of a bay-wide eradication effort (Invasive *Spartina* Project).

Within the future transition zones, the cost-shared adaptive management would address invasive *Lepidium*. The transition areas are more prone to invasion because *Lepidium* thrives in areas of physical disturbance. The transition areas would be a physically disturbed area because they would be constructed by moving large volumes of soil.

Table 7. Invasive and Nuisance Plants

Restoration Target Category	Potential Management Action	Type*	Cost Estimate
Invasive and Nuisance Plants	• Control invasive *Spartina* in future restored tidal marsh	M	$ 250,000
Invasive and Nuisance Plants	• Control invasive *Lepidium* in transition zone	M	$ 900,000
	SUBTOTAL Option		**$ 1,150,000**
	27% Contingency		**$ 310,500**
	TOTAL (First Cost Oct 2014)		**$ 1,460,500**

5.3 Project Close Out

Closeout of the project would occur after the period of cost-shared monitoring and adaptive management. Additional monitoring and adaptive management needed to determine when the project has successfully met its objectives will be conducted by the non-Federal sponsor as part of the operation and maintenance project phase. The project will be determined a success if the restoration targets (Table 2. Monitoring topics, targets, and metrics associated with ecosystem restoration objectives) have been met to the satisfaction of the USACE South Pacific Division Commander. The Division Commander will take into account the recommendations of the San Francisco District Commander and AMT, who will consult with the Executive Leadership Group, South Bay Salt Pond Restoration Project Stakeholder Forum and Science Program, Federal and State resource agencies, and others as appropriate.

Cost-shared monitoring is proposed for a period ten years following each phase of pond breaching. Monitoring beyond this ten-year period will be funded solely by the non-Federal sponsor. Conversely, if the restoration targets are met before the end of the ten-year period, monitoring may be discontinued.

6. Costs for Implementation of Monitoring and Adaptive Management

Cost-shared monitoring and adaptive management actions by the USACE will be limited to actions conducted within the project footprint that are associated with meeting the project's ecosystem restoration objectives, and will not extend beyond 10 years after construction.

The costs for cost-shared monitoring and adaptive management are summarized in Table 8 (Monitoring and Adaptive Management Cost Summary Table). Detailed cost estimates are described in the following sections. The total estimated cost for monitoring and adaptive management for the Shoreline Study, including a 27% contingency, is $8.7 million (First Cost October 2014 price level).

The individual cost elements are approximate and are intended to provide a reasonable basis for budgeting potential costs. Because uncertainties remain in the project elements, monitoring, and adaptive management actions, the cost estimates provided in this report will need to be refined before these actions are implemented.

6.1 Costs for Implementation of Monitoring

Table 3 reports the cost estimates for Shoreline Study monitoring. The costs are based on the frequency of monitoring and the amount of monitoring. All costs assume the monitoring plan is executed in full. The total estimated cost for Shoreline Study monitoring, including a 27% contingency, is $968,000 (First Cost October 2014 price level).

Many of the monitoring and assessment costs are estimated based on previously-estimated costs for the SBSP Restoration Project AMMP (Trulio et al 2007). The SBSP Restoration Project costs are scaled based on relative project areas. This assumes that costs can be estimated on a per-acre basis and reapplied for different regions in the South Bay.

The Shoreline Study's estimated share of monitoring and adaptive management costs is 18% of the combined Shoreline Study and SBSP Restoration Project costs. This calculation is based on the ratio of the Shoreline Study area to the combined Shoreline Study and South Bay Salt Pond area (2,891 acres/15,926 acres). Monitoring costs for the Shoreline Study would likely be higher if monitoring and adaptive management for the Shoreline Study were not coordinated with the SBSP Restoration Project.

6.2 Costs for Implementation of Adaptive Management

The costs for adaptive management are organized into the three adaptive management action categories. The costs of as-needed assessments, construction, and phasing, operations, and maintenance are reported in Table 5, Table 6, and Table 8, respectively. The construction cost estimates were provided in part by USACE. Many of the cost estimates were derived from other South Bay pond restoration projects. The total estimated cost for Shoreline Study adaptive management, including a 27% contingency, is $6,189,000 (First Cost October 2014 price level) for Ponds A9 - A15 and A18, with the potential construction actions contributing approximately three fourths of the costs. This total cost assumes that all adaptive management actions are implemented and likely overestimates total

costs. The relatively significant cost of adaptive management compared to initial construction of ecosystem restoration features is associated with the potential need to mobilize and demobilize for additional construction.

For management triggers where multiple adaptive management actions may be considered and only one implemented, we estimated costs for one representative action. The actual action selected during decision-making may not be the one assumed in the cost estimate and costs may differ. Total costs, however, are expected to be equal to or lower than the costs estimated here.

Table 8. Monitoring and Adaptive Management Cost Summary Table

		Adaptive Management				
Restoration Target Category	**Monitoring**	**Assessment**	**Construction**	**Invasive and Nuisance Plants**	**Adaptive Management Total**	**Total Cost**
Sedimentation Inside the Ponds	$600,000	$4,500	$3,680,000		$3,684,500	$4,284,500
Restored Tidal Marsh Habitat (Inside the Ponds)	$108,000	$9,000			$9,000	$117,000
CA Clapper Rail	$0				$0	$0
Salt Marsh Harvest Mouse	$0				$0	$0
Invasive and Nuisance Plants		$4,500		$1,150,000	$1,154,500	$1,154,500
Upland transition zones	$54,000		$25,000		$25,000	$79,000
Subtotal for Monitoring & Adaptive Management	$762,000	$18,000	$3,705,000	$1,150,000	$4,873,000	$5,635,000
Overhead for regular assessments, meetings, data management ($75K/year)						$1,500,000
TOTAL (Including 27% contingency) (First Cost Oct 2014)	**$967,740**	**$22,860**	**$4,705,350**	**$1,460,500**	**$6,188,710**	**$8,656,450**

Note: Adaptive Management column includes assessments triggered by monitoring results, construction, and invasive and nuisance plant costs.

References

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Trulio, L., D. Clark, S. Ritchie, A. Hutzel, and the Science Team (2007). South Bay Salt Pond Restoration Project Administrative Draft Adaptive Management Plan. November 14, 2007.

U.S. Army Corps of Engineers (USACE) (2009). Implementation Guidance for Section 2039 of the Water Resources Development Act of 2007(WRDA 2007) – Monitoring Ecosystem Restoration, CECW-PB. Washington D.C., August 31, 2009.

Attachment C:
Landward Levee Alignment
East of Artesian Slough Memo

South San Francisco Bay
Shoreline Project

City of San Jose
Santa Clara County

December 2017

TO: South Bay Shoreline Protection Project Team (internal)

FROM: Christina Toms
Senior Environmental Scientist (Specialist)
PLANNING DIVISION

DATE: June 8, 2017

SUBJECT: South Bay Shoreline Protection Project: Justification for landward levee alignment

The South Bay Shoreline Protection Project (Project) is a joint Flood Risk Management (FRM)/Ecosystem Restoration (ER) effort between the US Army Corps of Engineers (Corps), California Coastal Conservancy (Conservancy), and Santa Clara Valley Water District (District). The purpose of this memo is to briefly memorialize the Water Board's reasons for preferring a landward levee alignment (Figure 1) east of Artesian Slough to the Locally Preferred Plan (Figure 2) proposed in the US Army Corps of Engineers' 2015 Final Interim Feasibility Study/EIS/EIR.

1. Smaller Earthwork Volumes

The LPP proposes to build the FRM levee east of Artesian Slough along the centerline of the present Pond A18 levee. The precise bathymetry of Pond A18 is not known, but bottom elevations appear to range between +2 and +3 ft NAVD. The Pond A18 is levee is un-engineered, has crest elevations largely below +12 ft NAVD (Figures 3 and 4), and is located in an area with Bay Mud depths of up to 18 ft (see geotechnical appendix to the USACE report). To compensate for the likely settlement that would occur along much of the FRM levee in this area, the Corps proposes to build Reach 4 to an as-built elevation of +19.7 ft NAVD (Reach 5 would be built to +15.2 ft NAVD – the design levee crest – due to negligible local depths of Bay Mud). Figure 5 displays a cross-section of the FRM levee design on top of a cross-section of the existing Pond A18 berm. The Corps report describes a fill volume of approximately **1.55M cy** to construct Reaches 4 and 5; of this volume, approximately 1.2M cy would have to be imported from off-site (Table 1). The levee fill volume calculation assumes a base elevation of 0 ft NAVD, meaning below-grade foundation soils would have to be excavated and treated/compacted to be compatible with FRM levee specs.

The landward levee alignment moves the FRM levee centerline inland where it can capture existing high ground around the Zanker Landfill, the un-engineered berms that separate the San Jose-Santa Clara WWTP's inactive biosolids ponds, and the engineered levee along the active sludge ponds' western boundary (Figures 3 and 4). Of the levee alignment's four segments east of Artesian Slough (Zanker Landfill, Inactive Sludge Ponds, Active Biosolid Ponds Segment 1, and Active Biosolid Ponds Segment 3), only the Inactive Biosolid Ponds segment would require a full core FRM levee (3H:1V side slopes, 16 ft crest width). The Zanker and Active Biosolid Pond segments would likely only require "veneer" treatments to augment existing side slopes, which would ultimately be buried under the 30H:1V ecotone (for example, Figure 6 shows just

such a treatment for the Zanker Landfill). In addition, the negligible depth of Bay Mud deposits beneath most of the landward alignment means that only the portion near the Zanker Landfill would likely have to overbuild, and then only to approximately +16.7 ft NAVD. As a result, the landward levee alignment would likely require less fill volume to construct. Using the Corps' assumption of a levee/ecotone base at 0 ft NAVD, we estimate the landward levee would require roughly **1.45M cy** of material, only 110K cy less than the LPP (Table A-1). However, the alignment's location farther inland likely means that such deep excavation is likely not necessary. Applying conservative assumptions about local topography (City mitigation marsh at +2 ft NAVD, inactive biosolid ponds graded down to +5 ft NAVD, and the interior of Pond A18 at +3 ft NAVD) to the levee fill volume calculation results in an estimate of **895K cy** for the entire levee/ecotone. The ultimate volume necessary for levee construction will likely fall somewhere between these two estimates, and be considerably less than the LPP volume. The landward levee alignment's smaller volumes will likely result in a project that is cheaper and easier to build.

2. Volume, Availability, and Proximity of Inactive Sludge Pond Material

As mentioned previously, construction of the LPP levee and ecotone would require the import of over a million cy of material from off-site locations. This material would have to be trucked to the site, likely stockpiled, and managed until it could be used for construction. The volumes and timing of available material are uncertain due to the variety of projects in the SF Bay Area that require clean fill, particularly other upcoming FRM/ER projects such as Phase 2 of the South Bay Salt Ponds and the SAFER Bay project.

The footprint of inactive biosolid ponds that would be underneath and bayward of the landward levee alignment is approximately 95 acres. This area has an average elevation of +7.7 ft NAVD, slightly above local MHHW of +7.6 ft NAVD; low cordgrass marsh in the area begins to establish at roughly +4.3 ft NAVD (ESA PWA 2012). There is therefore considerable "elevation capitol" within the 95-acre pond footprint to provide material for construction of the ecotone, while still being able to rapidly develop tidal wetland habitats post-restoration. Table A-1 displays the volume of soil available in the inactive biosolid ponds and biosolid piles above a range of elevations.[1] For example, if the ponds and piles were excavated down to an elevation of +5 ft NAVD, they would provide over half a million cy of material for ecotone construction. A likely similar amount of material would be available landward of the levee, in the inactive sludge ponds between Zanker Landfill and the active sludge ponds. Since the inactive ponds are immediately adjacent to the levee/ecotone footprint, material from them would not require extensive trucking or handling to get into place, lowering potential GHG emissions from construction.

Use of inactive sludge pond material provides a "win-win" for the project: it provides a nearby source of construction material (likely making construction quicker and cheaper), and gives the City of San Jose (City) a mechanism to efficiently close its legacy biosolid ponds. The Water Board's practice for other similar properties is to require remedial actions to permanently close sites with contaminants, such as the inactive biosolid ponds, in a manner that will be protective

[1] Table A-1 separates the volumes of the sludge piles from the pond beds/berms because the pile material has slightly elevated levels of cadmium, and should be buried beneath the surface of the ecotone. Preliminary review of inactive sludge pond geotechnical data by Groundwater Protection Division chief Terry Seward indicates that the bed/berm material is largely suitable for ecotone construction. Note that the physical and chemical properties of the legacy biosolids are considerably different from fresher biosolids due to extensive exposure to time and sunlight; this proposal is not meant to address the feasibility of utilizing younger biosolids as a wetland construction medium.

of human health and the environment. This would potentially make it easier for the City to utilize this land consistent with its proposed Master Plan.

3. Elimination of "No Net Loss" as an Obstacle to Permitting

A June 2015 submittal from the Corps to the Water Board indicated that construction of the Project overall (not just Reaches 4 and 5) would require filling of 137.6 acres of wetlands and waters of the State, and would restore 54.7 acres of wetlands along the ecotones of Ponds A12 and A18 as well as the lowered levees around Pond A18. This results in a net loss of 82.9 acres of wetlands and waters. In 2016, the Corps updated this assessment, and calculated a net loss of 101.4 ac from construction of the overall Project. With high rates of sea level rise (estuarine transgression over the ecotone), the Corps estimated that this net loss would shrink to 74.1 acres. In the long term, of course, the Project also facilitates the tidal restoration of 2,900 acres of salt ponds (A9-A15, A18).

Most of the wetlands and waters that would be filled are isolated, non-tidal wetlands, while the restored wetlands would be tidal wetlands within a recovering regional tidal wetland complex. The Corps has argued that the restored wetlands would have comparatively greater habitat values than most of the existing wetlands that would be filled, and they are correct. Nonetheless, the Water Board's historic interpretation and application of the "no net loss" policy makes it difficult to reconcile the certain short-term loss of wetlands and waters with the uncertain long-term recovery of tidal wetland habitats. This is particularly challenging given (1) short-term (Phase 1, A12 and A18) wetland restoration would largely be limited to narrow strips along ecotones and lowered levees, not broad expanses of dendritic tidal marsh plains (Figure 2)[2], and (2) the long-term development of tidal wetland habitats within salt ponds subsided below tidal vegetation elevation thresholds is largely dependent on local sediment supply, sediment accretion rates, and SLR rates, all of which are temporally/spatially variable and challenging to predict (see ESA PWA 2012).

The landward levee alignment effectively eliminates this obstacle by facilitating the short-term restoration of over 70 acres of vegetated marsh within the footprint of the bayward former inactive sludge ponds. These areas could be graded to an appropriate elevation such that as soon as Pond A18 was breached, they would have sufficient "elevation capitol" to rapidly establish and develop vegetated marsh habitats much sooner than lower, subsided areas within the Pond A18 interior. The landward levee alignment also facilitates the enhancement of approximately 66 acres of existing mitigation marshes (managed wetlands) north and west of the Zanker landfill. These mitigation wetlands were developed in the 1980s, when the field of tidal wetland restoration was in its infancy, and are not providing the types of fully functional tidal habitats they were meant to provide. The LPP isolates these wetlands between the FRM levee and the Zanker landfill, further degrading their habitat values; in the long term SLR would gradually reduce opportunities for the mitigation marshes (which sit low in the tidal frame at about +2 to +4 ft NAVD) to drain at low tide. The landward alignment would instead allow these marshes to be directly breached to Pond A18 so that they may develop as fully functional tidal wetlands.[3]

[2] Broad, dendritic marsh plains are much more effective than narrow fringing wetlands at supporting the beneficial uses targeted by tidal wetland restoration, particularly the provision of habitat for rare and endangered species.

[3] This transitional period would likely result in a temporary shift from pickleweed-dominated to cordgrass-dominated habitats; the transition could be executed gradually to minimize impacts to listed species.

The ecological functions and values of the newly restored (in the inactive sludge ponds) and enhanced (in the mitigation marshes) wetlands would be further improved by lowering the Pond A18 "stairstep" levee to marsh elevations between MHHW and EHW (Figure 1). This way, the levee can provide critical high tide refugia that is ***internal*** to the Pond A18/former inactive sludge pond complex, as opposed to the high ride refugia along the outer fringes of the marsh on the ecotone. Internal high tide refugia is critical for listed species such as Ridgway rail and salt marsh harvest mouse that have small home ranges that may be far from terrestrial ecotones. The lowering of this levee (and the rest of the Pond A18 levee) would provide additional upland-to-wetland acreage for the Project's accounting.

Finally, construction of the landward FRM levee and ecotone would require the placement of fill in jurisdictional wetlands within inactive biosolid ponds and the mitigation marshes. The footprint of impact from these fill activities has not yet been calculated, but it would likely be offset by the restoration and enhancement activities described above. Table 1 below presents the approximate differences in post-project habitat types between the landward levee alignment and the LPP. Note how the landward levee alignment restores significantly more vegetated wetland areas (highlighted in green) than the LPP.

Table 1. Estimated Post-Project Habitats for the Landward Levee Alignment and the LPP.

Habitat Type	**Acreages – Landward**	**Acreages – LPP**
Upland	84	85
High Marsh – Pickleweed	24	4
High Marsh – Cordgrass	77	13
Low Marsh – Cordgrass	83	17
High Intertidal Mudflat	386	355
Mid-High Intertidal Mudflat	337	321
Mid-Low Intertidal Mudflat	30	31
Low Intertidal Mudflat	25	16
Shallow Subtidal B	27	19
Shallow Subtidal A	>1	>1
Managed Wetlands	N/A	90

4. Police Bomb Disposal Range

One of the legacy sludge ponds south of the proposed landward levee alignment is used on a non-continual basis (a few times a month) by local police departments for bomb disposal, target practice, and other related uses. The Project proposes constructing a new portion of the Bay Trail on top of the levee. In the case of the landward alignment, a short (~300 ft) portion of the new trail would therefore be located adjacent to this pond. To avoid conflicts with police activities, the trail in this area could be subject to temporary closures (requiring gates, and someone to open/close them), or routed instead farther out (bayward) along the ecotone levee, possibly with a boardwalk. The proximity of the disposal range to the levee needs to be evaluated further but should not preclude the use of this alignment.

5. Conclusion

The landward levee alignment eliminates a major obstacle to South Bay Shoreline Protection Project permitting, would likely require less dirt to build and be cheaper and easier to construct, and provides an alternative mechanism for the City of San Jose to address their legacy biosolid ponds.

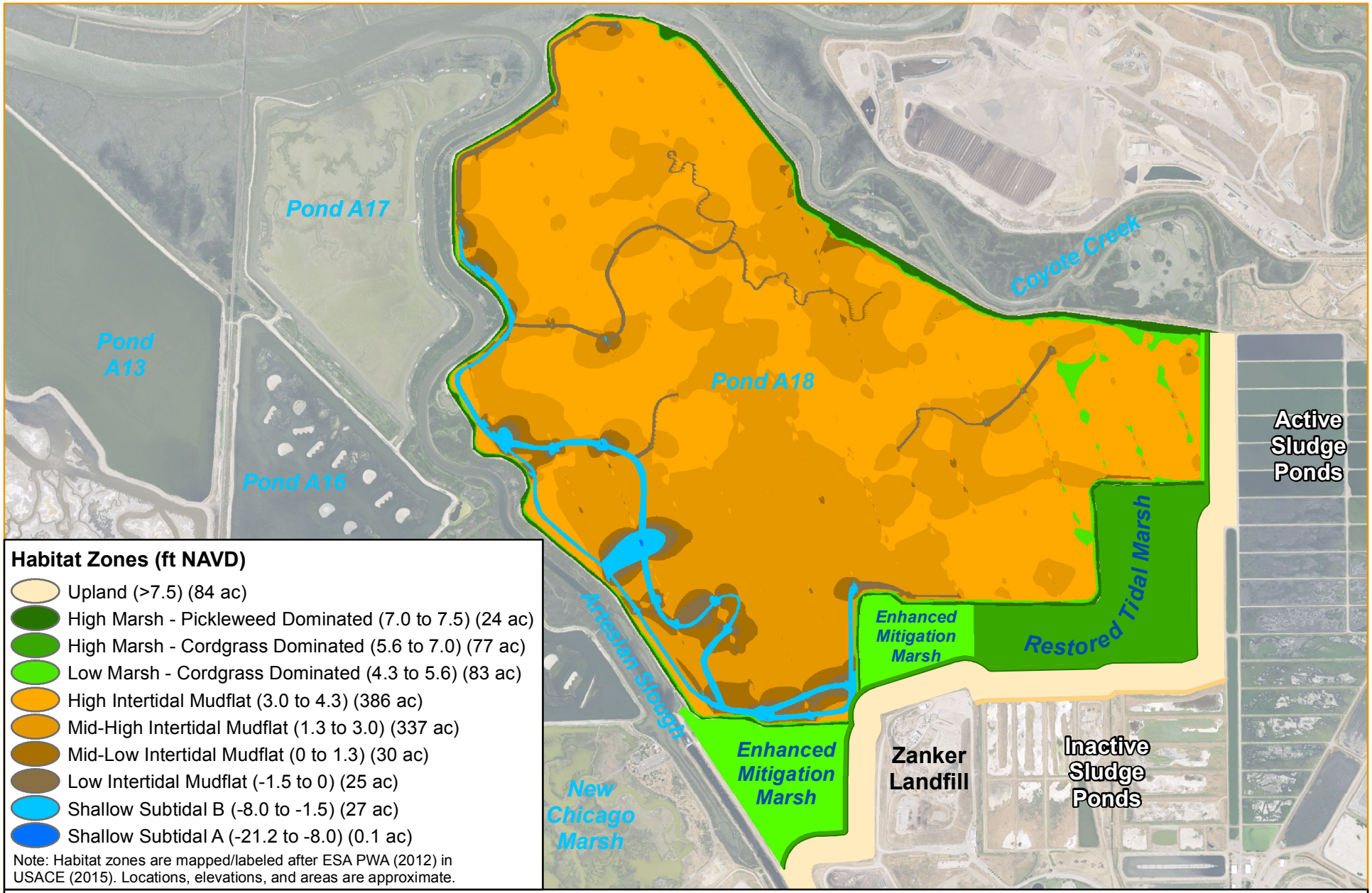

Figure 1
South Bay Shoreline Protection Project
Landward Levee Alignment:
Projected Post-Restoration Habitats

CALIFORNIA Water Boards
STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS

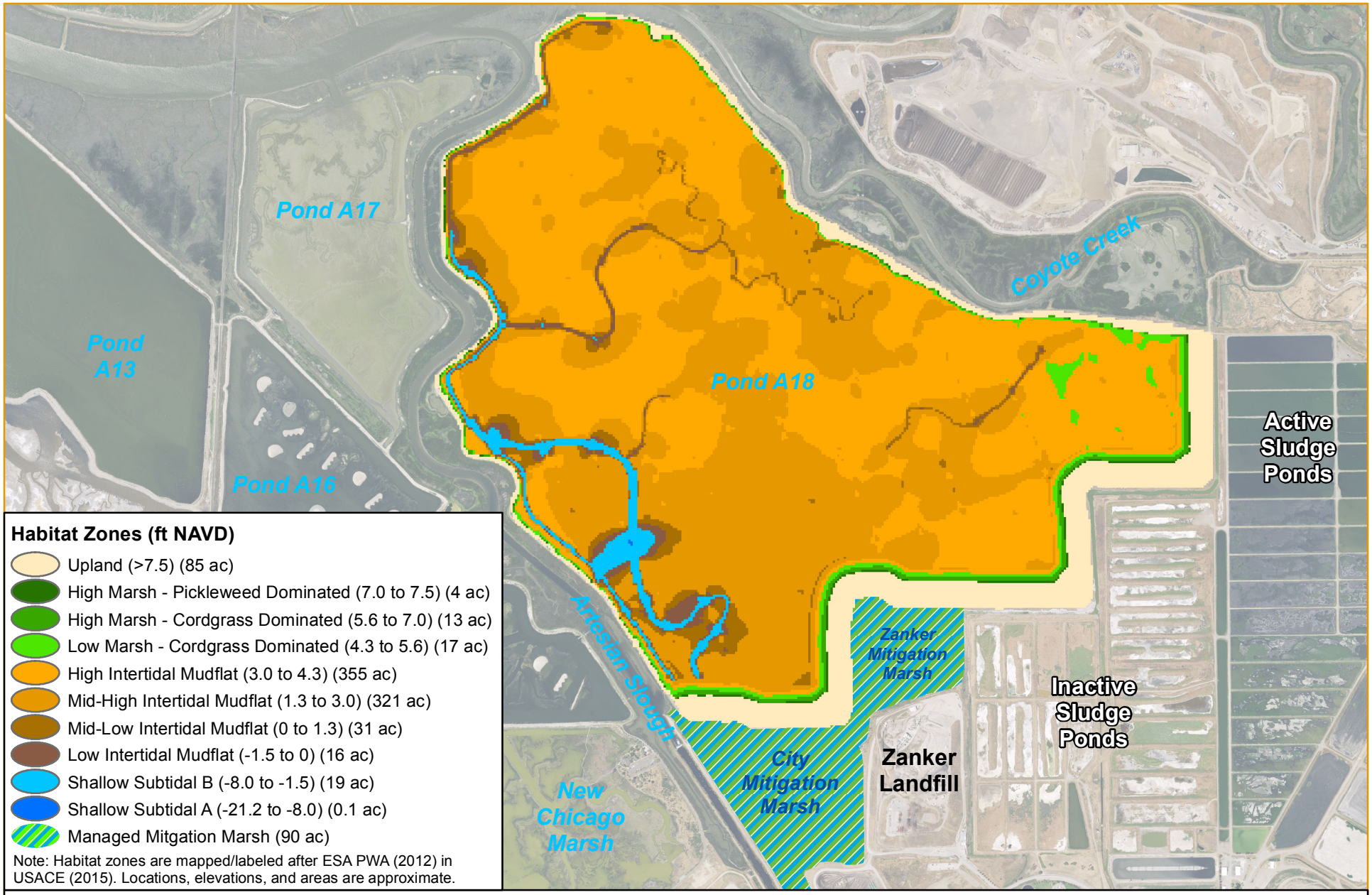

Figure 2
South Bay Shoreline Protection Project
LPP Levee Alignment:
Projected Post-Restoration Habitats

CALIFORNIA Water Boards
STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS

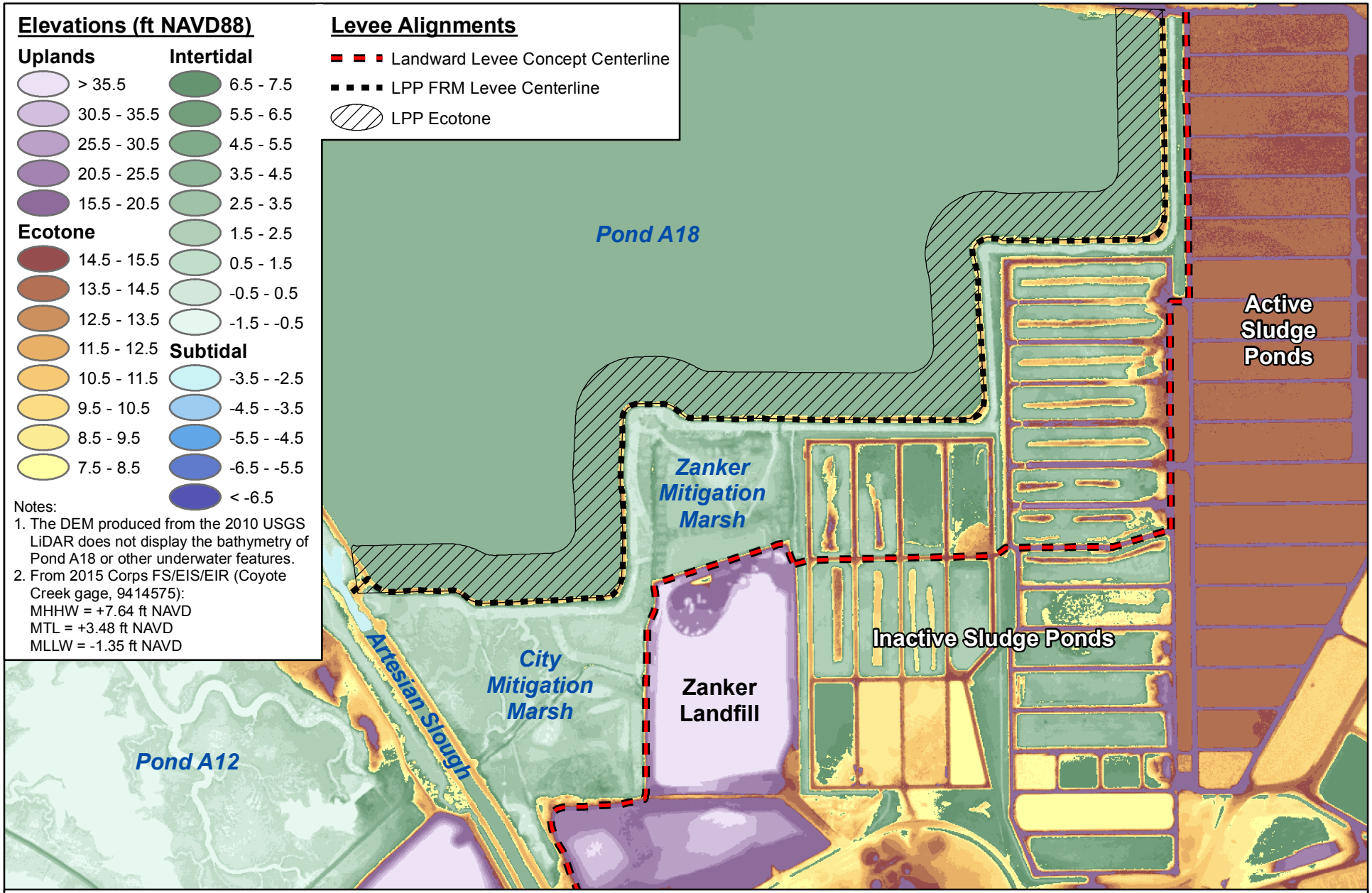

Figure 3
South Bay Shoreline Protection Project
Local Topography + Levee Alignments:
East of Artesian Slough

California Water Boards
State Water Resources Control Board
Regional Water Quality Control Boards

Figure 4: Levee Alignments: Profile Elevations

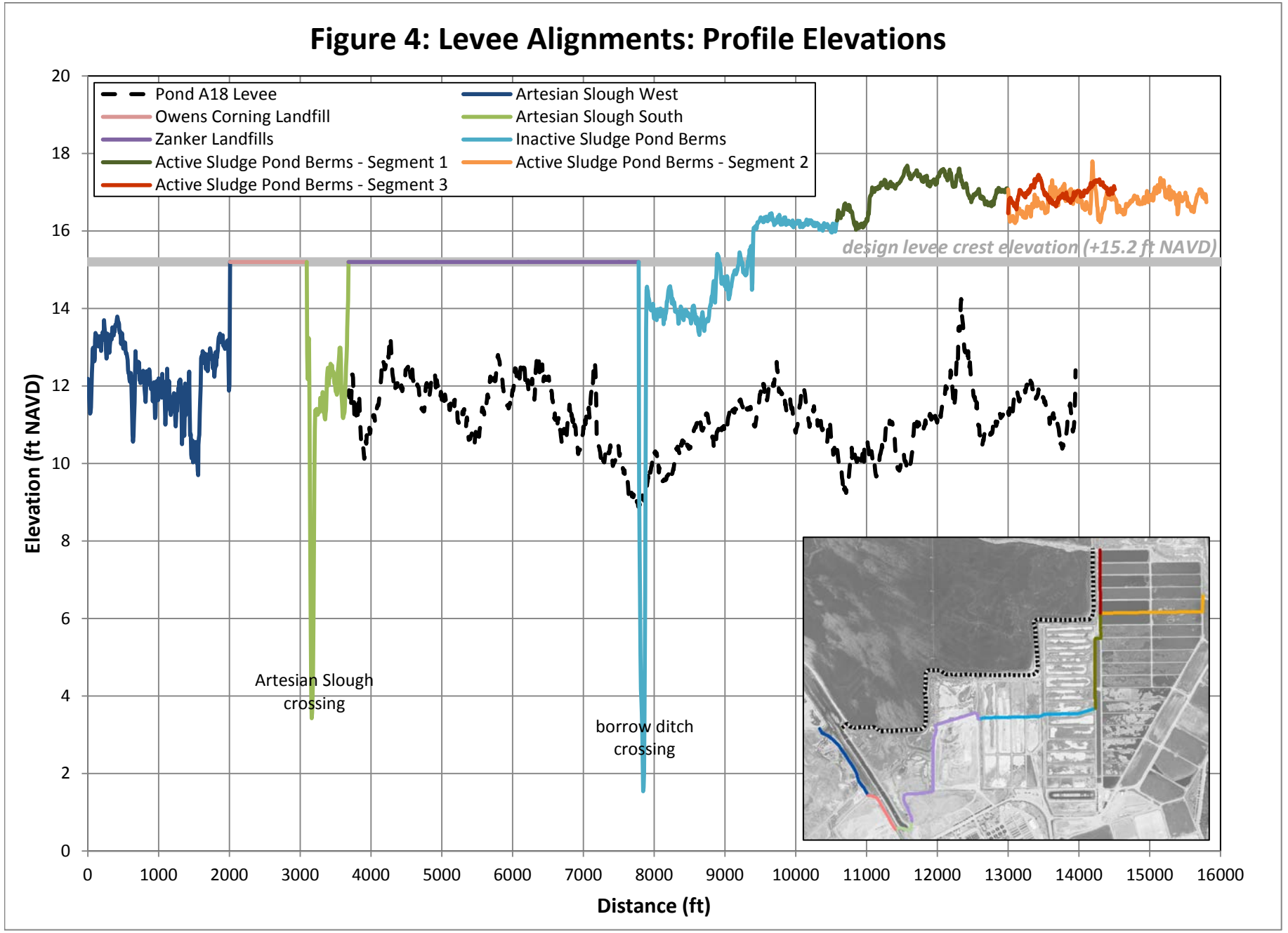

Figure 5: Representative Cross-Section + LPP: Pond A18 Levee

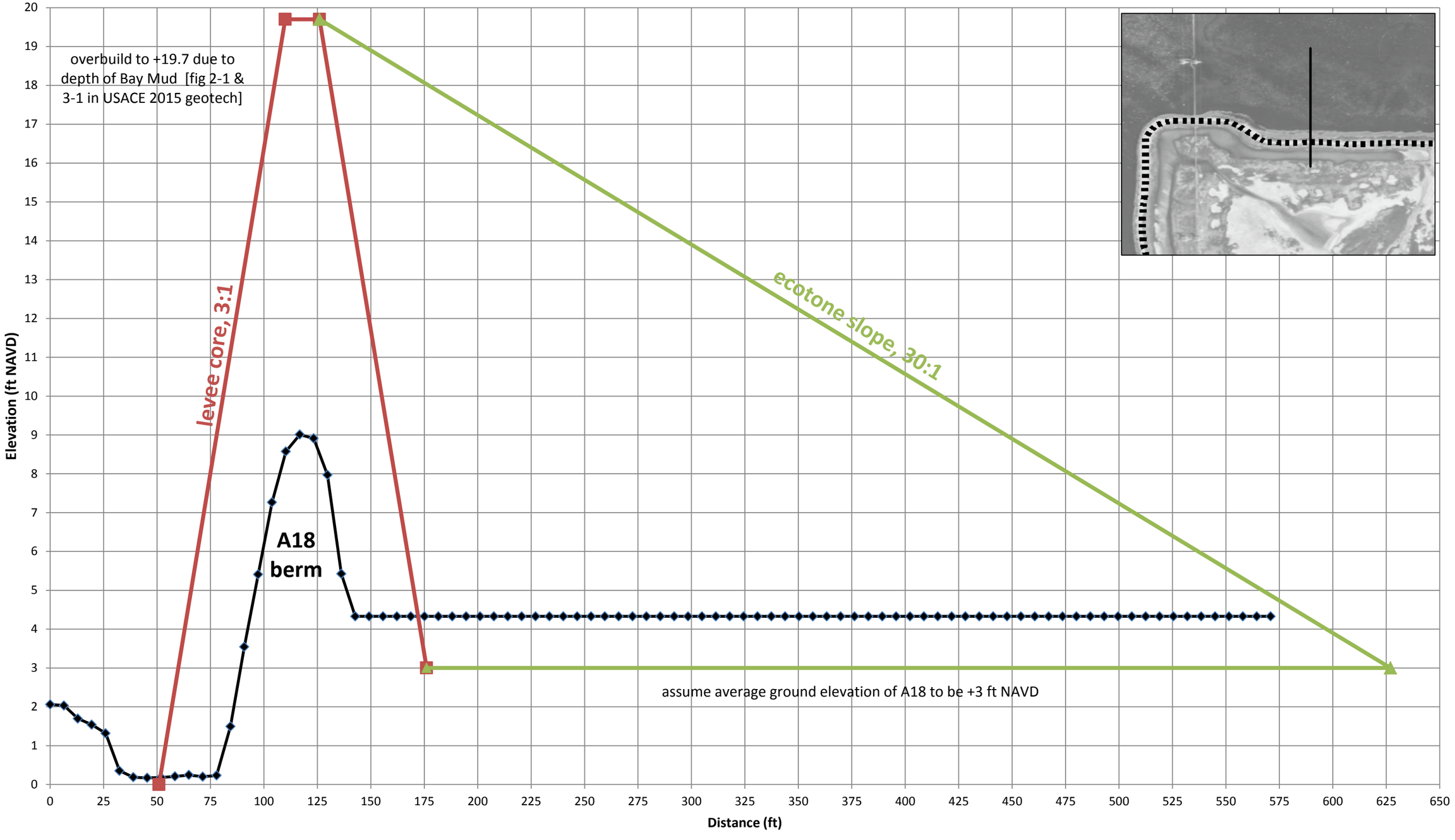

Figure 6: Representative Cross-Section +LPP: Zanker 2

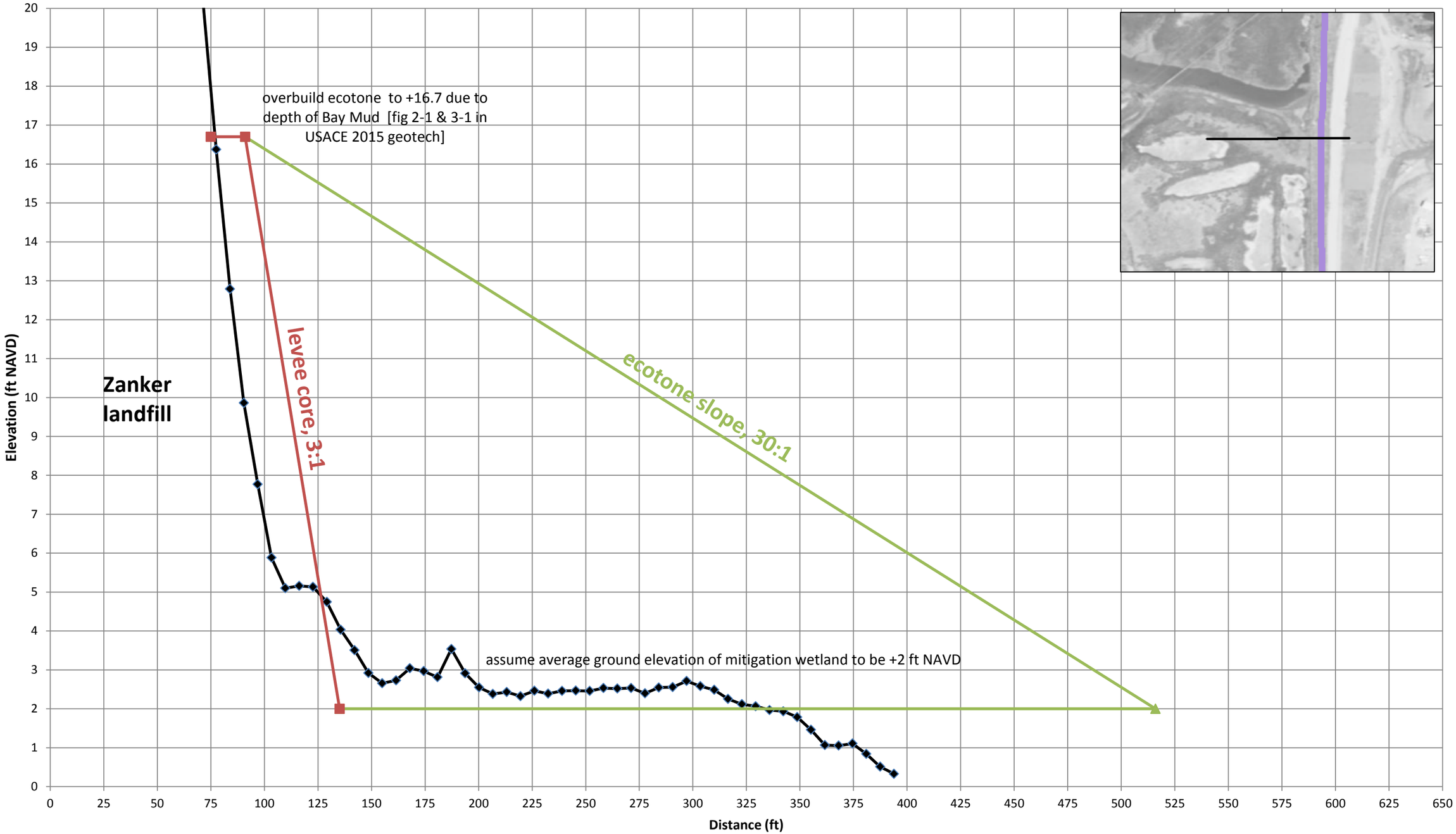

Figure 7: Representative Cross-Section + LPP: Inactive Sludge Ponds

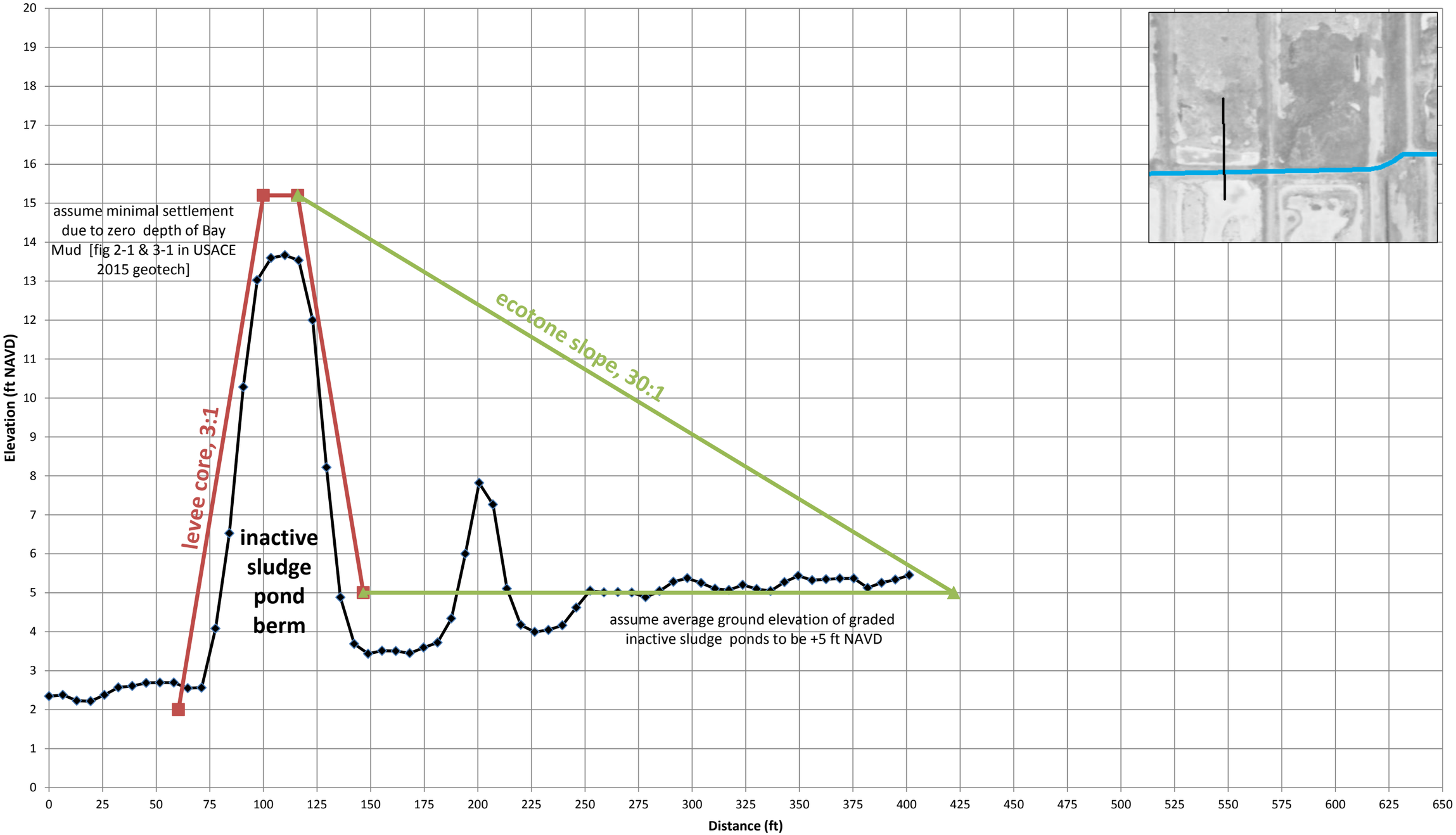

Figure 8: Representative Cross-Section+ LPP: Active Sludge Ponds - Segment 1

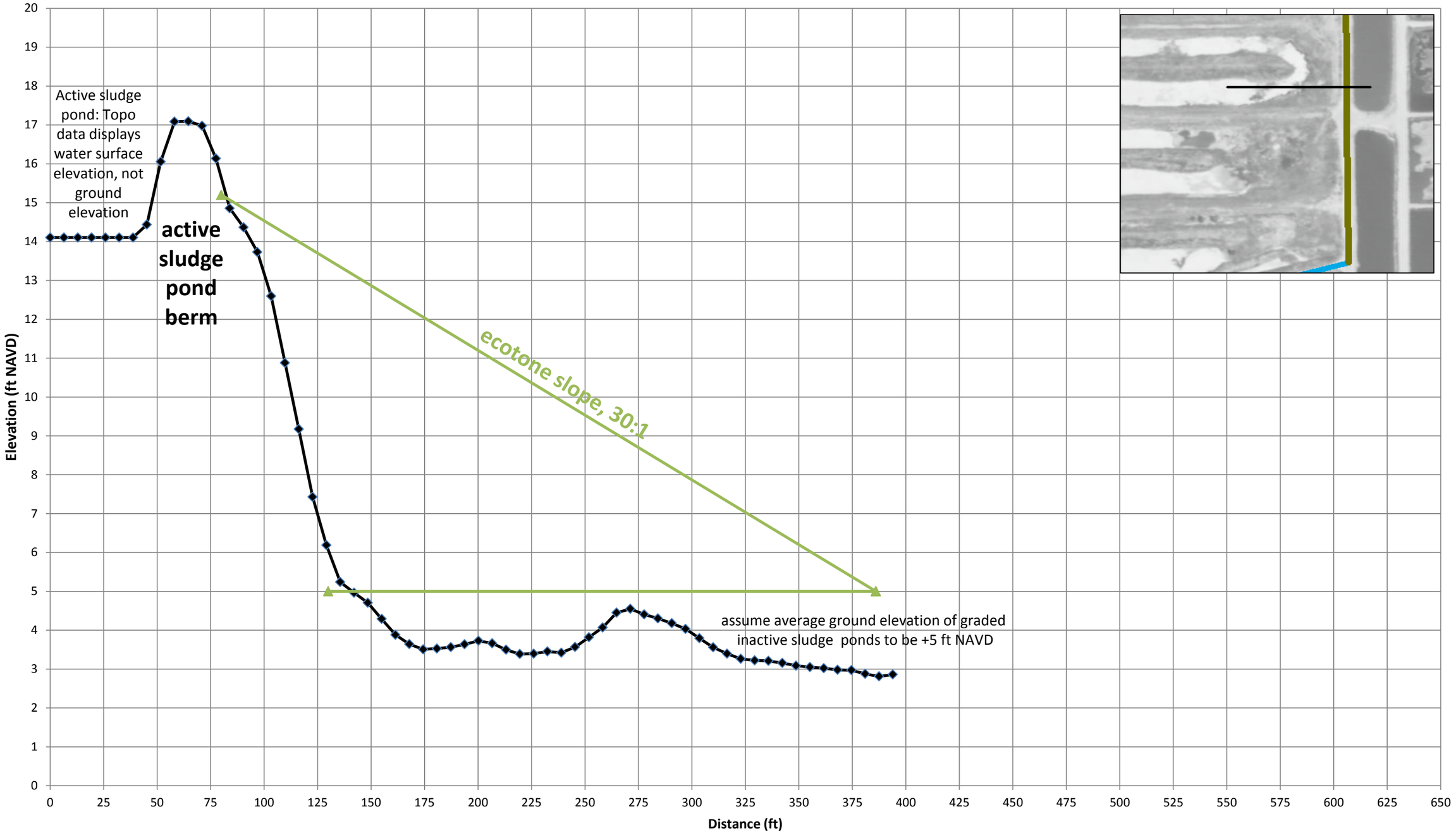

Figure 9: Representative Cross-Section + LPP: Active Sludge Ponds - Segment 3

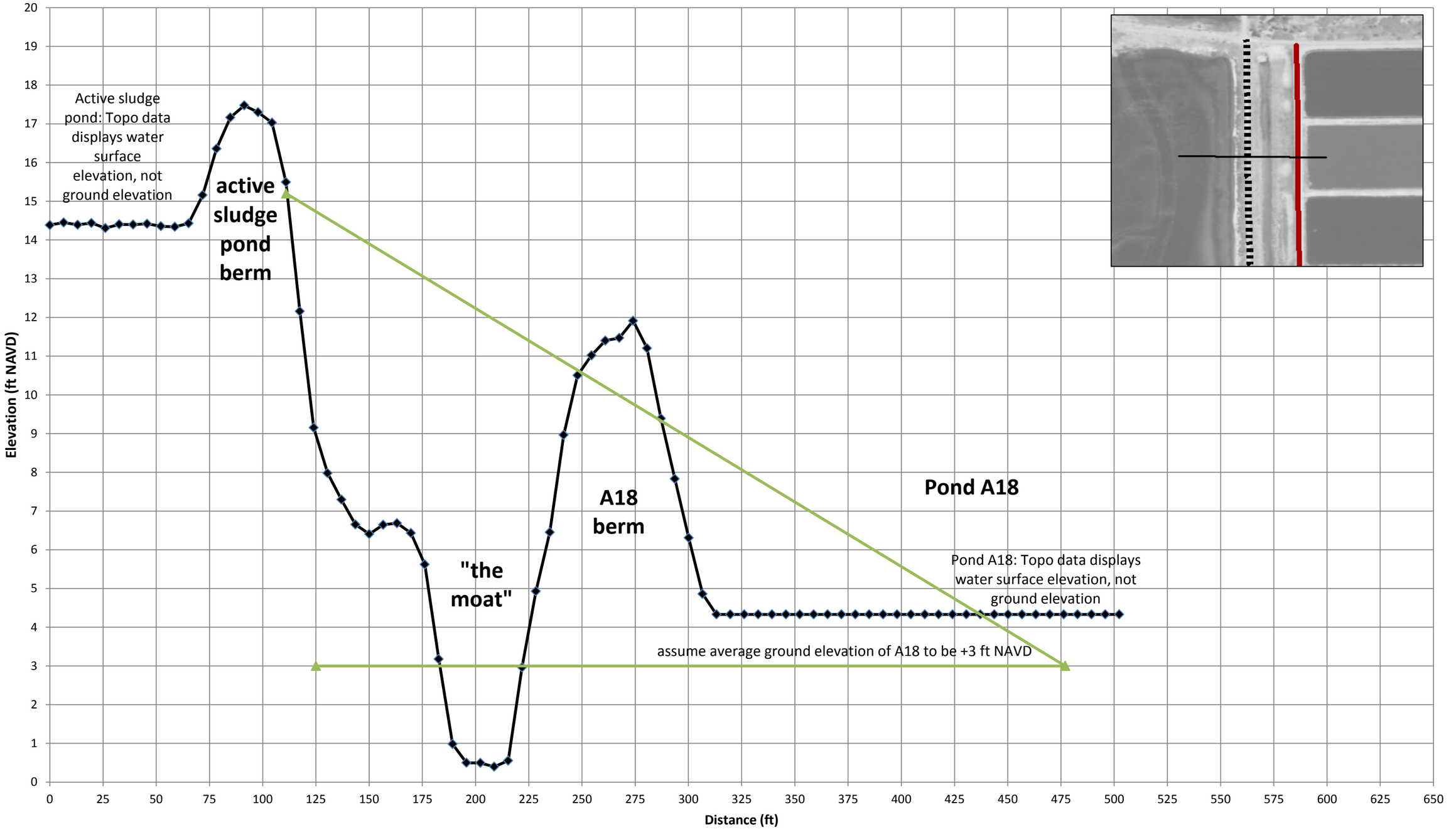

Table A-1: Levee Cut and Fill Volumes

Levee Fill Volumes (LPP, USACE 2015)

	Project Station			Fill (cy)			
LPP Levee Reach	Begin	End	Distance (ft)	Levee Core	50-ft Bench	Ecotone	Subtotal Fill (cy)
4	94+75	150+00	5,525	312,566	92,083	477,102	881,751
5	150+00	197+75	4,775	174,079	79,583	412,337	665,999
							1,547,750 TOTAL

Levee Fill Volumes (Landward Alignment, Water Board 2017)

Assumptions re: existing topography (mitigation marsh edge at +2 ft NAVD, inactive sludge ponds at +5 ft NAVD, Pond A18 at +3 ft NAVD)

		Design Elevations (ft NAVD)		Fill (cy/lf)		Subtotal Fill (cy)		
Levee Reach	Distance (ft)	Levee Crest	Bayward Ground Surface	Levee Core	Ecotone	Levee Core	Ecotone	
Zanker	4,099	16.7	2	9	108	35,707	442,876	
Inactive Sludge	2,802	15.2	5	18	52	49,328	145,760	
Active Sludge - 1	2,419	15.2	5	0	48	0	116,515	
Active Sludge - 3	1,509	15.2	3	0	69	0	103,981	
						85,034	809,133	894,167 TOTAL

Assumptions consistent w/ USACE approach (base elevation of 0 ft NAVD)

		Design Elevations (ft NAVD)		Fill (cy/lf)		Subtotal Fill (cy)		
Levee Reach	Distance (ft)	Levee Crest	Bayward Ground Surface	Levee Core	Ecotone	Levee Core	Ecotone	
Zanker	4,099	16.7	0	10	139	40,565	571,585	
Inactive Sludge	2,802	15.2	0	35	116	97,169	323,687	
Active Sludge - 1	2,419	15.2	0	0	107	0	258,743	
Active Sludge - 3	1,509	15.2	0	0	107	0	161,407	
						137,734	1,315,423	1,453,157 TOTAL

Available Cut Volumes from Pond A18 Levee (LPP, USACE 2015)

	Project Station			Cut (cy)		
LPP Levee Reach	Begin	End	Distance (ft)	Degrade	Inspection Trench	Subtotal Cut (cy)
4	94+75	150+00	5,525	154,817	9,822	164,639
5	150+00	197+75	4,775	164,712	8,489	173,201
						337,840 TOTAL

Available Cut Volumes from Inactive Sludge Ponds (Landward Alignment, Water Board 2017)

	Volume (cy) Above Elevation (ft NAVD)							
Location	0	1	2	3	4	5	6	7
Inactive Sludge Ponds	942,511	818,961	696,174	582,069	489,277	410,450	340,530	283,819
Old Sludge Piles	209,011	185,596	162,182	138,830	115,876	94,366	75,040	58,134
TOTALS	**1,151,521**	**1,004,557**	**858,355**	**720,899**	**605,153**	**504,816**	**415,570**	**341,953**

Note: This is only for the ponds underneath and bayward of the proposed levee/ecotone. Additional material could be made available from inactive ponds landward of the levee.

Attachment D:
Phase I, Reach 1 60 Percent Design Plans

Phase I, Reach I 60 Percent Design Plans can be found at the following link:

https://www.waterboards.ca.gov/sanfranciscobay/board_info/agendas/2017/December/SouthBayShoreline/TO_Attachment_D_SSFBSPP_813084.pdf

South San Francisco Bay
Shoreline Project

City of San Jose
Santa Clara County

December 2017

Appendix B:
Comments on Tentative Order

401 Water Quality Certification and Waste Discharge Requirements

South San Francisco Bay Shoreline Project

City of San Jose
Santa Clara County

December 2017

Coastal Conservancy

November 15, 2017

Mr. Bruce H. Wolfe
Executive Officer
San Francisco Bay Regional Water Quality Control Board
1550 Clay St, 15th Floor
Oakland CA 94612

Dear Mr. Wolfe:

Thank you for this opportunity to comment on the draft Tentative Order for the South San Francisco Bay Shoreline Project. We appreciate the extensive amount of time that RWQCB staff have devoted to the Shoreline Project and that they have accommodated the construction schedule of the Corps process by drafting the Order within a very short timeframe.

This is a large and complex project has multiple phases and the RWQCB staff have sought to streamline the permitting process by providing a means to approve subsequent phases in the Tentative Order. The Conservancy appreciates this efficiency. However, the Conservancy also has concerns about the ramifications of some of the provisions of Tentative Order and how it will impact future project implementation. The key concerns are discussed more fully below. Specific comments on language in the Tentative Order are in the attached table of comments.

CONSERVANCY CL-1

Voluntary Ecosystem Restoration vs. Mitigation

Most of our comments have to do with a misunderstanding of the purpose of the project. The Tentative Order initially correctly describes the project (pp. 2-3) as a multi-benefit project that seeks to restore former salt evaporation ponds, protect adjacent communities from flooding, and provide recreational opportunities. However, on p. 4, there is a different interpretation of the project purposes: "Phase I is expect to result in Project impacts and the ecosystem restoration work in Phases I, II, and III is intended to provide mitigation for those impacts." This description sets the stage for requirements that are extremely problematic.

The Conservancy would like to restate that the restoration options were selected for their own value in order to meet the project's ecosystem restoration goals. The Conservancy is involved in the Shoreline Project because it will implement the goals of the South Bay Salt Pond Restoration Project in an area where restoration is impossible without flood protection infrastructure.

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Oakland, California 94612-1401
510-286-1015 Fax: 510-286-0470

CONSERVANCY CL-1 (CONT.)

This project is not an infrastructure project with some mitigation elements – as is demonstrated by the vast amount of restoration proposed, much more than would be required to offset impacts. Furthermore, since the fill impacts from the flood protection measures (132.2 acres permanent fill or 8.76 acres net fill) are relatively minor when compared to the tremendous benefits from just the first phase of proposed restoration (restoring 1120 acres of existing ponds to tidal action), the Conservancy would expect that this project is self-mitigating by the end of Phase I. However, the Conservancy proposes to continue to restore ponds in Phases II and III, adding up to an additional 1780 acres of tidal restoration (pursuant to the adaptive management framework), because that is the goal of the project and the purpose of our agency, not to secure unnecessary, additional mitigation.

CONSERVANCY CL-2

Infeasibility of Mitigation

The Tentative Order currently states that if the restoration proposed in Phase II (900 acres) and Phase III (880 acres) is not implemented, then the project must provide compensatory mitigation elsewhere.

This requirement could adversely impact the ability of the Project to implement its Monitoring and Adaptive Management Plan (MAMP). The MAMP outlines project risks, a method for evaluating results, and a decision-making process to address or correct problems that arise while implementing the project. As described on p. 18 of the Tentative Order, the MAMP states that one of the potential ways to respond to adverse results to is to delay or halt pond breaching. (Indeed, having this ability to delay or stop the project is a primary reason that the restoration will be phased.)

The grounds upon which the Adaptive Management team might recommend that restoration be delayed or stopped are the same reasons that would make mitigation impossible elsewhere in San Francisco Bay. For example, if lack of sediment causes newly breached ponds to erode a significant amount of mudflat habitat, which millions of migratory shorebirds depend on, then pond breaching would likely need to stop in all of San Francisco Bay. Alternatively, if there is a Bay wide decline in pond-specialist species (e.g. grebes and phalaropes), then pond conversion in all of San Francisco Bay would need to be slowed or halted.

Obviously, the Shoreline Project expects to be successful; not implementing the wetland restoration proposed in Phase II and III is an extreme scenario. However, we are entering an era of greater uncertainty. The Conservancy and the other Project proponents have created a process through the MAMP to address uncertainty as much as possible. However, if the Project proponents are not able to implement all of the proposed restoration, there are not going to be alternatives at this scale available elsewhere.

Since mitigation is infeasible, the current language in the Tentative Order could create a scenario where the project will have no choice but to restore all the ponds, regardless of the

CONSERVANCY CC-2 (CONT.)

input from the Adaptive Management monitoring and applied studies, undermining this carefully crafted program. For these reasons, the Conservancy requests changes to the Tentative Order language in the attached comments.

CONSERVANCY CC-3

RWQCB and Adaptive Management Decision-Making

The project fully intends to communicate adaptive management decisions to our stakeholders and including the RWQCB. However, requiring the RWQCB's Executive Director approval for **not** implementing the restoration in Phase II and III essentially gives Executive Director "veto power" over the decision-making process outlined in the MAMP. The Adaptive Management decision-makers have to consider a broad suite of issues that include, but are not limited to, enhancing the resources overseen by the RWQCB. Making an adaptive management action subject to RWQCB approval (except to the extent that a proposed action requires a permit) would give the RWQCB a role not shared by any other stakeholder.

The Conservancy suggests an alternative approach in comment number nine. We propose that the Order should describe a process (e.g. the Technical Advisory Committee) for involving and informing RWQCB staff in the Adaptive Management decision-making process. The Order should clarify that the RWQCB shares the understanding of the Shoreline Project that there may be valid reasons that the Adaptive Management decision-makers recommend halting or delaying pond restoration and that the Project would not be held responsible for natural processes beyond anyone's control.

COMMENTS 1-20

There are also additional concerns discussed in the attached table of comments.

We appreciate that the RWQCB's flexible approach in crafting an Order for a lengthy, complex project with different agencies and future phases. We hope that some of the requirements can be modified to better accommodate the realities of implementing an ambitious ecosystem restoration and flood protection project in a new era of uncertainty with rising seas and climate change.

Sincerely,

Amy Hutzel
Deputy Executive Officer

United States Department of the Interior

FISH AND WILDLIFE SERVICE

San Francisco Bay National Wildlife Refuge Complex
1 Marshlands Road
Fremont, California 94555

November 15, 2017

Mr. Bruce H. Wolfe
Executive Officer
San Francisco Bay Regional Water Quality Control Board
1550 Clay St, 15th Floor
Oakland CA 94612

Dear Mr. Wolfe:

Thank you for this opportunity to provide comments on the draft Tentative Order for the South San Francisco Bay Shoreline Project (Project). A portion of the Project will be constructed on lands owned by the U.S. Fish and Wildlife Service and managed as part of the Don Edwards San Francisco Bay National Wildlife Refuge (Refuge). As a project team member, I want to express our appreciation for the work of the Regional Water Quality Control Board (RWQCB) staff. Your staff have contributed a considerable amount of time and effort working collaboratively and proactively with our project team in meeting RWQCB requirements while accommodating the federal processes and schedules that U.S. Army Corp of Engineers (USACE) must follow for their Congressionally approved projects.

We all share the common goal and sense of urgency for achieving flood risk reduction for a highly vulnerable section of shoreline in South San Francisco Bay through the construction of a flood risk management levee integrated with ecosystem restoration and public recreation improvements. The draft Order allows for Phase I of the Project to be initiated in the near term while charting a framework for future project phases to be implemented in sequence based upon adaptive management. The Refuge shares many of the same comments as the USACE and non-federal sponsors provided on the draft Order. As the federal landowner for the portion of the levee to be constructed along Refuge Ponds A12-13 and A16 and the restoration of Refuge Ponds A9-15, I want to reiterate the following comments for your consideration.

COMMENT 21

The draft Order initially correctly describes the Project (pp. 2-3) as a multi-benefit project that seeks to restore former salt evaporation ponds, protect adjacent communities from flooding, and provide recreational opportunities. However, on p. 4, there is a different interpretation of the project purpose: "Phase I is expected to result in Project impacts and the ecosystem restoration work in Phases I, II, and III is intended to provide mitigation for those impacts." The restoration components of the project were not presented under NEPA/CEQA or the federal Clean Water Act as being mitigation for project impacts; therefore that interpretation is incorrect and should be revised appropriately. It is our position that the Project as described in the NEPA/CEQA document does not need nor require mitigation.

COMMENT 22

The Refuge is involved in this Project because it will implement a portion of the South Bay Salt Pond Restoration Project, consistent with the Refuge's Comprehensive Conservation Plan that fulfills the purposes for which the Refuge was established for the protection and restoration of habitat for fish and wildlife, including federally listed species such as the California Ridgway's rail and salt marsh harvest mouse. The wetland restoration would be impossible without the construction of flood risk management infrastructure, and in turn, the flood risk management levee as integrated with the proposed wetland restoration features will be more resilient and sustainable in the face of climate change. The project description fully describes the considerable amount of restoration proposed, an amount in our opinion much higher than would be required as mitigation to offset impacts. For example, during Phase I the net fill impacts from the flood protection measures (8.67 acres) are minor when compared to the tremendous benefits from just Phase I of proposed restoration (restoring 1120 acres of existing ponds to tidal action).

COMMENT 22 (cont.)

In addition, as the Project continues to restore additional ponds in Phases II and III, it will be adding up to an additional 1780 acres of tidal restoration, as described in the project description.

COMMENT 23

The draft Order further states that if the restoration proposed in Phase II (900 acres) and Phase III (880 acres) is not implemented, then the Project must provide compensatory mitigation (CNMP) elsewhere. This requirement as stated in an order could adversely impact the ability of the Project to implement the USACE's approved Monitoring and Adaptive Management Plan (MAMP). The MAMP outlines project risks, a method for evaluating results, and a decision-making process to address or correct problems that arise while implementing the Project. As described on p. 18 of the draft Order, the MAMP states that one of the potential ways to respond to adverse results is to delay or halt pond breaching so that we can apply the best available science, address uncertainty, and inform future phases in an adaptive management framework. We respectively request and concur with the USACE that references to CMMP be removed from the draft Order accordingly.

COMMENT 24

We all certainly expect the Shoreline Project to be successful in achieving the multi-benefits of flood risk reduction, ecosystem restoration, and recreation opportunities. The MAMP was prepared to address uncertainty as much as possible, and indeed the South Bay Salt Pond Restoration Project has a proven track record of using adaptive management as described in the MAMP and provides a mechanism through technical working groups and stakeholder forums to keep RWQCB staff updated and part of the decision-making process should uncertainties arise throughout the project. We recommend that the Order describe a process for how RWQCB staff wish to be engaged and informed through the USACE's adaptive management decision-making process. The Order should clarify that the RWQCB shares a similar concern of the Shoreline Project that there may be valid reasons that the project team may recommend halting or delaying pond restoration elements due to natural processes beyond anyone's control in furtherance of the Project as described.

Again, thank you for your staff's willingness and flexibility in working with the project team to craft the Tentative Order for this project. We recognize that such a lengthy and complex project with multiple phases means that there are additional details to be provided on future reaches and project phases. We appreciate the opportunity to seek the Board's approval of an order that allows Phase I to move forward with construction and restoration as soon as feasible as we continue to plan together for the other reaches with RWQCB staff.

Sincerely,

Anne Morkill
Refuge Complex Manager
San Francisco Bay National Wildlife Refuge Complex

CC: LTC David A. Kaulfers, U.S. Army Corp of Engineers
Rechelle Blank, Santa Clara Valley Water District
Brenda Buxton, California Coastal Conservancy
John Bourgeois, South Bay Salt Pond Restoration Project

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Santa Clara Valley Water District

November 15, 2017

Tahsa Sturgis
San Francisco Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Subject: Comment Letter – South Bay Shoreline Project Order Comments

Dear Ms. Sturgis:

The Santa Clara Valley Water District (District) appreciates the opportunity to comment on the tentative "Water Quality Certification and Waste Discharge Requirements for: U.S. Army Corps of Engineers, South San Francisco Bay Shoreline Project, Santa Clara County" (Tentative Order) from the San Francisco Bay Regional Water Quality Control Board (Regional Board). The South San Francisco Bay Shoreline Project (Project) is an important multi-purpose project whose primary purposes are to restore up to 2,900 acres of diked, former salt ponds to tidal marsh, and to provide protection from tidal flooding and sea-level rise to homes, businesses, and infrastructure in Santa Clara County. Restoring tidal action to these former salt ponds, while providing long-term flood-protection, is good for the environment and people, and it fulfills an important policy of the San Francisco Bay Plan.

The District is partnering on this $177 million Project with the U.S. Army Corps of Engineers (USACE), the California Coastal Conservancy (Coastal Conservancy), and the U.S. Fish and Wildlife Service. USACE is contributing $71 million in federal dollars to the Project.

DISTRICT CL-1

While the District appreciates that the Tentative Order would approve the Project, the District shares the concerns of USACE and the Coastal Conservancy that the Tentative Order, if adopted, would impose unprecedented, onerous, and unwarranted conditions on a Project the Regional Board should be unreservedly supporting. The fundamental problem with the Tentative Order is that it treats the up-to 2,900 acres of tidal marsh restoration as mere mitigation for 8.76 acres of net fill needed for the flood protection, rather than as a key element of the Project. The tidal marsh restoration is key to the Project, as the Regional Board previously recognized for the South Bay Salt Pond Restoration Project: the main reason why the new flood protection system needs to be built is because the Project will be breaching the salt-pond dikes to create new tidal marsh. Nor is the Tentative Order's proposed mitigation ratio of approximately 330:1 reasonable. The District requests that the Regional Board revise the Tentative Order to incorporate the comments below.

COMMENTS 25-42

I. Restoring Tidal Marsh Is Not Proposed as Mitigation and Should Not be Characterized as Mitigation for the Project, As The Regional Board Has Previously Recognized

The tentative order, in finding 22, treats the 2,900 acres of restored tidal marsh proposed by the Project as mitigation for the project's net fill of 8.76 acres of waters. The Project's tidal marsh restoration is not proposed to be mitigation for the fill; rather, the fill is necessary in large part *because* of the tidal marsh restoration. The fill is being placed on the landside of the restored tidal marsh to construct new flood protection that becomes necessary in large part because the dikes

COMMENTS 25-42

that currently provide an incidental measure of flood protection have to be breached in order to restore the tidal marsh.

The Regional Board has previously—and correctly—recognized, for the South Bay Salt Pond Restoration Project (SBSPRP), that tidal marsh restoration is not mitigation for the fill that may be necessary for the restoration. The Regional Board's findings for that project (R2-2008-0078) recognized that restoring tidal marsh should not be viewed as mitigation: finding 96 of the SBSPRP order found that "[n]o penalties will be imposed for a failure to achieve the interim and final habitat goals, since this is a restoration (not a mitigation) project", and finding 16 found that "[n]o compensatory mitigation is required for impacts to existing wetlands and waters of the State, since this restoration project will result in many more acres of restored and enhanced habitats than the acres of habitat that are impacted."

Although the Tentative Order, in finding 9, states that it is modeled after SBSPRP, it treats the restoration component of this Project very differently than restoration was treated in SBSPRP. The Regional Board should be consistent: the Tentative Order should not treat the restoration component of the Project as mitigation for fill, just as the Regional Board treated the fill necessary for the restoration component of SBSPRP. No compensatory mitigation should be required here.

II. The Tentative Order Misapplies The No-Net-Loss Policy

The Tentative Order, in findings 32 and 33, cites the California Wetlands Conservation Policy (Executive Order W-59-93), often called the "no-net-loss policy", and the Basin Plan (which incorporates the no-net-loss policy), as the principal basis for requiring 2,900 acres of mitigation for 8.76 acres of net fill here. As described below, the Tentative Oder misapplies the no-net-loss policy.

The policy focuses on a programmatic approach to preserving and enhancing wetlands: it requires State agencies to "encourage partnerships to make restoration, landowner incentive programs, and cooperative planning efforts the primary focus of wetlands conservation."[1] The Project is developed through a cooperative partnership between agencies and landowners to restore wetlands and waters. The policy "is not meant to be achieved on a permit-by-permit basis". Yet the Tentative Order tries to apply the policy to this individual permit, without regard to the broader partnership represented by this Project, contrary to the policy's direction that it is to be implemented on a programmatic, rather than permit-by-permit, basis.

The Regional Board should read the no-net-loss policy as encouraging approval of the Project as-is, rather than as requiring conditioning the Project on thousands of acres of mitigation.

III. No Mitigation Should be Required Because The Project Provides Significant Benefits To Beneficial Uses, As The Regional Board Previously Recognized

Water Code section 13263(a) requires waste discharge requirements to implement relevant water quality control plans, and to take into consideration the beneficial uses to be protected. The water quality control plan here—the Basin Plan—incorporates the no-net-loss policy, but, as just discussed, that policy supports approval of the Project as is, rather than with thousands of acres

[1] https://www.waterboards.ca.gov/water_issues/programs/cwa401/docs/wrapp2008/executive_order_w59_93.pdf

of mitigation. Nor does the Tentative Order justify its conditions as necessary to promote beneficial uses: in fact, the Tentative Order recognizes that the Project as-is will provide significant benefits to beneficial uses. No additional mitigation is necessary.

The Tentative Order, in finding 31, lists a number of beneficial uses in the Project area, but the Tentative Order identifies no beneficial uses that will be adversely impacted by the Project. Finding 16 goes on at length, and in great detail, about how the Project as-is is expected to "result in a significant contribution to tidal wetland restoration", providing water quality and associated habitat and vegetation benefits "on a spatially significant scale".

In the SBSPRP, the Regional Board recognized that salt pond restoration projects promote beneficial uses and require no compensatory mitigation: in Finding 16 in its order for that project (R2-2008-0078), the Regional Board found that "[n]o compensatory mitigation is required for impacts to existing wetlands and waters of the State, since this restoration project will result in many more acres of restored and enhanced habitats than the acres of habitat that are impacted." Similar benefits would be generated by the Project, and thus the same approach should be used here.

COMMENTS 25-42

Because the Project as-is significantly promotes beneficial uses, no additional mitigation is required.

IV. A Mitigation Ratio Of 330:1 Is Excessive And Unjustified

Even if mitigation were required for the 8.76 acres of net fill, the Tentative Order would require 2,900 acres of mitigation—a ratio of nearly 330:1. That kind of ratio is unprecedented and unjustified.

Compensatory mitigation requirements must be roughly proportionate to a project's impacts. (*Dolan v. City of Tigard* (1994) 512 U.S. 374, 391.) A 330:1 mitigation ratio, for a project that is largely a restoration project, is also not roughly proportionate to any impacts this project may have.

Requiring a mitigation ration of 330:1, or anything close to that, would set an unfortunate precedent. It would signal that the Regional Board wants to stand in the way of restoration projects by imposing onerous conditions, rather than promoting such projects by blessing them with streamlined approvals. The Regional Board should rethink the Tentative Order's excessive and unjustified mitigation for this Project.

V. If Phases II And III Restoration Are Not Built, No Additional Mitigation Should Be Required

The ecosystem restoration component of the Project will occur in three phases (Phases I, II, and III) of pond breaches to establish tidal connection. The Tentative Order requires all phases of the restoration to be completed, and requires additional mitigation to be proposed for approval if not all phases are implemented (Findings 8, 22). Phase 1 of the restoration is scheduled to be constructed in 2022, and completion of this phase would result in restoration of up to over 1,000 acres of tidal marsh habitat. The design and construction of Phases 2 and 3 restoration will be guided by the Project's Monitoring and Adaptive Management Plan. Phases II and III of the Project are likely to be built, adding many hundreds of acres of restored tidal marsh to the Project. Only

in the unlikely event that Phase I causes unavoidable but undesirable outcomes would Phases II and III be reconsidered.

Even if Phase I does not result in all of the restoration benefits predicted, no additional mitigation should be required. Finding 96 of SBSPRP (Order No. R2-2008-0078) stated that "No penalties will be imposed for a failure to achieve the interim and final habitat goals, since this is a restoration (not a mitigation) project"; that order instead envisioned a collaborative process to achieve the desired results. A similar approach should be used here.

VI. The District Should Not be Named as A Discharger in the Water Quality Certification or Waste Discharge Requirements

COMMENTS 25-42

If the Regional Board revises the Tentative Order's current approach of treating the restoration component of this Project as mitigation for the fill necessary for the Project, then the following discussion becomes less important from a practical perspective. Nevertheless, the District is compelled to raise these issues until the Tentative Order is revised to drop its objectionable mitigation conditions.

As the District and USACE have explained to the Regional Board in other contexts, the Regional Board's authority to impose waste discharge requirements is limited to discharges of "waste". (Water Code section 13260(a)(1); *see Lake Madrone Water District* (1989) 209 Cal.App.3d 163 (flushing unwanted sediment accumulated behind dam was a discharge of waste).) The term "waste" is commonly understood as meaning "something discarded 'as worthless or useless.'" (*Waste Management of the Desert v. Palm Springs Recycling Center, Inc.* (1994) 7 Cal.4th 478, 485.) But constructing a beneficial project is not a discharge of something worthless or useless. (*See Tahoe-Sierra Preservation Council, Inc. v. Tahoe Reg'l Planning* Agency (D.NV 1999) 34 F.Supp.2d 1226, 1254 (distinguishing *Lake Madrone* to hold that "building a house" is not a discharge of waste under Porter-Cologne), *rev'd in part on other grounds*, 216 F.3d 764, *aff'd*, 535 U.S. 302.) This Project—restoring tidal marsh and constructing flood protection—is beneficial; it is not a discharge of waste subject to waste discharge requirements.

Nor would Water Code section 13376 authorize the Regional Board to issue a permit to the District for dredge-and-fill discharges. Water Code section 13372(b) unambiguously makes Water Code section 13376 operative "only to discharges for which the state has an approved permit program" under Section 404 of the Clean Water Act. California does not have an approved permit program under Section 404, and thus section 13376 cannot give the Regional Board authority.

Even if this Project were a discharge of waste, the Tentative Order, in finding 4, recognizes that this project will be built on the District's property. Water Code section 13270 precludes issuing waste discharge requirements to one public agency for discharges of waste on that agency's property by another public agency. Because this Project will be constructed by USACE on the District's property, and both are public agencies, Water Code section 13270 prohibits issuing waste discharge requirements for the construction of the Project to the District.

Nor may the Regional Board issue a Section 401 certification to the District. Section 401 applies only to persons who apply for a federal license or permit. (33 U.S.C. 1341(a).) The District has not applied for a federal license or permit, and thus Section 401 does not apply to the District.

25-42 COMMENTS

VII. Feasibility Constraints Of Alternative Levee Alignments Should Be More Clearly Acknowledged

Finding 13 discusses an alternative, more landward, levee alignment east of Artesian Slough for Reaches 4 and 5 that the Tentative Order describes, in finding 21 and elsewhere, as having greater environmental benefits with fewer impacts. The District and its Project partners considered suggestions for alternative alignments in the EIR/EIS process, including the Regional Board's suggestion of the alternative alignment raised in the Tentative Order. The District has considered, and will consider, alternative alignments, though the District is mindful that alternative alignments need to be feasible. Different alternative alignments raise various feasibility constraints, including enduring that any alternative is within the scope of the Project authorized for the USACE by Congress, avoiding interference with the City of San Jose's current plan for the San Jose-Santa Clara Regional Wastewater Facility, maintaining adequate buffers against a nearby San Jose Police Department bomb facility, and achieving consensus among stakeholders for the inclusion of legacy biosolid lagoons on the bayside of the proposed levee.

The District and its Project partners expect to continue assessing whether these constraints can be overcome by the alternative alignment discussed in the Tentative Order, or by some variation of that alternative alignment. While Attachment C to the Tentative Order acknowledges some of these constraints, that appendix and those constraints are not clearly acknowledged in, or incorporated into, the Tentative Order itself. The Tentative Order should more clearly acknowledge that alternative alignments may not be achievable, and the Regional Board should not be linking possible future mitigation requirements to alternatives that may not be achievable.

VIII. Impacts Mitigated To Less-Than-Significant Levels Are Not Under The Regional Board's Jurisdiction

The main impact identified in the Tentative Order—filling of waters of the United States—was analyzed in Section 4.6.5 of the EIR/EIS. The EIR/EIS concluded, in Section 4.6.6, that the fill of waters associated with the Project would have only less-than-significant impacts. Because impacts from fill would be less-than-significant, CEQA does not allow the Regional Board to impose additional mitigation for fill-related impacts.

As for other impacts identified in the EIR/EIS, the Tentative Order, in finding 30, correctly notes that the EIR/EIS found that the mitigation measures proposed in the EIR/EIS "would mitigate all of these impacts to less than significant levels". The Regional Board does not have authority to second-guess the conclusion of the EIR/EIS that no additional mitigation is necessary for these impacts that will already be mitigated to less-than-significant levels. (*See Ogden Envt'l Serv. v. City of San Diego* (S.D. Cal. 1988) 687 F.Supp. 1436, 1450-1452 (responsible agency does not have authority over impacts mitigated to less-than-significant levels).)

IX. The Technical Advisory Committee (TAC) Is Advisory

Provision B.20 requires the formation of a technical advisory committee (TAC) to assess, review, and suggest adaptive management strategies. The Mitigation and Adaptive Management Plan (MAMP), included as Attachment B to the Tentative Order, in Section 5, already prescribes a process for how decision-making will occur as part of the adaptive management process. While the District does not object to receiving suggestions and advice from the TAC, the ecosystem restoration activities would be undertaken through the MAMP's adaptive management process,

and the Tentative Order should make clear that the TAC has no actual decision-making authority in the adaptive management process.

X. No Fees Are Applicable

Finding 50 prescribes fees that the District would be responsible for. But Government Code section 6103(a) exempts the District from having to pay any fees.

XI. Other Technical Comments

Finding 5 states that, after 10 years, the Non-Federal Sponsors will assume the costs of the ponds' operation, maintenance, and management. This finding should be changed to make clear that responsibilities for costs, which will also include costs of operating and maintaining the new flood protection structures, will be allocated pursuant to the Project Partnership Agreement, which has not yet been completed.

Finding 7 states that Alviso has over 2,000 residents and 500 structures. It would be more accurate to state that Alviso has over 2,500 residents and 1,100 structures.

Finding 8 could be read to suggest that the Project is intended to allow the Union Pacific railroad tracks to continue functioning over Artesian Slough. Keeping the railroad functioning has nothing to do with Artesian Slough. The reference to Artesian Slough should be deleted as it relates to the railroad.

Finding 10, among other findings, refers to Reaches 4 and 5 of the FRM levee as being a "proposed conceptual" alignment. That alignment is not conceptual; it is the Congress-authorized alignment. All references to the "proposed conceptual" alignment for Reaches 4 and 5 should be changed to "authorized" alignment.

Finding 10 states that "Where the levee crosses an existing water feature, such as a slough, structures will be installed to allow flow during normal conditions and during flood conditions." As described in the Project EIR, a tide gate closure structure is being designed to be placed across the Artesian Slough to prevent water from overtopping existing levees along the slough during future high-tide events. The tide gate structure will be designed in coordination with the City of San Jose to allow for the city's wastewater treatment plant's discharge during storms. It is expected that the tide gate structure would remain open during normal and flood conditions, but that the opening would be regulated depending on flow conditions. The District suggests that the word "allow" be revised to "regulate".

Finding 10 discusses planting or seeding of marsh vegetation at the toe of the levee following construction. Generally, in the San Francisco Bay it is not necessary to seed marsh plain species because tidal waters have sufficient seed source. Active planting and seeding of marsh vegetation will be done as an adaptive management measure only as necessary.

Finding 10 (in the section on "Ponds A12 and A18 Tidal Restoration") gets the descriptions of Ponds A12 and A18 reversed. The finding currently suggests that the bottom elevation of Pond A18 is lower than the bottom elevation of Pond A12. In fact, as noted in Section 3.8.3.2 of the

25-42 COMMENTS

COMMENTS 25-42

EIR/EIS, Pond A12 has the lowest bottom elevation of all the ponds. The Tentative Order should reverse the descriptions of Ponds A12 and A18.

Finding 30 incorrectly identifies the CEQA lead agency as the California State Coastal Conservancy. The Tentative Order should indicate the Santa Clara Valley Water District as the lead agency under CEQA. The Tentative Order also incorrectly identifies the Environmental Impact Report (EIR) certification date as September 24, 2015. The District certified the EIR for the project on March 22, 2016.

Sincerely,

Melanie Richardson

Melanie Richardson, P.E.
Interim Chief Operating Officer
Watersheds

cc: N. Camacho, R. Callender, N. Nguyen, R. Gibson, R. Blank, B. Wolfe, K. Lichten

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, US ARMY CORPS OF ENGINEERS
1455 MARKET STREET,
SAN FRANCISCO CALIFORNIA 94103-1398

November 15, 2017

Mr. Bruce H. Wolfe
Executive Officer
San Francisco Bay Regional Water Quality Control Board
1515 Clay St, Suite 1400
Oakland CA 94612

Dear Mr. Wolfe:

COMMENTS 43-56

Thank you for this opportunity to comment on the draft Tentative Order for the South San Francisco Bay Shoreline Project. We appreciate the large amount of time and effort that your staff has devoted to working with the project sponsors to resolve a number of issues. In addition, your staff have worked hard to accommodate the federal processes and schedules that the U.S. Army Corps of Engineers (USACE) must follow for its projects. USACE has a number of concerns which are presented in the attached table of comments. We would like to highlight a few of these concerns in this letter.

CORPS CL-1

First, the project's flood risk management and ecosystem restoration features are interdependent; the latter were not formulated by assessing mitigation needs. The ecosystem restoration components of the project were formulated to take advantage of restoration opportunities resulting from construction of flood risk management features. Without construction of these features, tidal habitat restoration would not be feasible in the project area due to the resulting increased flood risk. In addition, the restoration components of the project were not presented under NEPA, CEQA, or the federal Clean Water Act as being mitigation for project impacts. The entire project was evaluated as an integrated whole and was determined to have an overall positive effect on habitat, fish and wildlife, and water quality. It is our position that the project as described in the NEPA/CEQA document does not need mitigation.

CORPS CL-2

Second, the adaptive management process proposed for the project has been a vital element in alleviating concerns and securing support for the project from a wide variety of stakeholders, as well as in addressing potential impacts of breaching ponds that were discussed in the NEPA/CEQA document. This process, to be administered by a broad-based adaptive management team, is intended to be science-based and responsive to the results of the project's proposed monitoring program. However, the draft Tentative Order would effectively mandate tidal restoration of all the managed ponds on the project site, voiding this collaborative process and negating the scientific foundation of the proposed adaptive management process. To avoid this outcome, in the event that tidal restoration needs to

CORPS CL-2 (CONT.)

slow or stop, the project sponsors would need to assume onerous off-site restoration burdens that likely would not be technically feasible.

CORPS CL-3

Finally, the draft Tentative Order's proposed Contingency Mitigation and Monitoring Plan (CMMP) would be problematic for several reasons. As explained earlier, USACE restoration projects cannot have habitat mitigation as a component and the project as described should not require mitigation. Also, the conditions that would result in a delay or cessation of pond breaching, such as excessive impacts to water birds or a shortage of sediment in the Bay, would also apply to tidal restoration in alternate locations. In addition, the required offsite habitat restoration plan is not a part of the Congressionally-authorized project and USACE cannot spend federal funds on developing such a plan. For all these reasons, we request that the CMMP be removed from the draft Tentative Order.

USACE has reviewed the comment letter and comments from the State Coastal Conservancy and concurs with their comments as well.

Again, USACE appreciates the flexibility shown by RWQCB staff and your interest in working with the project sponsors towards the goals of managing flood risk and restoring valuable tidal habitats on a timely basis in the face of rising sea levels. We look forward to receiving the Water Quality Certification in December, as this will support our schedule to compete for federal funding that will be finalized in January and announced in February, thereby enabling a late spring construction contract award for Reach 1.

Please direct all questions or requests for more information concerning this matter to Bill DeJager at (415) 503-6866 or at William.R.DeJager@usace.army.mil.

Sincerely,

KENDALL.THOMAS.R.1231850356

Digitally signed by KENDALL.THOMAS.R.1231850356
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=KENDALL.THOMAS.R.1231850356
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Thomas R. Kendall, P.E.
Chief, Planning Branch

Enclosure

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Assembly California Legislature

KANSEN CHU
朱感生

CHAIR: ASSEMBLY COMMITTEE ON ARTS, ENTERTAINMENT, SPORTS, TOURISM, AND INTERNET MEDIA
ASSEMBLYMEMBER, TWENTY-FIFTH DISTRICT

COMMITTEES
INSURANCE
TRANSPORTATION
WATER, PARKS, AND WILDLIFE

SELECT COMMITTEES
CHAIR: HATE CRIMES
ASIA/CALIFORNIA TRADE AND INVESTMENT PROMOTION
FOSTER CARE
IMPROVING BAY AREA TRANSPORTATION SYSTEMS

APPOINTMENTS
COMISSION ON ECONOMIC DEVELOPMENT

October 2, 2017

Larry Goldzband
Executive Director
San Francisco Bay Conservation and Development Commission
455 Golden Gate Ave., Suite 10600
San Francisco, CA 94103

Bruce Wolfe
Executive Officer
San Francisco Bay Regional Water Quality Control Board
1515 Clay St., Suite 1400
Oakland, CA 94612

Dear Mr. Goldzband and Mr. Wolfe:

I am writing to ask your agencies to give full consideration to the permit applications submitted by the U.S. Army Corps of Engineers for construction of the South San Francisco Bay Shoreline Project.

Authorized by Congress in the Water Infrastructure Improvements for the Nation Act in 2016, the Shoreline Project will restore close to 3,000 acres of former salt ponds to tidal wetlands and provide coastal flood risk management for northern San Jose. The Shoreline Project is a critical part of the South Bay Salt Pond Restoration Project, the largest wetland restoration effort on the west coast of the United States. Over 15,000 acres of former commercial salt ponds were acquired in 2003 by state and federal resource agencies, followed by an extensive public planning process, and the start of restoration actions and monitoring in 2009. The Shoreline Project will double the acres of wetlands restored to date as part of South Bay Salt Ponds Project, while providing flood management for: 650 housing units and 2500 residents and infrastructure in the community of Alviso; the San José-Santa Clara Regional Wastewater Facility, which cleans the wastewater of over 1.5 million people in the South Bay; and State Route 237, a major Silicon Valley artery.

I thank you for your work to protect San Francisco Bay and I urge your agencies to approve permits for the construction of the South San Francisco Bay Shoreline Project.

Sincerely,

KANSEN CHU
State Assemblymember, 25th AD

Appendix C:
Response to Comments

401 Water Quality Certification and Waste Discharge Requirements

South San Francisco Bay Shoreline Project

City of San Jose
Santa Clara County

December 2017

Response to Comments on the Tentative Order for the South San Francisco Bay Shoreline Protection Project

On October 2, 2017, we received a comment letter supportive of the Project from State Assembly member Kansen Chu, 25th AD. Although that letter was not commenting on the Tentative Order, we have included it in this package.

Comment Number	Commenter	Topic	Comment	Response
1	Coastal Conservancy (Conservancy)	Discharger Roles and Responsibilities	**Finding 5. Discharger** All clarifying language explaining roles and application of state vs. federal requirement. Suggested additional language is underlined: The Discharger will implement the Project as described in the application materials and herein. As described in the agreement among the Corps and Non-Federal Sponsors, the Corps will be responsible for construction of flood protection, ecosystem restoration, and some recreational elements. Although the Corps works cooperatively with the Non-Federal Sponsors, the Corps is the party directly responsible for project implementation and will follow the provisions of this Order that are applicable to federal agencies. This remains in effect until the Corps deems a project element complete, at which time it will be turned over to the US Fish and Wildlife Service or the Non-Federal Sponsors for operation and maintenance. The USFWS will follow the provisions of this Order that are applicable to a federal agency for operations and maintenance activities on their property. Any construction activities, operations, and maintenance undertaken directly by the Non-Federal Sponsor will follow the provisions of this Order applicable to state and local governments. For example, once the flood risk management (FRM) levee is constructed and fully functional, the Corps will transfer the levee's operation, maintenance, and management responsibility to the District.	Comment noted. The Tentative Order findings are intended to describe the anticipated roles of the Corps, Conservancy, and District, as well as the U.S. Fish and Wildlife Service (USFWS), which would be anticipated to complete future operation and maintenance actions under a different order. Finding 5, paragraph 2, has been revised as follows: 5. The Discharger will implement the Project as described in the application materials and herein. As described in the agreement among the Corps and Non-Federal Sponsors, the Corps will be responsible for construction of flood protection, ecosystem restoration, and some recreational elements. ~~o~~Once the flood risk management (FRM) levee is constructed and fully functional, the Corps will transfer the levee's operation, maintenance, and management responsibility to the District. The Corps and the Non-Federal Sponsors will share financial responsibility for the ecosystem restoration monitoring and adaptive management. However, the Corps' ecosystem restoration cost sharing obligation is restricted to ten years following each pond-breaching event. Once the Discharger's cost-sharing obligation ends, the Non-Federal Sponsors will assume the total cost for each pond's long-term operation, maintenance, and management. Responsibilities for costs, which will also include operation and maintenance costs, will be allocated pursuant to the PPA, when it is finalized. Currently, the Non-Federal Sponsors

Comment Number	Commenter	Topic	Comment	Response
1 (cont.)	Coastal Conservancy (Conservancy)	Discharger Roles and Responsibilities		are negotiating how their respective roles and responsibilities, including cost sharing, will be divided during the ecosystem restoration's long-term operation, maintenance, and management.
2(a)	Conservancy	Mitigation	**Finding 8. Project Construction Phasing** For reasons discussed in cover letter and throughout comments, we request that this Order delete "is intended to provide mitigation for those impacts" in Section 8 and describe the purpose of the project in a manner consistent with project description in Section 6. In other words, the purpose of the wetland restoration in all phases is improve ecosystem habitat and function, not to provide mitigation.	See general response regarding mitigation.
2(b)	Conservancy	Mitigation	**Finding 8. Project Construction Phasing** Please delete (strikeout) as follows: "If Phase I is successfully implemented and the Discharger does not move forward with Phases II and III, the Discharger will submit supplemental information on Project ~~impacts and propose alternative mitigation, as appropriate and~~ as described in the Provisions." For reasons discussed in cover letter and throughout comments, we suggest that the submittal required if Phase II and III do not go forward is consistent with language proposed in comment number 9.	See general response regarding mitigation.

Comment Number	Commenter	Topic	Comment	Response
2(b) (cont.)	Conservancy	Mitigation	Please also note that since success is not defined in this Order, this could potential [*sic*] create problems in the future over different interpretations. Since the adaptive management process is considering dynamics in the broader landscape of San Francisco Bay, successful restoration of Phase I ponds does not necessarily mean Phase II and III can be implemented. Although highly unlikely, the Project needs to preserve its ability to consider issues outside of the project area that could warrant slowing or halting breaching of additional ponds. This is an additional reason for changing this requirement.	
3	Conservancy	Marsh Planting	**Finding 10. Phase I (2018-2022)**, *FRM Levee* Please delete "will" and substitute "may" in the following sentence: "Marsh vegetation ~~will~~ may be seeded or planted…" and "pickleweed…~~will~~ may be planted". This is generally not done in SF Bay restoration projects as the tidal waters bring in sufficient seed source for marsh species. However, the project will likely plant higher marsh and upland species above marsh plain.	The requested revision has been made. We concur that tidal waters should bring in sufficient seed sources for marsh species, and also that higher marsh and upland species should be planted. We note the Project application submitted to the Water Board stated marsh vegetation "will" be seeded or planted. The vegetation is anticipated to be continuous and serve as erosion protection. Marsh vegetation ~~will~~ may be seeded or planted at the toe of the levee following construction. Peripheral halophytes such as 12- to 18-inch tall pickleweed (*Salicornia pacifica*) ~~will~~ may be planted at the toe of the levee, if necessary.

Comment Number	Commenter	Topic	Comment	Response
4	Conservancy	Ecotone	**Finding 10. Phase I (2018-2022)**, *Ecotone Creation* Please edit this sentence "The ecotones will be constructed with a 30:1 horizontal to vertical slope…" to reflect the discussion at the Sept. 2016 ecotone charrette that acknowledges that there may be variation in the final design of the ecotone and the quantities estimated in this Order are expected to be the maximum amount.	The requested revision to Finding 10 regarding the ecotone slope has been made. The ecotones will be constructed with an average 30:1 horizontal to vertical slope.
5	Conservancy	Monitoring (EPMP)	**Finding 11. Phase II (2027)** The Order refers to both a MAMP and an Ecotone and Pond Monitoring Plan (EPMP). This is confusing since the MAMP already includes a description of pond monitoring. It seems likely that the EPMP is a placeholder for the ecotone monitoring addendum that the Conservancy has already submitted to the RWQCB as part of the Phase 2 permitting for the South Bay Salt Pond Restoration Project. If that is the intent, we request that the language in this paragraph to refer to that ecotone addendum specifically instead of an additional plan which seems to overlap with the MAMP. See comment 20 as well for further discussion of ecotone monitoring requirements.	Comment noted. We are not proposing to make the requested change. We are supportive of the Project's ecotone and pond components and expect the results of the proposed EPMP would both characterize the performance of the implemented Project and significantly inform future implementation of these restoration and adaptive management measures elsewhere in the Bay. If the Conservancy would prefer to include the specific updated restoration targets and monitoring plan, including an ecotone monitoring plan, with future South Bay Salt Pond Restoration Project monitoring plan submissions, or in reference to these submissions, then Water Board staff would find that approach acceptable. The Tentative Order has been revised to allow the use of the South Bay Salt Pond Phase 2 Project ecotone addendum monitoring plan as a model for the EPMP, to the extent the addendum meets the

Comment Number	Commenter	Topic	Comment	Response
5 (cont.)	Conservancy	Monitoring (EPMP)		requirements set forth in the Tentative Order. The Discharger may also incorporate South Bay Shoreline ecotone monitoring into the addendum and complete the required work.
6	Conservancy	Landward Levee Alignment East of Artesian Slough	**Finding 13. Future Project Design Decisions**, *Landward Levee Alignment East of Artesian Slough* The discussion of the Pond A18 Alternative does not note that there are constraints to pursuing this alternative. For the Shoreline proponents to pursue levee alignment alternatives 1) the lands must be provided in a condition suitable for restoration or construction, 2) the project costs cannot increase more than 20% over authorized costs, and 3) the alternative cannot require new NEPA/CEQA analysis or feasibility analysis. Otherwise, the Corps will be required to re-open project planning which [may] delay project implementation and jeopardize Congressional appropriations.	Comment noted. Water Board staff understands the constraints regarding implementing potential changes to the proposed alignment, and we appreciate the extensive discussions we have had on this issue with Project stakeholders. The Tentative Order, including its appendices, appropriately recognizes potential constraints and sets forth specific steps for considering alternative alignments, which we understand Corps staff is now completing. The Tentative Order's language regarding alternative landward levee alignments between Artesian Slough and Coyote Creek reflects the productive discussion between Water Board staff and Project stakeholders including the Dischargers, USFWS, and BCDC. That discussion is already expected to result in the use of a modified San Jose Regional Wastewater Facility levee, rather than construction of what would have been a duplicate new levee immediately adjacent to it, for part of the alignment. This is expected to reduce anticipated Project costs and impacts, including the volume of fill material required to construct the levee. The Landward Levee Alignment Memo described the anticipated benefits of an alternative alignment between Artesian Slough and Coyote Creek, including reduced Project costs. The Tentative Order requires updates regarding work that Corps staff is already doing to reduce Project costs and increase

Comment Number	Commenter	Topic	Comment	Response
6 (cont.)	Conservancy	Landward Levee Alignment East of Artesian Slough		ecosystem restoration opportunities, including evaluating the landward levee alignment alternatives. In addition, future mitigation requirements are not linked to the landward levee alignment in the Tentative Order as the District describes. The Tentative Order authorizes the Project authorized by Congress, but recognizes that an alternative landward levee alignment east of Artesian Slough may be beneficial to the Federal and Non-Federal Sponsors from a cost standpoint as well as reduce the anticipated amount of net loss of waters of the U.S. to zero, or better. Finding 13 discusses the benefits that may result from an alternative alignment. Those include, but are not limited to, reduced Project costs, reduced volume of fill needed to build the Project, reduced fill in jurisdictional waters and opportunities to create new jurisdictional waters, avoidance of future water management issues that would result from building the levee between the Bay and existing wetlands, and opportunities to address cleanup of legacy biosolids ponds at the San Jose Regional Wastewater Facility in coordination with the Project, potentially resulting in reduced cleanup costs for the City of San Jose. Prior discussion with the Conservancy, Corps, and District indicated that they potentially preferred a landward levee alignment east of Artesian Slough for these reasons. The Tentative Order discussion regarding an alternative alignment does not discount the challenges that must be overcome before the design is finalized. Rather, the Tentative Order sets forth a mechanism that would eliminate or reduce obstacles by identifying and authorizing a range of

Comment Number	Commenter	Topic	Comment	Response
6 (cont.)	Conservancy	Landward Levee Alignment East of Artesian Slough		landward levee alignments. Finding 30 notes that any potential significant environmental impacts associated with a landward levee alignment east of Artesian Slough have already been identified in the Joint EIS/EIR. Thus, the Tentative Order facilitates potential landward levee alignments and does not present, or attempt to minimize, obstacles that those alignments may face as designs become finalized.
7	Conservancy	Mitigation	**Finding 15. Authorization Process for Future Project Phases** Please delete this sentence: "In addition, depending on overall Project impacts and tidal restoration success, this Order may be modified to require compensatory mitigation beyond that now required herein." While we appreciate that the Order is deferring some decision-making in order to provide the project with flexibility, the Project proponents will not be able to fulfill this requirement for reasons discussed in cover letter.	Comment noted. See general response regarding mitigation. In addition, the Tentative Order has been revised to clarify that the restoration of Ponds A12 and A18 as part of Project Phase I addresses the Project's temporal impacts associated with fill in jurisdictional waters.
8	Conservancy	Additional Analysis for Levee Alternatives	**Finding 15. Authorization Process for Future Project Phases** We request that the supplemental analysis for Reach 4 and 5 requested on p. 15 be deleted or modified. The differences in environmental benefits between the levee alternatives are primarily in the amount of acreage restored to tidal action. The impacts of the levee alignments to long-term water management, water quality,	Comment noted. The Tentative Order has been revised to delete the requirement for new detailed sediment modeling: This Order requires that the supplemental analysis for Reaches 4 and 5 quantitatively address the impacts of alternative levee alignments on (a) anticipated rates and extent of post-breach establishment of vegetated tidal

Comment Number	Commenter	Topic	Comment	Response
8 (cont.)	Conservancy	Additional Analysis for Levee Alternatives	habitat functions, wave energy, and establishment of tidal marsh plain are likely to be fairly similar or would be difficult to quantify with any precision given the relatively small amount of topographical changes or increased tidal influence (compared to the pond size). This analysis described in the Order are not necessary for the Corps to justify an alternative levee alignment. Rather, the factors that most influence the feasibility of the any levee alignment are: 1) lands provided in a condition suitable for restoration or construction, 2) alternative levee alignment does not increase project costs more than 20% over authorized costs, and 3) the alternative does not require new NEPA/CEQA analysis or feasibility analysis. Since the Shoreline proponents agree that increasing the amount of tidal restoration and decreasing impacts to waters of the U.S. is a desirable goal, we suggest that requiring information or analysis that focuses on addressing the constraints listed above will be more helpful in assessing levee alignment feasibility. Additional modeling or other quantitative analysis (beyond estimating acreage of additional tidal wetlands) is less critical for decision-making in this instance.	marsh; (b) long-term water management operations, water quality, and habitat functions/values in the City and landfill mitigation marshes given anticipated sea level rise (Att. C, Figures 1 and 3); and (c) anticipated attenuation of wave energy by vegetated tidal marsh seaward of the ecotone. However, a basic qualitative assessment that provides sufficient documentation to compare the likely spatial and temporal development of restored tidal marsh is still required for any alternative levee alignment in Provision 37: • Comparison of projected short-term (0 to 10 years post-breach) and long-term (10+ years post-breach) establishment of vegetated tidal marsh plain seaward of the FRM levee under alternate levee alignments east of Artesian Slough~~and suspended sediment concentrations of 100 mg/L and 200 mg/L (consistent with the modeling work performed by ESA PWA in 2012 and cited in the September 2015 South Bay Shoreline Phase 1 Study)~~; The constraints regarding alternative levee alignments have been well documented and communicated. As detailed in Tentative Order Attachment C, the alternative alignment likely will reduce overall Project costs because it utilizes land that has advantages over the land conditions along the currently proposed alignment along Reaches 4 and 5. These advantages include better construction access, reduced need for construction dewatering, and the availability of soil for construction.

Comment Number	Commenter	Topic	Comment	Response
				Furthermore, any alignment would not only have to be justified economically, but also environmentally. Therefore, the requirements for the supplemental analysis, which reflect Water Board staff's discussions with Corps staff, and which we understand Corps staff is already completing, are intended to aid the Discharger in justifying the design. See also response to Comment 6.
9a	Conservancy	EO Approval of Adaptive Management Decisions	**Finding 15. Authorization Process for Future Project Phases**. We request modification or deletion of this language: "In addition to supplemental applications, any changes to the Project that reduce the ecosystem restoration amount, thereby reducing the Project's compensatory mitigation amount, must be approved by the Water Board's Executive Officer before those changes can be implemented (see Findings 21 and 22)." The first sentence conflates all ecosystem restoration proposed by the project with compensatory mitigation, which is problematic for numerous reasons discussed in the cover letter and in the comments. The second sentence requires the EO's approval to implement the recommendations of the Adaptive Management program, which is problematic for reasons discussed in the cover letter.	Tentative Order Findings 21 and 22 have been revised for clarity regarding the Project's fill-based and non-fill based impacts and the related mitigation requirements. Specifically, they have been revised to clarify (1) that the proposed restoration of Ponds A12 and A18 as part of Phase I will address the Project's anticipated temporal impacts to jurisdictional waters; (2) that the restoration work in Phases II and III is anticipated to be self-mitigating; and (3) that proposed creation of jurisdictional waters in Phases II and III is a component of the Project's compensatory mitigation for proposed permanent fill associated with construction during Phase I (See general response regarding mitigation). See also response to Comment 7. We are not proposing to modify the "acceptable to the Executive Officer" language. The Water Board, with the Tentative Order, is approving a proposed Project design. To the extent there are future changes to the design, and they are appropriately framed in the Tentative Order, Executive Officer approval is a relatively efficient mechanism for allowing changes to an approved project. The alternative, review by the Water Board at a regularly scheduled meeting, is more time-consuming and

Comment Number	Commenter	Topic	Comment	Response
9a (cont.)	Conservancy	EO Approval of Adaptive Management Decisions	We would like to propose that the Order focus on process for involving and informing RWQCB staff of Adaptive Management decisions by suggesting the following language (if not in this section of the Order, in another appropriate place). Suggested language is below: The Adaptive Management Plan outlines project risks, a method for evaluating results, and a decision-making process to address or correct problems. One of the potential ways to address problems is to delay or halt the conversion of ponds to tidal wetlands. For example, if a lack of sediment causes newly breached ponds to erode a significant amount of mudflat habitat, which millions of migratory shorebirds depend on, then pond breaching would likely cease. Alternatively, if there is a significant Bay wide decline in pond-specialist bird species (e.g. grebes and phalaropes), then pond conversion would need to be slowed or halted. Scenarios such as these would reduce the Project's ultimate ecosystem restoration acreage, but this would [be] because of regional natural processes beyond the control of the Project. If the Project anticipates that the Phase II and/or III ecosystem restoration is delayed or halted beyond the schedule proposed in the Order, the Project's Adaptive Management Team will present findings and recommendations for delaying or stopping restoration to key stakeholders, including regulatory agencies and a representative appointed by the Executive Director [*sic*] of the RWQCB [or perhaps this is	unnecessary because the Tentative Order specifies the parameters that revisions must meet in order to be "acceptable to the Executive Officer" in Finding 15 and Provisions 1 and 35. Water Board staff intends to continue to be involved in the collaborative adaptive management processes associated with Bay margin tidal restoration. If data is collected during the monitoring period or other sound scientific information developed that justifies implementing adaptive management approaches, including delaying future pond breaches, the Water Board's Executive Officer will review it and any supporting documentation. The Tentative Order includes language intended to allow Executive Officer review of the likely Project outcomes. However, should the information presented to the Water Board propose Project changes that fall outside what the Tentative Order authorizes, then review by and approval from the Water Board may be required. This language is not intended to require tidal restoration that is not supported by data collection and monitoring. Rather, the Executive Officer approval requirement recognizes that a while range of adaptive management techniques could be implemented at the Project site, any significant changes to the Project require Executive Officer or Water Board approval.

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9a (cont.)	Conservancy	EO Approval of Adaptive Management Decisions	the TAC process referred to in the Order]. It is anticipated that delaying or stopping Phase II or III restoration would be a "worst case scenario" after other measures and alternatives had been considered and documented as insufficient to address concerns. If the Project experiences delays in implementation of Phase II and/or III ecosystem restoration due to lack of funding, the Project proponents shall document the funding short fall and prepare a funding strategy for submittal to the Executive Director that shall consider using local and state sources of funding in order to complete implementation.	
9(b)	Conservancy	EO Approval of Adaptive Management Decisions.	**Finding 16. Ecosystem Restoration and Benefits of Tidal Marsh Restoration and Ecotones** As discussed in cover letter and in comments, please either modify as suggested above in comment nine or delete (strikeout) as follows: "This Order requires any modifications to Phase II and III implementation to be submitted to the Water Board Executive Officer for review ~~and approval~~ (see Finding 15 and Provision 1)."	See general response regarding mitigation.

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10	Conservancy	Mitigation	**Finding 21. Project's Net Loss of Waters of the U.S.** This section notes that the net loss is only 8.76 acres. This section should also point out that the proposed 1,120 acres of wetland restoration proposed in Phase I is outside of any Adaptive Management "risk". We would also appreciate if this Order could reframe the ecosystem restoration as not the same as compensatory mitigation.	See general response regarding mitigation.
11	Conservancy	Mitigation	**Finding 21. Project's Net Loss of Waters of the U.S.** We request that the last two paragraphs on this page requiring "compensatory mitigation" be deleted for reasons discussed in cover letter and throughout comments. As noted above, Phase I alone includes 1,120 acres of wetland restoration (regardless of levee alignments) which should be evaluated against the fill impacts (132 acres permanent fill).	See general response regarding mitigation.
12	Conservancy	Mitigation	**Finding 22. Project Mitigation** Please delete this sentence: "However, the habitat conversion's success and consistency with these policies is contingent upon the completion of all three Project phases, including	See general response regarding mitigation.

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12 (cont.)	Conservancy	Mitigation	the Project's ecosystem restoration components." It seems unlikely that 8.76 acres of impacts requires 2,900 acres of mitigation.	
13	Conservancy	CEQA	**Finding 30. California Environmental Quality Act (CEQA)** Please note the CEQA lead was the SCVWD, not the Conservancy.	Finding 30 of the Tentative Order has been revised as requested to reflect the correct lead agency. The ~~Conservancy~~District, as the lead agency, certified a combined Interim Feasibility Study and Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) (Joint EIS/EIR) (HDR, July 2015) for the Project on ~~September~~ March ~~24~~22, ~~2015~~2016.
14	Conservancy	Monitoring	**Provision 15. Pond and Ecotone Monitoring** This is monitoring is consistent with what the Project has proposed in the MAMP. We request that the requirement for the EPMP be modified or deleted since we believe it is already covered in the MAMP. If there is concern that the MAMP does not sufficiently include ecotone monitoring, then we suggest this condition include a reference to the SBSP Restoration Project's Adaptive Management's addendum which includes ecotone monitoring parameters and triggers for management.	See response to Comment 5.

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15	Conservancy	Mitigation	**Provision 17. Contingency Mitigation and Monitoring Plan (CMMP)** Please delete the requirement for a preparation of a Contingency Mitigation and Monitoring Plan. This Plan would be impossible to implement for reasons discussed in cover letter and throughout comments.	See mitigation response. Further, Water Board permits for projects that require mitigation for impacts to waters of the State include performance standards that are to be used in assessing the success of the mitigation project, as well as provisions for contingency measures to be implemented in the event that a mitigation project does not attain its performance standards. The requirement for a CMMP was included in the Order because of the significant uncertainties associated with full implementation of tidal marsh restoration (e.g., long time lag between fill and the first breaching of outer levees, uncertainties with respect to sediment availability, uncertainties associated with the relative rates of sediment accretion and sea level rise, the possibility that the AMT may recommend that some salt ponds be maintained as open water ponds, and the uncertainties related to federal funding for future project phases). The CCMP is initially, and potentially primarily, an accounting mechanism that tracks Project fill impacts and allows the gradual resolution of what are now areas of uncertainty. Requirements for contingency measures are a standard component of Water Board permits that require mitigation. The MAMP is not sufficiently flexible to address contingency measures, which is inconsistent with standard Water Board permit development procedures. Dischargers usually submit draft MAMPs to the Water Board, and those draft MAMPs are revised in consultation with the Water Board to provide a high

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				level of certainty that sufficient mitigation will be provided for unavoidable impacts that are authorized by Water Board permits. Since the Corps did not incorporate Water Board input into the MAMP, it is necessary to address unresolved issues in the CMMP.
16	Conservancy	Monitoring	**Provision 24. Photo-Documentation Report** The requirement for a minimum of 20 photo-documentation sites may be excessive for some phases of the project such as Phase I, Reach I, which involves less than a mile of levee. Is there a way to add language to decrease the number, if appropriate?	Comment noted. The photo-documentation provision has been revised as follows: To document levee and Pond conditions immediately at the Project site, the Discharger shall establish a minimum of ~~20~~ 4 photo-documentation points at the Phase I Reach I location, 8 photo-documentation points at locations for future Phase I construction events that include ecotone creation, and 8 photo-documentation points at locations for each Project construction event for which berms are lowered and tidal action is restored, including the last Phase I construction event. ~~Each Project component, including all Phase I construction events, Phase II, and Phase III.~~
17	Conservancy	Mitigation	**Provision 26. Notice of Mitigation Completion** Since the project has not proposed any compensatory mitigation, we would interpret this condition as not applicable and ask that the Order please delete this paragraph. We expect to provide results of ecosystem restoration monitoring consistent with the MAMP as required elsewhere in the Order.	See general response regarding mitigation. The Notice of Mitigation Completion is appropriate.

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18	Conservancy	Monitoring Requirements	**Provision 36. Mechanism for approval of subsequent Project work** The conditions outlined under "mechanism for approval of subsequent Project work" conflates all the proposed ecosystem restoration with compensatory mitigation requiring a more detailed level of monitoring to demonstrate that "the Project's compensatory mitigation" is avoiding "a loss in existing functions, values, or habitat". Since this is an ecosystem restoration project, not a mitigation project, we request that the second and fifth bullets be deleted in order to not characterize the ecosystem restoration as mitigation. To address the RWQCB's concern about ecotone monitoring, we would then suggest under that, consistent with comment 6, section iii (p. 47) add the ecotone addendum proposed as part of the SBSP Restoration Project's Phase 2 instead of a separate EPMP plan.	See general response regarding mitigation and response to Comment 5.
19	Conservancy	MAMP	**Provision 36. Mechanism for approval of subsequent Project work** ["]Consistent with Section 3.1 and 3.3 of the MAMP[…"] Please delete reference to updating the MAMP since the MAMP has been adopted by the Corps' Civil Works Review Board and it is not feasible to update this document. The additional information listed in bullets under iii could still	The request for update is specific to ecotone monitoring and to the referenced MAMP sections, which themselves call for more-detailed work. Water Board staff communicated to the Conservancy and other Project stakeholders in our collaborative meetings that ecotone monitoring needed further development because it was not fully addressed in the MAMP. We understand that with the MAMP reviewed and approved by the Corps, the ability to make changes to the MAMP may not be

Comment Number	Commenter	Topic	Comment	Response
19 (cont.)	Conservancy	MAMP	be provided as we develop the details of implementation of the MAMP, but not as part of a formal modification of the MAMP.	possible without delaying Project construction. As such, in part to facilitate the Project's construction and internal Corps processes, that work has been specified as a separately-named plan. Therefore, the EPMP is a supplemental document that eliminates the need to revise the MAMP and serves to complete the MAMP's recognition that a more detailed monitoring plan should be developed prior to the start of monitoring. For instance, the EPMP requirement is intended to fulfill the need for additional quantitative restoration targets, as referenced in MAMP Section 3.1[1]: "Targets include both long-term goals and intermediate conditions as the ecosystem changes. Quantitative targets, such as minimum numbers or ranges of variability, do not yet exist for all restoration targets. These targets will be developed using existing data or regulations and many are expected to evolve as monitoring and assessments are conducted." The EPMP requirement is also consistent with the recognition in the MAMP that more detailed monitoring methods would be needed outside the general approach that was used in the MAMP, as stated in Section 3.3: "The monitoring method summaries in Table 3 (Monitoring Cost Estimate) are described in enough detail to make the approach clear, but do not fully describe the monitoring regime. A monitoring plan

[1] *South San Francisco Bay Shoreline Study, Monitoring and Adaptive Management Plan for Ecosystem Restoration* (September 2015)

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19 (cont.)	Conservancy	MAMP		with detailed methods, protocols, timing, and responsible parties will be developed prior to the start of monitoring as each monitoring study is contracted." These sections in the MAMP acknowledge the necessity of a more detailed monitoring plan and assume the plan will be developed prior to the start of monitoring. Therefore, the requirements and reference to these MAMP sections in Provision 36 are necessary.
20	Conservancy	Additional Analysis for Levee Alternatives	**Provision 37. Impact Reduction and Environmental Benefit Optimization** As stated in comment 9, we [request] the first and second bullets requiring additional analysis for Reach 4 and 5 in Provision 35 be deleted or modified. We would also like to clarify that requiring extensive additional modeling or other quantitative analysis could jeopardize the project's eligibility for Congressional appropriations (because this extent of additional technical analysis would trigger a new feasibility analysis, making the project ineligible for construction funding).	See Response to Comment 8.

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Conservancy Cover Letter (CL)-1	Conservancy	Voluntary Ecosystem Restoration vs. Mitigation	Most of our comments have to do with a misunderstanding of the purpose of the project. The Tentative Order initially correctly describes the project (pp. 2-3) as a multi-benefit project that seeks to restore former salt evaporation ponds, protect adjacent communities from flooding, and provide recreational opportunities. However, on p. 4, there is a different interpretation of the project purposes: "Phase I is expect to result in Project impacts and the ecosystem restoration work in Phases I, II, and Ill is intended to provide mitigation for those impacts." This description sets the stage for requirements that are extremely problematic. The Conservancy would like to restate that the restoration options were selected for their own value in order to meet the project's ecosystem restoration goals. The Conservancy is involved in the Shoreline Project because it will implement the goals of the South Bay Salt Pond Project in an area where restoration is impossible without flood protection infrastructure. This project is not an infrastructure project with some mitigation elements - as is demonstrated by the vast amount of restoration proposed, much more than would be required to offset impacts. Furthermore, since the fill impacts from the flood protection measures (132.2 acres permanent fill or 8.76 acres net fill) are relatively minor when compared to the tremendous benefits from just the first phase of proposed restoration (restoring 1120 acres of existing ponds to tidal action), the Conservancy	See general response regarding mitigation.

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Conservancy Cover Letter (CL)-1	Conservancy	Voluntary Ecosystem Restoration vs. Mitigation	would expect that this project is self-mitigating by the end of Phase I. However, the Conservancy proposes to continue to restore ponds in Phases II and Ill, adding up to an additional 1780 acres of tidal restoration (pursuant to the adaptive management framework), because that is the goal of the project and the purpose of our agency, not to secure unnecessary, additional mitigation.	
Conservancy CL-2	Conservancy	Infeasibility of Mitigation	The Tentative Order currently states that if the restoration proposed in Phase II (900 acres) and Phase Ill (880 acres) is not implemented, then the project must provide compensatory mitigation elsewhere. This requirement could adversely impact the ability of the Project to implement its Monitoring and Adaptive Management Plan (MAMP). The MAMP outlines project risks, a method for evaluating results, and a decision-making process to address or correct problems that arise while implementing the project. As described on p. 18 of the Tentative Order, the MAMP states that one of the potential ways to respond to adverse results to is to delay or halt pond breaching. (Indeed, having this ability to delay or stop the project is a primary reason that the restoration will be phased.) The grounds upon which the Adaptive Management team might recommend that restoration be delayed or stopped are the same reasons that would make mitigation impossible elsewhere in San Francisco Bay. For example, if	See general response regarding mitigation.

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Conservancy CL-2 (cont.)	Conservancy	Infeasibility of Mitigation	lack of sediment causes newly breached ponds to erode a significant amount of mudflat habitat, which millions of migratory shorebirds depend on, then pond breaching would likely need to stop in all of San Francisco Bay. Alternatively, if there is a Bay wide decline in pond-specialist species (e.g. grebes and phalaropes), then pond conversion in all of San Francisco Bay would need to be slowed or halted. Obviously, the Shoreline Project expects to be successful; not implementing the wetland restoration proposed in Phase II and Ill is an extreme scenario. However, we are entering an era of greater uncertainty. The Conservancy and the other Project proponents have created a process through the MAMP to address uncertainty as much as possible. However, if the Project proponents are not able to implement all of the proposed restoration, there are not going to be alternatives at this scale available elsewhere. Since mitigation is infeasible, the current language in the Tentative Order could create a scenario where the project will have no choice but to restore all the ponds, regardless of the input from the Adaptive Management monitoring and applied studies, undermining this carefully crafted program. For these reasons, the Conservancy requests changes to the Tentative Order language in the attached comments.	

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Conservancy CL-3	Conservancy	RWQCB and Adaptive Management Decision-Making	The project fully intends to communicate adaptive management decisions to our stakeholders and including the RWQCB. However, requiring the RWQCB's Executive Director approval for not implementing the restoration in Phase II and Ill essentially gives Executive Director "veto power" over the decision-making process outlined in the MAMP. The Adaptive Management decision-makers have to consider a broad suite of issues that include, but are not limited to, enhancing the resources overseen by the RWQCB. Making an adaptive management action subject to RWQCB approval (except to the extent that a proposed action requires a permit) would give the RWQCB a role not shared by any other stakeholder. The Conservancy suggests an alternative approach in comment number nine. We propose that the Order should describe a process (e.g. the Technical Advisory Committee) for involving and informing RWQCB staff in the Adaptive Management decision-making process. The Order should clarify that the RWQCB shares the understanding of the Shoreline Project that there may be valid reasons that the Adaptive Management decision-makers recommend halting or delaying pond restoration and that the Project would not be held responsible for natural processes beyond anyone's control.	See general response regarding mitigation.

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21	USFWS	Mitigation	**Finding 8. Project Construction Phasing** p. 2-3 "The draft Order initially correctly describes the Project (pp. 2-3) as a multi-benefit project that seeks to restore former salt evaporation ponds, protect adjacent communities from flooding, and provide recreational opportunities. However, on p. 4, there is a different interpretation of the project purpose: "Phase I is expected to result in Project impacts and the ecosystem restoration work in Phases I, II, and III is intended to provide mitigation for those impacts." The restoration components of the project were not presented under NEPA/CEQA or the federal Clean Water Act as being mitigation for project impacts; therefore that interpretation is incorrect and should be revised appropriately. It is our position that the Project as described in the NEPA/CEQA document does not need nor require mitigation."	See general response regarding mitigation.
22	USFWS	Mitigation	The Refuge is involved in this Project because it will implement a portion of the South Bay Salt Pond Restoration Project, consistent with the Refuge's Comprehensive Conservation Plan that fulfills the purposes for which the Refuge was established for the protection and restoration of habitat for fish and wildlife, including federally listed species such as the California Ridgway's rail and salt marsh harvest mouse. The wetland restoration would be impossible without the construction of flood risk management infrastructure, and in turn, the flood risk	See general response regarding mitigation.

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			management levee as integrated with the proposed wetland restoration features will be more resilient and sustainable in the face of climate change. The project description fully describes the considerable amount of restoration proposed, an amount in our opinion much higher than would be required as mitigation to offset impacts. For example, during Phase I the net fill impacts from the flood protection measures (8.67 acres) are minor when compared to the tremendous benefits from just Phase I of proposed restoration (restoring 1120 acres of existing ponds to tidal action). In addition, as the Project continues to restore additional ponds in Phases II and III, it will be adding up to an additional 1780 acres of tidal restoration, as described in the project description.	
23	USFWS	Mitigation	The draft Order further states that if the restoration proposed in Phase II (900 acres) and Phase III (880 acres) is not implemented, then the Project must provide compensatory mitigation (CNMP) elsewhere. This requirement as stated in an order could adversely impact the ability of the Project to implement the USACE's approved Monitoring and Adaptive Management Plan (MAMP). The MAMP outlines project risks, a method for evaluating results, and a decision-making process to address or correct problems that arise while implementing the Project. As described on p. 18 of the draft Order, the MAMP states that one of the potential ways to respond to adverse results is to delay or halt pond breaching so that we can apply the best	See general response regarding mitigation.

Comment Number	Commenter	Topic	Comment	Response
			available science, address uncertainty, and inform future phases in an adaptive management framework. We respectively request and concur with the USACE that references to CMMP be removed from the draft Order accordingly.	
24	USFWS	Monitoring	We all certainly expect the Shoreline Project to be successful in achieving the multi-benefits of flood risk reduction, ecosystem restoration, and recreation opportunities. The MAMP was prepared to address uncertainty as much as possible, and indeed the South Bay Salt Pond Restoration Project has a proven track record of using adaptive management as described in the MAMP and provides a mechanism through technical working groups and stakeholder forums to keep RWQCB staff updated and part of the decision-making process should uncertainties arise throughout the project. We recommend that the Order describe a process for how RWQCB staff wish to be engaged and informed through the USACE's adaptive management decision-making process. The Order should clarify that the RWQCB shares a similar concern of the Shoreline Project that there may be valid reasons that the project team may recommend halting or delaying pond restoration elements due to natural processes beyond anyone's control in furtherance of the Project as described.	See responses to Comments 5 and 9a.

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25	Santa Clara Valley Water District (District)	Mitigation	**Finding 22. Project Mitigation** The tentative order, in finding 22, treats the 2,900 acres of restored tidal marsh proposed by the Project as mitigation for the project's net fill of 8.76 acres of waters. The Project's tidal marsh restoration is not proposed to be mitigation for the fill; rather, the fill is necessary in large part because of the tidal marsh restoration. The fill is being placed on the landside of the restored tidal marsh to construct new flood protection that becomes necessary in large part because the dikes that currently provide an incidental measure of flood protection have to be breached in order to restore the tidal marsh. The Regional Board has previously-and correctly-recognized, for the South Bay Salt Pond Restoration Project (SBSPRP), that tidal marsh restoration is not mitigation for the fill that may be necessary for the restoration. The Regional Board's findings for that project (R2-2008-0078) recognized that restoring tidal marsh should not be viewed as mitigation: finding 96 of the SBSPRP order found that "[n]o penalties will be imposed for a failure to achieve the interim and final habitat goals; since this is a restoration (not a mitigation) project", and finding 16 found that "[n]o compensatory mitigation is required for impacts to existing wetlands and waters of the State, since this restoration project will result in many more acres of restored and enhanced habitats than the acres of habitat that are impacted."	See general response regarding mitigation.

Comment Number	Commenter	Topic	Comment	Response
25	Santa Clara Valley Water District (District)	Mitigation	Although the Tentative Order, in finding 9, states that it is modeled after SBSPRP, it treats the restoration component of this Project very differently than restoration was treated in SBSPRP. The Regional Board should be consistent: the Tentative Order should not treat the restoration component of the Project as mitigation for fill, just as the Regional Board treated the fill necessary for the restoration component of SBSPRP. No compensatory mitigation should be required here.	
26	District	No Net Loss Policy	**Finding 32. Basin Plan Wetland Fill Policy** **Finding 33. California Wetlands Conservancy Policy** The Tentative Order, in findings 32 and 33, cites the California Wetlands Conservation Policy (Executive Order W-59-93), often called the "no-net-loss policy", and the Basin Plan (which incorporates the no-net-loss policy), as the principal basis for requiring 2,900 acres of mitigation for 8.76 acres of net fill here. As described below, the Tentative Oder misapplies the no-net-loss policy. The policy focuses on a programmatic approach to preserving and enhancing wetlands: it requires State agencies to "encourage partnerships to make restoration, landowner incentive programs, and cooperative planning efforts the primary focus of wetlands conservation." The Project is developed through a cooperative partnership between agencies and landowners to restore	See general response regarding mitigation.

Comment Number	Commenter	Topic	Comment	Response
26 (cont.)	District	No Net Loss Policy	wetlands and waters. The policy "is not meant to be achieved on a permit-by-permit basis". Yet the Tentative Order tries to apply the policy to this individual permit, without regard to the broader partnership represented by this Project, contrary to the policy's direction that it is to be implemented on a programmatic, rather than permit-by-permit, basis. The Regional Board should read the no-net-loss policy as encouraging approval of the Project as-is, rather than as requiring conditioning the Project on thousands of acres of mitigation.	
27	District	Mitigation	**Finding 31. Water Quality Control Plans.** Water Code section 13263(a) requires waste discharge requirements to implement relevant water quality control plans, and to take into consideration the beneficial uses to be protected. The water quality control plan here-the Basin Plan-incorporates the no-net-loss policy, but, as just discussed, that policy supports approval of the Project as is, rather than with thousands of acres of mitigation. Nor does the Tentative Order justify its conditions as necessary to promote beneficial uses: in fact, the Tentative Order recognizes that the Project as-is will provide significant benefits to beneficial uses. No additional mitigation is necessary. The Tentative Order, in finding 31, lists a number of beneficial uses in the Project area, but the Tentative Order identifies no beneficial uses that will be adversely impacted by the Project.	See general response regarding mitigation.

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27 (cont.)	District	Mitigation	Finding 16 goes on at length, and in great detail, about how the Project as-is is expected to "result in a significant contribution to tidal wetland restoration", providing water quality and associated habitat and vegetation benefits "on a spatially significant scale". In the SBSPRP, the Regional Board recognized that salt pond restoration projects promote beneficial uses and require no compensatory mitigation: in Finding 16 in its order for that project (R2-2008-0078), the Regional Board found that "[n]o compensatory mitigation is required for impacts to existing wetlands and waters of the State, since this restoration project will result in many more acres of restored and enhanced habitats than the acres of habitat that are impacted." Similar benefits would be generated by the Project, and thus the same approach should be used here. Because the Project as-is significantly promotes beneficial uses, no additional mitigation is required.	
28	District	Mitigation (Ratio)	Even if mitigation were required for the 8.76 acres of net fill, the Tentative Order would require 2,900 acres of mitigation-a ratio of nearly 330:1. That kind of ratio is unprecedented and unjustified. Compensatory mitigation requirements must be roughly proportionate to a project's impacts. (*Dolan v. City of Tigard* (1994) 512 U.S. 374, 391.) A 330:1 mitigation ratio, for a project that	See general response regarding mitigation.

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28 (cont.)	District	Mitigation (Ratio)	is largely a restoration project, is also not roughly proportionate to any impacts this project may have. Requiring a mitigation ration of 330:1, or anything close to that, would set an unfortunate precedent. It would signal that the Regional Board wants to stand in the way of restoration projects by imposing onerous conditions, rather than promoting such projects by blessing them with streamlined approvals. The Regional Board should rethink the Tentative Order's excessive and unjustified mitigation for this Project.	
29	District	Mitigation (CCMP)	**Finding 8. Project Construction Phasing** **Finding 22. Project Mitigation** The ecosystem restoration component of the Project will occur in three phases (Phases I, II, and III) of pond breaches to establish tidal connection. The Tentative Order requires all phases of the restoration to be completed, and requires additional mitigation to be proposed for approval if not all phases are implemented (Findings 8, 22). Phase [I] of the restoration is scheduled to be constructed in 2022, and completion of this phase would result in restoration of up to over 1,000 acres of tidal marsh habitat. The design and construction of Phases 2 and 3 restoration will be guided by the Project's Monitoring and Adaptive Management Plan. Phases II and Ill of the Project are likely to be built, adding many hundreds of acres of restored tidal marsh to the Project. Only in the	See general response regarding mitigation.

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29 (cont.)	District	Mitigation (CCMP)	unlikely event that Phase I causes unavoidable but undesirable outcomes would Phases II and III be reconsidered. Even if Phase I does not result in all of the restoration benefits predicted, no additional mitigation should be required. Finding 96 of SBSPRP (Order No. R2-2008-0078) stated that "No penalties will be imposed for a failure to achieve the interim and final habitat goals, since this is a restoration (not a mitigation) project"; that order instead envisioned a collaborative process to achieve the desired results. A similar approach should be used here.	
30(a)	District	Whether Discharge is a "Waste"	If the Regional Board revises the Tentative Order's current approach of treating the restoration component of this Project as mitigation for the fill necessary for the Project, then the following discussion becomes less important from a practical perspective. Nevertheless, the District is compelled to raise these issues until the Tentative Order is revised to drop its objectionable mitigation conditions. As the District and USACE have explained to the Regional Board in other contexts, the Regional Board's authority to impose waste discharge requirements is limited to discharges of "waste". (Water Code section 13260(a)(1); see *Lake Madrone Water District* (1989) 209 Cal.App.3d 163 (flushing unwanted sediment	Dredge and fill discharges causing discharges of sediment involve discharges of "waste": "There is no doubt that concentrated silt or sediment associated with human habitation and harmful to the aquatic environment is 'waste' under the statute." (*Lake Madrone Water District v. State Water Resources Control Board* (1989) 209 Cal.App.3d 163, 169. See also, State Water Board Resolution No. 2004-0030 [favorably citing the *Lake Madrone* finding that accumulated sediment was a discharge of waste and noting the impact of sediment on steelhead habitat].) The State Board has determined that discharges "produced by dredging or filling operations" involving "the discharge of earth, rock, or similar solid materials" are properly regulated by WQCs and WDRs.[2] The State Board reasoned that such regulation is necessary because:

[2] State Board Order 2004-0004 (*Statewide General WDRs for Dredge and Fill Activities in Waters of the State*), p. 2.

Comment Number	Commenter	Topic	Comment	Response
30a (cont.)	District (cont.)	Whether Discharge is a "Waste" (cont.)	accumulated behind dam was a discharge of waste).) The term "waste" is commonly understood as meaning "something discarded 'as worthless or useless.'" (*Waste Management of the Desert v. Palm Springs Recycling Center, Inc.* (1994) 7 Cal.4th 478, 485.) But constructing a beneficial project is not a discharge of something worthless or useless. (See *Tahoe-Sierra Preservation Council, Inc.* v. *Tahoe Reg'/ Planning Agency* (D.NV 1999) 34 F.Supp.2d 1226, 1254 (distinguishing Lake Madrone to hold that "building a house" is not a discharge of waste under Porter Cologne), rev'd in part on other grounds, 216 F.3d 764, aff'd, 535 U.S. 302.) This Project—restoring tidal marsh and constructing flood protection—is beneficial; it is not a discharge of waste subject to waste discharge requirements.	Discharges of fill can directly or indirectly destabilize the channel or bed of a receiving water by changing geomorphic parameters, including hydrologic characteristics, sediment characteristics, or stream grade. Such destabilization diminishes the ability of the water body to support designated beneficial uses.[3] Dischargers cite *Tahoe-Sierra Preservation Council, Inc. v. Tahoe Reg'/ Planning Agency* (D.NV 1999) 34 F.Supp.2d 1226 (note subsequent negative treatment omitted in Dischargers' comment). The court in that case noted facts that distinguished the case from *Lake Madrone*, specifically, that the activity in question – building a house – was not expected to result in discharges of concentrated silt or sediment. (*Id.* at pp. 1253-1254.) In this case, all parties anticipate that there will be discharges of sediment to the receiving waters, as demonstrated in the Joint EIS/EIR that states: "Construction activity would be conducted consistent with waste discharge requirements (WDRs) prescribed for compliance with the State's Porter-Cologne Act and BMPs outlined in the required Stormwater Pollution Prevention Plan (SWPPP) for the Shoreline Phase I Project (AMM-GEO: Prepare SWPPP)…Applying these measures would reduce any potential impacts to a less-than-significant level."[4]

[3] *Id.* at pp. 3-4.

[4] Joint EIS/EIR at pg. 4-47.

Comment Number	Commenter	Topic	Comment	Response
30a (cont.)	District	Whether Discharge is a "Waste"		"Construction of the FRM levee would involve soil disturbance along the levee alignment, adjacent areas, and staging areas, thereby temporarily exposing the soil in these areas to erosion. The Project's WDRs and SWPPP would include measures to control erosion during construction (AMM-GEO-6: Prepare SWPPP). In addition, as work in areas is completed, disturbed areas would be stabilized consistent with the SWPPP…"[5] "Operation and Maintenance actions that result in soil disturbance are likely to temporarily increase turbidity and suspended sediment; these activities include placement of dredge material on levee tops, dredging of ponds and stockpiling of dredge materials, and gaining access to excavation sites…However, avoidance and minimization measures would be implemented to minimize temporary increases in turbidity and suspended sediment (AMM-ABR-1, AMM-ABR-2, AMM-ABR-4, AMM-ABR-6, AMM-ABR-10), as well as spills or other chemical contamination form construction equipment."[6] "Table 1.5-1, Regulation Summary: Authority to regulate discharges of waste into waters of the State, which are defined as "any surface or groundwater, including saline water, within the boundaries of the State" (California Water Code, Section 13050). This definition includes, but is broader than, waters of the United States.

[5] Joint EIS/EIR at pg. 4-47.
[6] Joint EIS/EIR at pg. 4-227 and 4-228

Comment Number	Commenter	Topic	Comment	Response
30a (cont.)	District	Whether Discharge is a "Waste"		Primarily implemented through waste discharge requirements (WDRs). Table 1.5-1, Applicability to Shoreline Phase I Project: WDR Order No. R2-2008-0078 established limitations on the discharge of waste associated with the SBSPRP activity for restoration of 3,069 acres of former salt ponds and ongoing maintenance. Either this WDR would be amended to apply to the Shoreline Phase I Project or the Shoreline Phase I Project would have a similar WDR order." Therefore, the Tentative Order is consistent with the Project's Joint EIS/EIR in that it implements the requirements in its provisions that were anticipated therein as related to discharges of waste (i.e., sediment). Provisions 4, 5, 6, 7, 8, 9, 10, 12, and 13 all facilitate waste disturbance management by requiring construction BMPs that limited waste disturbance and discharge, or plans that outline methods to limit waste disturbance and discharge. The San Francisco Bay Water Board's Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Sediment is regulated by Basin Plan Discharge Prohibition 9, which prohibits the discharge of "[silt, sand, clay, or other earthen materials from any activity in quantities sufficient to cause deleterious bottom deposits, turbidity or discoloration in surface waters or to unreasonably affect or threaten to affect

Comment Number	Commenter	Topic	Comment	Response
30a (cont.)	District	Whether Discharge is a "Waste"		beneficial uses."[7] The intent of prohibiting such discharges "is to prevent damage to the aquatic biota by bottom deposits which can smother non-motile life forms, destroy spawning areas, and, if putrescible, can locally deplete dissolved oxygen and cause odors."[8] In this case, the discharge will be entirely associated with human activities as opposed to natural deposition. The harmful effects of the fill on the aquatic environment are described extensively in the Joint EIS/EIR. The Impacts section of the Order (See Findings 20 to 22 and Finding 31) have been revised to discuss the impact fill has on beneficial uses. Water Code section 13263 authorizes the regional water boards to regulate discharges of dredge and fill materials with WDRs to protect the beneficial uses of waters of the State.
30(b)	District	Application of Water Code Section 13376	Nor would Water Code section 13376 authorize the Regional Board to issue a permit to the District for dredge-and-fill discharges. Water Code section 13372(b) unambiguously makes Water Code section 13376 operative "only to discharges for which the state has an approved permit program" under Section 404 of the Clean Water Act. California does not have an approved permit program under Section 404, and thus section 13376 cannot give the Regional Board authority.	The operation of the Water Code is not contingent upon the State having an approved program to issue 404 dredge and fill permits under the Clean Water Act. The District provides no authority to support such an assertion. The Legislature added Chapter 5.5 to the Water Code in 1972 to provide the State Board with adequate statutory authority to implement the federal Clean Water Act National Pollutant Discharge Elimination System (NPDES) permit program.[9] In 1978, Chapter 5.5 was amended to authorize a state

[7] Basin Plan, Table 4-1.
[8] *Ibid.*
[9] Stats. 1972, ch. 1256.

Comment Number	Commenter	Topic	Comment	Response
30(b) (cont.)	District	Application of Water Code Section 13376		permit program to permit discharges of dredged or fill material.[10] Nothing in the 1978 amendments or subsequent changes to Chapter 5.5 should be construed as preventing the State from protecting water resources against unpermitted discharges, regardless of whether it has obtained approval to issue dredge or fill material permits implementing the Clean Water Act section 404 permit program. A careful reading of the provisions in Chapter 5.5, particularly sections 13372 and 13376, supports this conclusion. Water Code section 13372 establishes that Chapter 5.5. shall be construed to ensure consistency with the implementation of the Clean Water Act.[11] Section 13376 requires a person discharging or proposing to discharge dredge and fill material to waters of the United States to file a report of waste discharge with the State. Water Code section 13377 requires the State Board or regional boards to, as required or authorized by the Clean Water Act, issue dredge and fill materials. Read together, these Water Code provisions establish the framework for state authority to assume the federal permitting program under Clean Water Act section 404. Nothing in the express language of these provisions operates to prevent the San Francisco Bay Water Board from issuing WDRs for discharges to waters of the State. Moreover, as explained below, the practical effect of sections 13376 and 13377 is limited because California has not taken over the 404 permitting program.

[10] Stats. 1978, ch. 746.

[11] Wat. Code § 13372, subd. (a).

Comment Number	Commenter	Topic	Comment	Response
30(b) (cont.)	District	Application of Water Code Section 13376		Subdivision (b) of Water Code section 13372 limits the authority of the State to issue section 404 permits and to require reports of waste discharge until the State actually takes over the program. It states, in part, that "[t]he provisions of Section 13376 *requiring the filing of a report* for the discharge of dredged or fill material and the provisions of this chapter relating *to the issuance of dredged or fill material permits by* the State Board or a regional water board shall be applicable only to discharges for which the state has an approved permit program."[12] This provision only seeks to eliminate the confusion and inconsistency that would arise from a scenario in which the Corps and the State concurrently issued 404 permits; it does not bar the implementation of all other provisions in Chapter 5.5 related to dredge or fill activities, or any other section of Porter-Cologne. This interpretation is supported by the plain language of section 13376, which states "[t]he discharge of […] dredged or fill material […] *except as authorized by* […] *dredged or fill material permits, is prohibited*."[13] Section 13376 explicitly notes the potential circumstance where a regional water board may require a report of waste discharge for discharges in waters of the State: *Unless required by … a regional board*, a report need not be filed under this section for discharges that are not subject to the permit application requirements of the

[12] Wat. Code § 13372, subd. (b) (emphases added).

[13] Wat. Code § 13376 (emphases added).

Comment Number	Commenter	Topic	Comment	Response
30(b) (cont.)	District	Application of Water Code Section 13376		Federal Water Pollution Control Act, as amended.[14] Section 13372 is silent on the provision of section 13376 that prohibits the unauthorized discharge of dredged and fill material, and is otherwise silent on other sections of Porter-Cologne, requiring the San Francisco Bay Water Board to issue WDRs for discharges of waste to waters of the State. Had the Legislature intended to limit the State's authority to regulate dredge and fill discharges in State waters until such time that the State has an approved permit program, the Legislature would have also done so explicitly in section 13376.
30(c)	District	Application of Water Code Section 13270	**Finding 4. Local-Federal Partnership** Even if this Project were a discharge of waste, the Tentative Order, in finding 4, recognizes that this project will be built on the District's property. Water Code section 13270 precludes issuing waste discharge requirements to one public agency for discharges of waste on that agency's property by another public agency. Because this Project will be constructed by USACE on the District's property, and both are public agencies, Water Code section 13270 prohibits issuing waste discharge requirements for the construction of the Project to the District.	Water Code 13270 states: Where a public agency as defined in subdivision (b) of Section 13400 leases land for waste disposal purposes to any other public agency …, the provisions of Sections 13260, 13263, and 13264 shall not require the lessor public agency to file any waste discharge report for the subject waste disposal, and the regional board … shall not prescribe waste discharge requirements for the lessor public agency as to such land…. To the extent section 13270 has any application, the State Board construed section 13270 in State Water

[14] *Ibid.*

Comment Number	Commenter	Topic	Comment	Response
30(c)	District	Application of Water Code Section 13270		Board Order WQ 90-3 (*San Diego Unified Port District*). In that order, the State Board considered whether it was appropriate to name the Port District as a discharger on National Pollutant Discharge Elimination System (NPDES) permits held by various ports and boatyards. The State Board first noted that Water Code section 13270 "supports the conclusion that it is appropriate to name non-operating landowners in waste discharge requirements."[15] The State Board ultimately remanded the NPDES permits to the San Diego Water Board with instructions to specify more clearly that the Port District was not responsible for monitoring or day-to-day operations, "or at most it should be held only secondarily liable for permit obligations."[16] *San Diego Unified Port District* states: "The Regional Board has the discretion to name non-operating landowners in waste discharge requirements/NPDES permits because landowners may properly be considered "dischargers" under the Clean Water Act and the Water Code."[17] This is not a situation like the *San Diego Unified Port District*, where there was an entity who only held title to the land, but was not actively involved in the discharge. District staff has completed Project actions including identifying potential sources of sediment for the Project's levee and sites where that sediment could be stored, negotiating with site landowners regarding that storage, and coordinating with City of San Jose staff on aspects of Project design, including Pond A18 acquisition. In addition,

[15] *San Diego Unified Port District* at p. 4.
[16] *Id.* at pp. 4 and 5.
[17] *Id.* at p. 15.

Comment Number	Commenter	Topic	Comment	Response
30(c)	District	Application of Water Code Section 13270		the District's responsibilities include Project monitoring and oversight, as evidenced in the approval of the Joint EIS/EIR (see response to Comment 30(d)). The District and the Conservancy are partners with the Corps in the Project, as further evidenced in the Design Agreement between these parties that outlines the partnership's design roles and responsibilities, including a 35/65 percent Non-Federal Sponsor to Federal Sponsor cost-sharing ratio, and the eventual Project Partnership Agreement (PPA) that will provide similar details regarding Project construction and O&M responsibilities and cost-sharing percentages. The Joint EIS/EIR further details the District's specific responsibilities in overseeing the construction contractor and other duties with respect to protecting water quality, including monitoring/oversight. When the Joint EIS/EIR was approved by the District, each Project partner's responsibility and duties, as it pertains to Project implementation, were detailed in the Mitigation Monitoring and Reporting Program (MMRP). The MMRP stated the following: "…The USACE is responsible project design, construction, and initial maintenance of the improvements. The District is responsible for partially funding the Project, acquiring real property interests needed for the project, and operating and maintaining the Project's flood risk management elements after construction is complete. "…The table below provides a summary of the AMMs and mitigation measures proposed for the Project and for each measure identifies the timeframe for implementation, the entity/entities

Comment Number	Commenter	Topic	Comment	Response
30(c)	District	Application of Water Code Section 13270		responsible for implementation, and the entity/entities responsible for monitoring oversight." The table referenced in the MMRP goes on to list the District as the party responsible for monitoring/oversight on nearly every AMM and mitigation measure. The following AMMs had shared implementation responsibility for all Project partners, including the District: GEO-5, HYD-1A. HYD-1B, HYD-1C, WAT-17, ABR-11, TBR-2C, and REC-2. In this case, there is a discharge that could affect water quality. The District's Board Agenda Memoranda (March 22, 2016) acknowledges that "the Project would result in significant impacts on hydrology, water quality, biological resources...." Impact Wat-01 (violate any water quality standard or waste discharge) lists 24 mitigation measures the District deemed necessary. A person discharging waste that could affect the quality of waters of the State must file a report of waste discharge.[18] In cases where a discharger proposes a discharge that will impact waters of the State, Water Code section 13263 states that the regional board "*shall* prescribe requirements as to the nature" of the proposed discharge.[19] The Order appropriately identifies the District as a discharger.

[18] Wat. Code § 13260.

[19] Wat. Code § 13263 (emphasis added).

Comment Number	Commenter	Topic	Comment	Response
30(d)	District	Application of CWA Section 401	Nor may the Regional Board issue a Section 401 certification to the District. Section 401 applies only to persons who apply for a federal license or permit. (33 U.S.C. 1341(a).) The District has not applied for a federal license or permit, and thus Section 401 does not apply to the District.	The Water Board may regulate the District's dredge and fill activities in the absence of an application. As U.S. EPA explains in the "Clean Water Act Section 401 Water Quality Certification: A Water Quality Protection Tool For States and Tribes" (401 Handbook), however, the Corps (the applicant in this case) does not permit its own dredge and fill activities pursuant to Clean Water Act section 404, but will still apply for section 401 water quality certification.[20] This is codified in the Code of Federal Regulations: > Although the Corps does not process and issue permits for its own activities, the Corps authorizes its own discharges of dredged or fill material by applying all applicable substantive legal requirements, including public notice, opportunity for public hearing, and application of the section 404(b)(1) guidelines. The CWA requires the Corps to seek state water quality certification for discharges of dredged or fill material into waters of the U.S.[21] The State Water Board is authorized to administer water quality certification in California[22] and has promulgated Title 23 of the California Code of Regulations, section

[20] 401 Handbook, https://www.epa.gov/sites/production/files/201611/documents/cwa_401_handbook_2010.pdf, at p. 4.
[21] 40 C.F.R. § 336, subd. (a)(1).
[22] Wat. Code § 13160.

Comment Number	Commenter	Topic	Comment	Response
30(d) (cont.)	District	Application of CWA Section 401		3855, which requires that an "application for water quality certification shall be filed with the regional board executive officer in whose region a discharge may occur." The requirement to apply for certification under is inherent in Clean Water Act section 301, prohibiting discharge without a permit, and explicitly required by section 3855, requiring submission of an application for certification before discharging. There is no question that certification is required for the Project, which the District and Corps agree involves dredge and fill activities that impact waters of the United States.[23] There is also no question that the District is appropriately named as a discharger in a certification for this Project, given the District's involvement in key aspects of the project, as described in the response to Comment 30(c). Staff construed the Corps' application for certification and the District's Joint EIS/EIR to be an application that covered both the District's and the Corps' activities. The only alternative interpretation is that the Corps and District failed to comply with requirements that parties apply for water quality certification for dredge and fill activities. Moreover, proceeding without certification would violate the Clean Water Act, leaving both the Corps and the District vulnerable to the Clean Water Act's citizen suit provisions, so it is to the District's benefit that the Water Board has acted to issue a WDR/WQC.

[23] *Clean Water Action Section 404(b)(1) Determination* (July 1, 2015), Section 8.0 Waters of the United States Impact Estimates.

Comment Number	Commenter	Topic	Comment	Response
30(d) (cont.)	District	Application of CWA Section 401		Finally, the State's authority to protect waters focuses on the protection of beneficial uses and is broader than the Corps' authority under Clean Water Act section 404. The Water Board has independent authority under the Water Code to regulate discharges of waste to waters of the State, including wetlands, that would adversely affect the beneficial uses of those waters, through waste discharge requirements or other orders.[24] Water Code section 13263(a) requires the Water Board to "implement any relevant water quality control plans that have been adopted, and shall take into consideration the beneficial uses to be protected, the water quality objectives reasonably required for that purpose, other waste discharges, the need to prevent nuisance, and the provisions of Section 13241." The Water Board has statutory authority under Porter-Cologne to adopt WDRs requiring mitigation, independent of Clean Water Act section 401.

[24] Basin Plan § 4.23.4.

Comment Number	Commenter	Topic	Comment	Response
31	District	Landward Levee Alignment East of Artesian Slough	**Finding 13. Future Project Design Decisions.** Finding 13 discusses an alternative, more landward, levee alignment east of Artesian Slough for Reaches 4 and 5 that the Tentative Order describes, in finding 21 and elsewhere, as having greater environmental benefits with fewer impacts. The District and its Project partners considered suggestions for alternative alignments in the EIR/EIS process, including the Regional Board's suggestion of the alternative alignment raised in the Tentative Order. The District has considered, and will consider, alternative alignments, though the District is mindful that alternative alignments need to be feasible. Different alternative alignments raise various feasibility constraints, including enduring that any alternative is within the scope of the Project authorized for the USACE by Congress, avoiding interference with the City of San Jose's current plan for the San Jose-Santa Clara Regional Wastewater Facility, maintaining adequate buffers against a nearby San Jose Police Department bomb facility, and achieving consensus among stakeholders for the inclusion of legacy biosolid lagoons on the bayside of the proposed levee. The District and its Project partners expect to continue assessing whether these constraints can be overcome by the alternative alignment discussed in the Tentative Order, or by some	See response to Comment 6.

Comment Number	Commenter	Topic	Comment	Response
31 (cont.)	District	Landward Levee Alignment East of Artesian Slough	variation of that alternative alignment. While Attachment C to the Tentative Order acknowledges some of these constraints, that appendix and those constraints are not clearly acknowledged in, or incorporated into, the Tentative Order itself. The Tentative Order should more clearly acknowledge that alternative alignments may not be achievable, and the Regional Board should not be linking possible future mitigation requirements to alternatives that may not be achievable.	
32	District	Mitigation	**Finding 30. California Environmental Quality Act (CEQA)** The main impact identified in the Tentative Order-filling of waters of the United States-was analyzed in Section 4.6.5 of the EIR/EIS. The EIR/EIS concluded, in Section 4.6.6, that the fill of waters associated with the Project would have only less-than-significant impacts. Because impacts from fill would be less-than-significant, CEQA does not allow the Regional Board to impose additional mitigation for fill-related impacts. As for other impacts identified in the EIR/EIS, the Tentative Order, in finding 30, correctly notes that the EIR/EIS found that the mitigation measures proposed in the EIR/EIS "would mitigate all of these impacts to less than significant levels". The Regional Board does not have authority to second-guess the conclusion of the EIR/EIS that no additional mitigation is	See general response regarding mitigation.

Comment Number	Commenter	Topic	Comment	Response
32 (cont.)	District	Mitigation	necessary for these impacts that will already be mitigated to less-than-significant levels. (See *Ogden Envt'l Serv. v. City of San Diego* (S.D. Cal. 1988) 687 F.Supp. 1436, 1450-1452 (responsible agency does not have authority over impacts mitigated to less-than-significant levels).)	
33	District	TAC	**Provision 22. Technical Advisory Committee (TAC)** Provision B.20 [22] requires the formation of a technical advisory committee (TAC) to assess, review, and suggest adaptive management strategies. The Mitigation and Adaptive Management Plan (MAMP), included as Attachment B to the tentative Order, in Section 5, already prescribes a process for how decision-making will occur as part of the adaptive management process. While the District does not object to receiving suggestions and advice from the TAC, the ecosystem restoration activities would be undertaken through the MAMP's adaptive management process, and the Tentative Order should make clear that the TAC has no actual decision-making authority in the adaptive management process.	Comment noted. The use of technical advisory groups is a common and appropriate practice and means by which project proponents can take advantage of significant expertise in an efficient way, to a project's benefit. The Water Board's involvement in the TAC would be focused on providing our staff expertise to assist in the collaborative scientific discussion, rather than a regulatory oversight involvement. The TAC would be organized and convened through a public process by the Discharger. TAC members would include the Water Board, BCDC, Conservancy, Corps, USFWS, and the NMFS. The TAC's purpose is to assess the Project's ecosystem restoration success. The goal of the TAC is facilitate discussions about the most recent monitoring data. While the TAC may not have decision-making authority, the TAC would still provide input regarding adaptive management decisions. The TAC would have the same decision making authority as the MAMP's adaptive management team (AMT), as evidenced in MAMP Section 5.0, "The AMT would report the results of the vetting process to the USCE, who will decide whether to take action."

Comment Number	Commenter	Topic	Comment	Response
34	District	Fees	**Finding 41 and Provision 48** Finding 50 [41 and Provision 48] prescribes fees that the District would be responsible for. But Government Code section 6103(a) exempts the District from having to pay any fees.	We disagree. The Board has required named sponsors who are partnering with the Corps to pay fees that would otherwise be due Section 6103.4, subdivision (g), specifically notes that section 6103, subdivision (a) does not apply to any fees required by Division 7 of the Water Code. Issuance of WDRs falls within the services described in Division 7.
35	District	Maintenance	**Finding 5. Discharger** Finding 5 states that, after 10 years, the Non-Federal Sponsors will assume the costs of the ponds' operation, maintenance, and management. This finding should be changed to make clear that responsibilities for costs, which will also include costs of operating and maintaining the new flood protection structures, will be allocated pursuant to the Project Partnership Agreement, which has not yet been completed.	The requested change has been made to the Tentative Order. See response to Comment 1.
36	District	Project Site Description	**Finding 7. Site Description and Background** Finding 7 states that Alviso has over 2,000 residents and 500 structures. It would be more accurate to state that Alviso has over 2,500 residents and 1,100 structures.	Comment noted. The language regarding Alviso was taken from the application materials. The Tentative Order has been revised as follows: The community of Alviso has over 2,500 residents, 1,100 structures, and 3,000 commuters who work and travel through the area each day.

Comment Number	Commenter	Topic	Comment	Response
37	District	Union Pacific Railroad	**Finding 8. Project Construction Phasing** Finding 8 could be read to suggest that the Project is intended to allow the Union Pacific railroad tracks to continue functioning over Artesian Slough. Keeping the railroad functioning has nothing to do with Artesian Slough. The reference to Artesian Slough should be deleted as it relates to the railroad.	Comment noted. The Tentative Order has been revised to clarify that Finding 8 addresses the railroad's continued operation. "Appropriate infrastructure construction where the Project crosses the Union Pacific railroad tracks ~~and Artesian Slough~~ to ensure the Project can provide effective flood protection while still allowing the railroad to function effectively. This Order does not authorize a separate project to modify the railroad line to address the effects of anticipated sea level rise."
38	District	Landward Levee Alignment East of Artesian Slough	**Finding 10. Phase I (2018-2022)** Finding 10, among other findings, refers to Reaches 4 and 5 of the FRM levee as being a "proposed conceptual" alignment. That alignment is not conceptual; it is the Congress-authorized alignment. All references to the "proposed conceptual" alignment for Reaches 4 and 5 should be changed to "authorized" alignment.	Comment noted. Since the currently-proposed alignment along Reaches 4 and 5 is only at a 30 percent design stage and may change, in order to minimize costs and maximize ecosystem restoration opportunities, prior to its construction, then the current "proposed conceptual" description is accurate.
39	District	Artesian Slough Crossing	**Finding 10. Phase I (2018-2022)** Finding 10 states that "Where the levee crosses an existing water feature, such as a slough, structures will be installed to allow flow during normal conditions and during flood conditions." As described in the Project EIR, a tide gate closure structure is being designed to be placed	Comment noted. The Tentative Order's existing language appropriately reflects expectations regarding discharges and flows at Artesian Slough. The requested edit would not significantly modify its meaning.

Comment Number	Commenter	Topic	Comment	Response
39 (cont.)	District	Artesian Slough Crossing	across the Artesian Slough to prevent water from overtopping existing levees along the slough during future high-tide events. The tide gate structure will be designed in coordination with the City of San Jose to allow for the city's wastewater treatment plant's discharge during storms. It is expected that the tide gate structure would remain open during normal and flood conditions, but that the opening would be regulated depending on flow conditions. The District suggests that the word "allow" be revised to "regulate".	
40	District	Other	**Finding 10. Phase I (2018-2022)** Finding 10 discusses planting or seeding of marsh vegetation at the toe of the levee following construction. Generally, in the San Francisco Bay it is not necessary to seed marsh plain species because tidal waters have sufficient seed source. Active planting and seeding of marsh vegetation will be done as an adaptive management measure only as necessary.	The requested change has been made in the Tentative Order. See response to Comment 3.
41	District	Other	**Finding 10. Phase I (2018-2022)** Finding 10 (in the section on "Ponds A12 and A18 Tidal Restoration") gets the descriptions of Ponds A 12 and A 18 reversed. The finding currently suggests that the bottom elevation of Pond A 18 is lower than the bottom elevation of Pond A 12. In fact, as noted in Section 3.8.3.2 of	The descriptions of Pond A12 and A18 were taken directly from the application materials. The revisions requested in this comment have been made in the Tentative Order. *Ponds A12 and A18 Tidal Restoration*: Ponds A12 and A18 are proposed for the first phase of

Comment Number	Commenter	Topic	Comment	Response
41 (cont.)	District	Other	the EIR/EIS, Pond A12 has the lowest bottom elevation of all the ponds. The Tentative Order should reverse the descriptions of Ponds A 12 and A 18.	restoration because they have experienced the greatest degree of subsidence, and ~~their~~ Pond A12's bottom elevation is too low to support intertidal marsh vegetation. Restoring tidal action to Ponds A12 and A18 maximizes the potential for the sites to accrete sediment transported from the Bay on flood tides. ~~After Pond A12 is breached, the anticipated sediment deposition is expected to raise its bottom elevation sufficiently to support colonization by intertidal marsh vegetation.~~ Pond A~~18~~12's bottom elevation is so low that, after it is restored to tidal action, several feet of sediment deposition from sediment transported on flood tides will be needed before the pond bottom reaches a sufficient elevation to support colonization by marsh vegetation. The sedimentation process is expected to proceed at rates determined in part by suspended solids concentrations in the South Bay as well as factors causing re-suspension of sediment, such as wave action and tidal currents, in the South Bay and breached pond (ESA PWA 2012; HTH 2012). After Pond A12 is breached, the anticipated sediment deposition is expected to raise its bottom elevation sufficiently to support colonization by intertidal marsh vegetation. Internal pond dike breaches will be conducted to reconnect historical channels and restore hydrologic connections to the innermost ponds in the Project footprint.

Comment Number	Commenter	Topic	Comment	Response
42	District	CEQA	**Finding 30. California Environmental Quality Act (CEQA)** Finding 30 incorrectly identifies the CEQA lead agency as the California State Coastal Conservancy. The Tentative Order should indicate the Santa Clara Valley Water District as the lead agency under CEQA. The Tentative Order also incorrectly identifies the Environmental Impact Report (EIR) certification date as September 24, 2015. The District certified the EIR for the project on March 22, 2016.	See response to Comment 13.
District CL-1	District	Mitigation	While the District appreciates that the Tentative Order would approve the Project, the District shares the concerns of USACE and the Coastal Conservancy that the Tentative Order, if adopted, would impose unprecedented, onerous, and unwarranted conditions on a Project the Regional Board should be unreservedly supporting. The fundamental problem with the Tentative Order is that it treats the up-to 2,900 acres of tidal marsh restoration as mere mitigation for 8.76 acres of net fill needed for the flood protection, rather than as a key element of the Project. The tidal marsh restoration is key to the Project, as the Region Board previously recognized for the South Bay Salt Pond Restoration Project; The main reason why the new flood protection system needs to be built is because the Project will be breaching the salt-pond dikes to create new tidal marsh. Nor is the	See general response regarding mitigation.

Comment Number	Commenter	Topic	Comment	Response
District CL-1 (cont.)	District	Mitigation	Tentative Order's proposed mitigation ratio of approximately 330:1 reasonable. The District request that the Regional Board revise the Tentative Order to incorporate the comments below.	
43	Corps	Project Purpose and Mitigation Requests	**Finding 22. Project Mitigation.** The Shoreline Project is a multipurpose project that includes substantial ecosystem restoration in addition to flood risk management and recreation. The ecosystem restoration components of the project were formulated to take advantage of restoration opportunities resulting from construction of flood risk management features to protect adjacent floodplains. They were not formulated by assessing mitigation needs. In addition, the restoration components of the project were not presented under NEPA, CEQA, or the federal Clean Water Act as being mitigation for project impacts. Including habitat mitigation in a restoration project is contrary to national USACE policy and jeopardizes the project. REQUEST: The restoration components of the project should not be treated as mitigation.	See general response regarding mitigation.

Comment Number	Commenter	Topic	Comment	Response
44	Corps	Project Phases	Due to concerns over potential side effects of breaching ponds, such as effects on water birds and erosion of mudflats, the project includes an adaptive management plan to govern breaching of the second (A9, A10, A11) and third (A13, A14, A15) sets of ponds. The RWQCB and other agencies will have members on the Adaptive Management Team (AMT) and will have input into AMT decisions. If breaching of these additional ponds is effectively required by the Order, this would negate the science basis This plan will use a science-based approach, informed by monitoring data, to decide whether and when to breach ponds beyond the initial breaches at ponds A12 and A18. The plan balances trade-offs between aquatic habitat types and their respective benefits as the restoration progresses. The project sponsors expect that all the ponds will be breached over time, but safeguards are needed to ensure that impacts of breaching are acceptable and to respond to unexpected events should they occur. This adaptive management process will help implement the restoration program for the South Bay adopted by the South Bay Salt Pond Restoration Project. Finding #15 implies that Executive Officer approval is indicated to implement the recommendations of the Adaptive Management Team. Since the additional acreage in Phases II and III are not necessary to offset FRM levee impacts (see Comment #1), the Order should	The Tentative Order recognizes and supports the use of a science-based approach to inform future actions at the second and third sets of ponds. This is consistent with the Water Board's long history of support of such approaches. This is shown, for example, in our work to participate in the Regional Monitoring Program, the Long-Term Management Strategy for the management of dredged sediment, and the Habitat Goals project, among other efforts. As such, and as recognized in the Tentative Order, we intend to participate in and significantly rely on the work of the adaptive management team to inform Project decisions. At the same time, the Water Board is a regulatory agency responsible for ensuring the Project meets applicable State water quality standards. As such, the Tentative Order appropriately sets forth a discussion of Project impacts and necessary mitigation for those impacts. Significant changes to an authorized project will require appropriate review, and the Tentative Order sets for efficient mechanisms for such review, delegating more-minor reviews to the Executive Officer. It is standard practice in Water Board permitting for the Water Board to approve acceptable impacts to waters of the State and to determine the sufficiency of mitigation for those impacts. Since we are responsible for ensuring that sufficient mitigation is provided for impacts authorized by Water Board permits, it is inappropriate for us to delegate oversight of that mitigation to other agencies. Although other agencies, such as the Corps and the California Department of Fish and Wildlife (CDFW)

Comment Number	Commenter	Topic	Comment	Response
44 (cont.)	Corps	Project Phases	focus on process for involving and informing Water Board staff in the Adaptive Management process rather than having these decisions be subject to Executive Officer approval. The Adaptive Management Team, which will include the Water Board, will make the decision to breach or not breach ponds in Phases II and III based on available science. of the Monitoring and Adaptive Management Plan as well as its intended role in mitigating potential impacts under NEPA and CEQA. REQUEST: Revise text to indicate that the base project includes the FRM actions plus tidal restoration of ponds A12 and A18. Additional tidal restoration (ponds A9-A11, A13-A15) is likely but the timing is not certain. Tidal restoration of these ponds should not be required by the Order (directly or indirectly) as these restoration decisions will be governed by the Monitoring and Adaptive Management Plan. The decision on whether and when to breach should not be subject to Executive Officer approval.	also require mitigation for impacts, it is very rare for the Water Board, or its Executive Officer, to require mitigation that is contrary to the requirements of the Corps Regulatory Division or the CDFW. The Water Board is committed to making decisions that are consistent with the best available science, and to considering the recommendations of the AMT with respect to any necessary modifications to project mitigation. If data obtained in the future supports not breaching some Phase II or Phase III ponds, the Water Board is committed to working with all parties to revise the project in a manner that is consistent with good science, as well as conformance with Water Board regulations and policies. If significant revisions are necessary to allow for less conversion of salt ponds to tidal marsh, the permittees will have a full opportunity to present alternative project designs to the Water Board for consideration. See response to Comment 9a. In addition, Water Board policies allow for more flexibility in using the best available science than is possible for Corps projects. The Basin Plan incorporates references to acting in conformance with the most recent versions of the Habitat Goals Reports (*Baylands Ecosystem Habitat Goals* (1999) (*Habitat Goals*), and the *Baylands Ecosystem Species and Community Profiles* (2000)). The Corps is constrained by the need to use federally-approved habitat assessment protocols. For example, in the *Final Integrated Document for the South San Francisco Bay Shoreline Phase I Study* (See pages ES-16 through ES-23), the Corps determined that it

Comment Number	Commenter	Topic	Comment	Response
44 (cont.)	Corps	Project Phases		could not fund the creation of ecotones along the new FRM levee because the only federally approved habitat assessment method, the Combined Habitat Assessment Protocol (CHAP), could not demonstrate a net habitat benefit associated with creating ecotones. Text on page ES-22 of the *Final Integrated Document* acknowledges that the results from the CHAP model "contradicts the current scientific understanding of the value of upper marsh transitional habitats in tidal marshes." The Water Board is committed to making decisions that are consistent with the current scientific understanding of marsh habitats. We do not agree that there is complete certainty at this time that the additional acreage of tidal marsh restoration proposed in Phases II and III will not be necessary to offset FRM levee impacts. As is noted in Sections S.3.11.1 through S.3.12.4 of the *Final Integrated Document*, there is a delay of many years between the first impacts associated with the FRM levee and the initiation of tidal marsh restoration, there is uncertainty with respect to the availability of sufficient sediment in the South Bay to support the restoration of tidal marshes when the levees are eventually breached, and the rate of sediment accretion in tidal marshes may not occur at a rate that is sufficient to sustain tidal marshes as sea level rises. As noted in the general response regarding mitigation, the comment's stated net fill of less than 8.76 acres described for the Shoreline Project is based in part on giving the Project credit for all tidal marsh creation that will be associated with lowering

Comment Number	Commenter	Topic	Comment	Response
44 (cont.)	Corps	Project Phases		internal levees to marsh elevations in Phases II and III of the Project. If Phases II and III, and their associated lowering of internal levees, are not implemented, then the net fill for the Shoreline Project will increase to approximately 50 to 77 acres. In addition, when we determined that the complete Shoreline Project would have net fill of less than 8.76 acres, we gave the project credit for 28 acres on levees and ecotones that would be uplands at the time of project construction, but would become wetlands after 50 years of sea level rise. Without this allowance for sea level rise, the project's net fill would have been on the order of 35 acres. We believe that the commenter's concerns can be sufficiently addressed in the context of the wording in the Tentative Order, and have assured the Corps of this in several meetings.
45	Corps	Mitigation Requests	**Finding 22. Project Mitigation** **Provision 17. Contingency Mitigation and Monitoring Plan (CMMP)** Finding #22 and Provision #15 describe portions of the project as constituting "mitigation" for project impacts. The ecosystem restoration components of the Shoreline Project can only occur with the provision of flood risk management. To comply with both national USACE policy and the Bay Conservation and Development Commission Bay Plan, the flood risk management provided	See general response regarding mitigation.

Comment Number	Commenter	Topic	Comment	Response
45 (cont.)	Corps	Mitigation Requests	must go beyond merely current levels of flood protection and must provide for future sea level rise. This inherently involves placing more fill than if we were merely maintaining current levels of flood protection. that the Bay is facing a future of accelerating sea level rise and declining sediment concentrations. The Water Board should reconsider imposing mitigation requests on projects like this one, as this may discourage these kinds of projects in the future. REQUEST: We ask that that the word mitigation be replaced with restoration throughout the document. Phase I alone (FRM features, ecotone, plus breaching of ponds A12 and A18) makes the entire project self-mitigating. The approach of requesting mitigation in multipurpose projects like the Shoreline project sets a poor precedent for tidal marsh restoration projects and integrated FRM/tidal marsh projects around the Bay. As been noted by various stakeholders in the region, including the Water Board, these types of projects are urgently needed given	
46	Corps	CMMP	**Provision 17. Contingency Mitigation and Monitoring Plan (CMMP)** Provision #15 states that "The CMMP shall provide for a minimum mitigation amount sufficient to ensure no net loss of area and function, including temporal loss, of waters of the U.S. resulting from the Project."	See response to Comment 15.

Comment Number	Commenter	Topic	Comment	Response
46 (cont.)	Corps	CMMP	This backup mitigation plan is beyond the scope of the authorized project. The Monitoring and Adaptive Management Plan should not require any contingency or compensatory mitigation. The studies requested would also be outside of the scope of the authorized project. If for any reason Congress ceases to appropriate construction funds after only the FRM portion of the project has been completed, this would constitute a major project change and would cause the project team would apply for an amendment to the Order. REQUEST: Delete the CMMP in Provision 15.	
47	Corps	Northern Legacy Ponds (Stairstep)	**Provision 37. Impact Reduction and Environmental Benefit Optimization** Provision 35 [37] and Attachment C address potential levee alignment changes along the southern edge of Pond A18. The project team is committed to fully evaluating and implementing an optimized FRM levee alignment at the location of the northernmost set of legacy lagoons, located within the easternmost stairstep of the south berm of pond A18. This is subject to three practical conditions: 1. The lands are made available to the project in a condition suitable for project use. 2. The alignment change can be supported via value engineering.	Comment noted. We appreciate and recognize Corps staff's commitment to complete an evaluation of the alternative levee alignments identified in the Tentative Order. The Tentative Order's language reflects extensive discussions with the Corps and other Project stakeholders to identify the work needed to consider alternative alignments. The current language addresses expectations regarding the completion of that work. As a result, we are not proposing changes to the Tentative Order's current language. See responses to Comments 6 and 31 for further clarification regarding the Tentative Order's inclusion of alternative levee alignments.

Comment Number	Commenter	Topic	Comment	Response
47 (cont.)	Corps	Northern Legacy Ponds (Stairstep)	3. No significant new environmental compliance work will be required by the project sponsors. REQUEST: USACE wishes to work out language that would facilitate future inclusion of this area in the project.	
48	Corps	Landward Levee Alignment East of Artesian Slough	**Finding 15. Authorization Process for Future Project Phases** **Provision 37. Impact Reduction and Environmental Benefit Optimization** Provision #35 [37] and Finding #15 are intended to memorialize the process that has been established between the Water Board and the project team for refining the designs and optimizing the benefits in Reaches 4 and 5. Pursuant to USACE policy, any alignment changes would take place through the USACE Value Engineering Process. This means that any change needs to save cost or increase environmental benefits for the same cost. To make these decisions, the team is first looking at the real estate and engineering feasibility, and environmental benefits for each alignment change. If the alignment changes are found to be infeasible for reasons in any of the above categories, USACE will be unable to make them and will proceed with the authorized alignment. Some of the submittals that the Water Board requires in Provision 35 are out of step with USACE policy and beyond what is required to	See response to Comment 8. As noted, the requirement for submittal of sedimentation modeling has been removed.

Comment Number	Commenter	Topic	Comment	Response
48 (cont.)	Corps	Landward Levee Alignment East of Artesian Slough	make the alignment change decision. This includes the sedimentation modeling requested in Provision #35, which would be a major undertaking and would delay FRM and subsequent tidal restoration due to the time required. REQUEST: This Provision should be revised so that the list of technical documents to be submitted is not as prescriptive we will provide sufficient documentation to prove that any decision to change or not change the alignment is justified).	
49	Corps	Roles and Responsibilities	**Finding 5. Discharger** Finding #5 describes the Applicant/"Discharger," as USACE and the 2 Non-Federal Sponsors, despite the fact that USACE was the only entity to apply for a Water Quality Certification. USACE has not waived sovereign immunity relative to state law. Therefore characterizing USACE as a discharger is not appropriate. REQUEST: If the Water Board insists on naming multiple "Dischargers," we ask that you please add clarifying language explaining roles and application of state vs. federal tasks stated in the Order. Suggested additional language is underlined. "The Discharger will implement the Project as described in the application materials and herein.	See response to Comment 1, further describing the responsibilities of the various dischargers, as represented by the dischargers. See response to Comments 1 and 32(d) regarding why naming the Corps, District, and Conservancy as dischargers is appropriate. Also, the Corps applied for Water Quality Certification. As such, it has requested to be named as a Discharger under the Certification.

Comment Number	Commenter	Topic	Comment	Response
49 (cont.)	Corps	Roles and Responsibilities	As described in the project partnership agreement between the USACE and Non-Federal Sponsors, USACE will be responsible for construction of flood protection, ecosystem restoration, and some recreational elements. Although USACE works cooperatively with the Non-Federal Sponsors, USACE is responsible for project implementation and will follow the provisions of this Order that are applicable to federal agencies. Pursuant to the project partnership agreement, this remains in effect until USACE deems a project element complete, at which time it will be turned over to the US Fish and Wildlife Service or non-federal sponsors for operation and maintenance. The USFWS will follow the provisions of this Order that are applicable to a federal agency for operations and maintenance activities on their property. Any construction activities, operations, and maintenance undertaken directly by the non-federal sponsor will follow the provisions of this Order applicable to state and local governments. For example, once the flood risk management (FRM) levee is constructed and fully functional, USACE will transfer the levee's operation, maintenance, and management responsibility to the District…."	

Comment Number	Commenter	Topic	Comment	Response
50	Corps	Revegetation	**Finding 10. Phase I (2018-2022)** Finding #10 describes the revegetation of the project area. REQUEST: We ask that you rephrase this so it says that vegetation may be seeded or planted. This is because tidal waters in the Bay have a sufficient amount of seed for vegetation to be established below MHHW without necessitating active planting, as documented by successful tidal marsh establishment without planting at a number of projects.	See response to Comment 3.
51	Corps	Ecotone	**Finding 10. Phase I (2018-2022)** Finding #10 describes the ecotone slope as 30:1. REQUEST: We ask that you change this to be "an average 30:1 horizontal to vertical slope" to allow for undulation and topographic variation.	See response to Comment 4.
52	Corps	Pond Description	**Finding 10. Phase I (2018-2022)** Finding #10 switches the descriptions of Ponds A12 and A18. A12 is the deepest and most-subsided pond. REQUEST: Correct pond description.	See response to Comment 41.

Comment Number	Commenter	Topic	Comment	Response
53	Corps	Approvals and Submittals	Some approvals and submittals are described under the findings. REQUEST: We ask that you make sure that any requested approval and submittals are listed in the Provisions section of the Order.	Comment noted. We were unable to identify instances where submittals were inadvertently required in the Findings, but not in the Provisions. Based on further discussion with Corps staff regarding this comment, we understand it was intended as a request to create a "punch list" of required submittals. We will work with Corps staff to create that list leading up to or following the Board meeting at which the Tentative Order is heard.
54	Corps	Earthen Materials	**Prohibition 3.** Prohibition #3 says that the discharge of earthen materials is prohibited. REQUEST: We ask that you revise this to say "except where authorized by this Order."	Comment noted. Prohibition 3 has been revised as follows: 3. The discharge of silt, sand, clay, or other earthen materials from any activity in quantities sufficient to cause deleterious bottom deposits, turbidity, or discoloration in surface waters is prohibited, except as otherwise described herein.
55	Corps	Directional Drilling	~~**Prohibition 7.**~~ Prohibition #7 disallows the use of directional drilling. REQUEST: We ask that you move this to the Provisions and state that directional drilling is allowed with the condition of a directional drilling plan approved by the Water Board's Executive Officer.	Comment noted. The directional drilling prohibition has been removed. The following provision that conditionally allows directional drilling after acceptance of a plan by the Water Board's Executive Offer, has been added to the Tentative Order: 12. **Directional Drilling Plan**. If directional drilling is necessary at the Project site, the Discharger shall prepare a Directional Drilling Plan acceptable to the Water Board's Executive Officer. The plan shall be submitted

Comment Number	Commenter	Topic	Comment	Response
55 (cont.)	Corps	Directional Drilling		to the Water Board's Executive Officer at least 30 days prior to each Project phase in which directional drilling is proposed or may be needed. The Directional Drilling Plan shall contain boring plans that include the following items: a sketch of the approximate locations of drill entry and exit points; the proposed depth of bore and a statement of waterbody conditions that supports the proposed depth of the bore; approximate length of the proposed bores; type and size of boring equipment to be used; estimated time to complete the bore; list of lubricants and muds to be used; name(s) of contractor and cell phone numbers of the construction supervisor(s)and monitor(s); name(s) of the environmental and biological monitor(s); site-specific monitoring conditions; monitoring protocols; and a containment and clean-up plan. The drill mud pressure and volume shall be monitored at all times during drilling to ensure that hydrofracture or other loss of drill muds has not occurred. In the event of a sudden loss in pressure or volume, the Discharger shall take appropriate steps, including immediately halting the drilling operation to ensure that drilling muds are not discharged to waters of the U.S. All drilling muds, slurries, oils, oil-contaminated water, and other waste materials removed from the bore hole or otherwise used during the Project shall be disposed of at a permitted landfill, other appropriately permitted site, or at an upland site approved in advance by the Water Board's Executive Officer.

Comment Number	Commenter	Topic	Comment	Response
56	Corps	Fueling and Equipment	**Prohibition 9.** It will not be possible to refuel construction equipment only on sites that cannot drain to State waters. REQUEST: Change text to allow refueling in areas that may drain to State waters only under an approved refueling plan.	Comment noted. Prohibition 9, formerly 10, has been revised accordingly. The following provision that requires submittal of a refueling plan has been added to the Tentative Order: 11. **Spill Prevention and Containment Plan.** The Discharger shall prepare a Spill Prevention and Containment Plan (SPCP) acceptable to the Water Board's Executive Officer. The SPCP shall be submitted to the Water Board's Executive Officer no later than 90 days prior to start of any construction event in which construction equipment is planned or needed. The plan shall describe the preventative spill measures that shall be implemented, including equipment leak prevention, and what actions shall be taken in the event of a spill. In the event of a containment spill, the Discharger shall take appropriate steps, including immediately halting the construction work, containing and mitigating the spill, and immediately notifying appropriate authorities, including Water Board staff. Containers for storage, transportation, and disposal of containment absorbent materials shall be provided on-site.

Comment Number	Commenter	Topic	Comment	Response
Corps CL-1	Corps	Project Purpose	First, the project's flood risk management and ecosystem restoration features are interdependent; the latter were not formulated by assessing mitigation needs. The ecosystem restoration components of the project were formulated to take advantage of restoration opportunities resulting from construction of flood risk management features. Without construction of these features, tidal habitat restoration would not be feasible in the project area due to the resulting increased flood risk. In addition, the restoration components of the project were not presented under NEPA, CEQA, or the federal Clean Water Act as being mitigation for project impacts. The entire project was evaluated as an integrated whole and was determined to have an overall positive effect on habitat, fish and wildlife, and water quality. It is our position that the project as described in the NEPA/CEQA document does not need mitigation.	See general response regarding mitigation.
Corps CL-2	Corps	Project Purpose	Second, the adaptive management process proposed for the project has been a vital element in alleviating concerns and securing support for the project from a wide variety of stakeholders, as well as in addressing potential impacts of breaching ponds that were discussed in the NEPA/CEQA document. This process, to be administered by a broad-based adaptive management team, is intended to be science-based and responsive to the results of the project's proposed monitoring program.	See general response regarding mitigation.

Comment Number	Commenter	Topic	Comment	Response
Corps CL-2 (cont.)	Corps	Project Purpose	However, the draft Tentative Order would effectively mandate tidal restoration of all the managed ponds on the project site, voiding this collaborative process and negating the scientific foundation of the proposed adaptive management process. To avoid this outcome, in the event that tidal restoration needs to slow or stop, the project sponsors would need to assume onerous off-site restoration burdens that likely would not be technically feasible.	
Corps CL-3	Corps	Mitigation (CMMP)	Finally, the draft Tentative Order's proposed Contingency Mitigation and Monitoring Plan (CMMP) would be problematic for several reasons. As explained earlier, USACE restoration projects cannot have habitat mitigation as a component and the project as described should not require mitigation. Also, the conditions that would result in a delay or cessation of pond breaching, such as excessive impacts to water birds or a shortage of sediment in the Bay, would also apply to tidal restoration in alternate locations. In addition, the required offsite habitat restoration plan is not a part of the Congressionally-authorized project and USACE cannot spend federal funds on developing such a plan. For all these reasons, we request that the CMMP be removed from the draft Tentative Order. USACE has reviewed the comment letter and comments from the State Coastal Conservancy and concurs with their comments as well.	See general response regarding mitigation and Comment 15.

General Response Regarding Mitigation

This general response is intended to address Comments 2(a), 2(b), 7, 9, 10, 11, 12, 15, 17, 18, CL-1, CL-2, CL-3, 21, 22, 23, 25, 26, 27, 28, 29, 32, SCVWD CL-1, 43, 45, and Corps CL-1, all of which address mitigation, and many of which have overlapping issues.

Water Board staff views the Project as an important one that will both improve flood protection for Alviso and the nearby area of San Jose, and implement a key part of the larger South Bay Salt Pond Restoration. In part as a result, staff has worked diligently to support Project permitting, including submitting comments on the Project CEQA/NEPA document in early 2015, providing a letter of support to the Corps in 2016 to assist the Corps' internal approval process, meeting regularly over the past year with the SCVWD, Corps, and Conservancy, and providing them and other interested stakeholder with two administrative draft orders to review prior to circulating the Tentative Order for formal public comment. The Tentative Order would authorize the entire Project and sets forth mechanisms facilitate its timely construction, taking into account numerous uncertainties. That work reflects the Water Board's commitment to promoting and facilitating both this Project and projects with large-scale restoration components.

Revisions to the Tentative Order

The Tentative Order has been revised to clarify that the restoration of Ponds A12 and A18 as part of Project Phase I addresses the Project's temporal impacts associated with fill in jurisdictional waters. The Tentative Order has been revised to clarify that while it allows the construction of Project Phases II and III, there are circumstances, relating to the need to avoid to-be-identified adverse impacts to water quality and beneficial uses, where such construction may not be completed.

In response to comments, the Tentative Order has been revised as follows:

Finding 20. Project's Fill of Waters of the U.S.

> "…The Project work will also ~~cause permanent non-fill-based impacts to~~ modify waters of the U.S~~.,~~. without permanent placement of fill, including berm excavation, outboard dike breaches and lowering, ~~and~~anticipated habitat conversion from former salt ponds to tidal marsh after tidal action is restored to the ponds, and establishment of a permanent FRM levee maintenance area (see Table 6)."

Table 1: Summary of the Project's Non-Fill-Based Impacts, Including Restoration Actions.

Feature	Permanent Non-Fill Impacts		
	Area (Acres)	Length (Linear Feet)	Fill (Cubic Yards)
Phase I: Pond A12 southeastern berm excavation	0.740	19,607	
Phase I: Pilot Channel	7.8	4,373	-62,920
Phase I: Pond A12 and A18 outboard dike breaches and internal berm lowering	18.5	16,050	-89,105
Phase I: Restoration of tidal action to Ponds A12 and A18	1,120	--	--
Phase II: Ponds A9-A11 outboard dike breaches and internal berm lowering	20.0	--	0
Phase II: Restoration of tidal action to Ponds A9-A11	900	--	--
Phase III: Ponds A13-A15 outboard dike breaches and internal berm lowering	20.0	--	0
Phase III: Restoration of tidal action to Ponds A13-A15	880	--	--
Phases I to III: Permanent FRM Maintenance Easement	5.32	19,451	0
Total	~~722~~**2,972.36**[1]	**35,657**[2]	**-152,025**

[1] This amount includes overlapping areas.

[2] Since the ecotone will run parallel to the FRM levee, the stockpile impact length overlaps with the FRM levee impact length.

Finding 21. Project's Net Loss of Waters of the U.S.

"…The phasing will result in a net loss of waters ~~during~~starting in Phase I due to the lag time between the initiation of construction activities and the eventual return of tidal action to the ponds, ecotone creation, and anticipated tidal marsh restoration. ~~There~~After Phase I is completed, including Ponds A12 and A18 breaching, there will be an approximate 76.96-acre net loss of waters of the U.S., not including sea level rise mitigation credit. After the 14-year Project is completed, there will be an approximate 8.76-acre net loss of waters of the U.S~~.~~., with the currently proposed FRM levee alignment, although the currently projected loss could turn into a net gain of waters of the U.S. with an alternative landward alignment along Reaches 4 and 5 (see Att. C) (see Table 7)."

Table 2: Summary of the Total Net Loss of Waters of the U.S. by Project Phase.

Created waters of the U.S.		Total Net Loss of waters of the U.S. after creation (acres)[3]
Description	**Area (Acres)**	
Pond A12 southeastern berm excavation	0.740	131.5
Ecotones ~~-~~below high tide line[4]	36.0	95.46
Phase I Pond A12 and A18 outboard dike breaches and berm lowering	18.5	76.96
Phase II Ponds A9-A11 outboard dike breaches and berm lowering	20.0	56.96
Phase III Ponds A13-A15 outboard dike breaches and berm lowering	20.0	36.96

This Order specifies minimum required mitigation the Discharger is required to complete to compensate for Project impacts, and deadlines for completing the mitigation (see Finding **Error! Reference source not found.**). Due to the need to phase construction activities and the uncertainty in the final levee alignment and associated impacts, final mitigation amounts may be greater or less than the minimum specified~~. The~~ herein. To facilitate Project construction, the Order sets forth a process to determine final mitigation requirements as plans for future Project phases are further developed.

[3] The values in this column reflect the running net-loss total starting with 132.2 acres of fill-based impacts.
[4] This area is being counted as new created waters because it has not historically existed in this area.

If there is a minimal net loss of waters of the U.S. from the final FRM levee alignment, then the tidal restoration and ecotone creation, if fully implemented consistent with the deadlines in this Order, will serve as sufficient compensatory mitigation for the impacts from Project construction activities. If there is a net loss of waters of the U.S. from the final FRM levee alignment that is greater than the amount described above in Table 7, the Order requires the Discharger to update the Project's impact quantities, and propose and implement additional compensatory mitigation as described in the Provisions. (see Provisions 17, 35, and 36). Pursuant to an agreement between the Corps, District, and Conservancy, the Coastal Conservancy is responsible for complying for the requirements of Provision 17, regarding preparation and implementation of a Contingency Mitigation and Monitoring Plan.

When the Discharger submits supplemental applications for future Project work, total Project impacts will be taken into account to calculate the impacts to waters of the U.S., including temporary and permanent losses."

Finding 22: Project Mitigation

"In total, the Project will restore up to 2,900 acres of tidal marsh by 2032 and create approximately 91.52 acres of ecotone by Year 2022, if the proposed restoration is successfully implemented.The Discharger will mitigate the Project's fill-based impacts by restoration actions that include creating jurisdictional waters of the U.S. and restoring tidal action to existing jurisdictional waters. As detailed in Finding 21 and summarized below, the Project will create approximately 59 acres of new jurisdictional waters from lowering and removing berms, and 36 acres of created ecotone habitat will be immediately below the high tide line, while another 28 acres of created ecotone will become jurisdictional by 2067 from sea level rise. The anticipated restoration of tidal action to the Project's ponds is expected to provide water quality improvements, habitat for rare and endangered species and resident and migratory shorebirds and waterfowl, more and higher-quality estuarine-upland transitional habitat (ecotone) along the proposed levees in Ponds A12, A13, and A18 than is currently available, protect beneficial uses, and increase the shoreline resiliency to sea level rise. In addition, restoring tidal marsh and creating estuarine-upland transitional habitat is consistent with the Goals Report and CCMP. However, the mitigation requirement may change as designs for the FRM levee alignment east of Artesian Slough are further developed, which may reduce the Project's fill-based impacts. As discussed in Findings 13 to 15, the Discharger is evaluating an alternative FRM levee alignment east of Artesian Slough that would reduce the Project cost and maximize ecosystem restoration opportunities. The other uncertainty in the final mitigation requirement is the ecosystem restoration's degree of success. The anticipated tidal marsh habitat acreage may not be successful if observed sediment accretion rates in the South Bay are significantly less than anticipated rates, or mitigation and monitoring results from the first set of breached ponds do not lead to a recommendation to breach Ponds A9-A15. ThusSince berm lowering and removal in Phases II and III are expected to create jurisdictional features that will reduce the Project's net fill

amount to the currently projected 8.76 acres, there is uncertainty associated with future tidal marsh restoration and its sufficiency as mitigation for Project impacts. Therefore, the mitigation for the Project's total impacts will become more certain as the designs for future Phases are further developed and the monitoring results provide more information about the likelihood of success for the restoration activities. To account for the uncertainty in the Project's ecosystem restoration success and FRM levee alignment east of Artesian Slough, the Order sets forth a mechanism to account for, and, as needed, adjust the Project's impacts and compensatory mitigation amounts authorized by this Order (see Provisions 17, 31, 35, and 36).

… ~~The remaining 8.76~~In addition, the Project will restore up to 2,900 acres of ~~net fill will be mitigated by conversion of existing pond habitat to restored~~ tidal marsh by 2032 and ~~created~~ create approximately 91.52 acres of ecotone~~.~~ by 2022, if the proposed restoration is successfully implemented. The anticipated tidal marsh and ecotone habitat are regionally scarce and their restoration and creation, respectively, are recommended in the Habitat Goals report (see Finding 16). The ecotone area will convert approximately ~~95.1~~91.52 acres of current salt pond habitat to wetland-upland transitional habitat. The conversion will facilitate a tidal wetlands restoration that mimics historical San Francisco Bay landforms. The net benefit is an increase in tidal marsh habitat and its associated beneficial uses and functions, and a corresponding decrease in salt ponds. This habitat conversion is consistent with the Water Board's Basin Plan Wetland Fill Policy and California Wetlands Conservation Policy (see Findings ~~32 and 33).~~**Error! Reference source not found.** and **Error! Reference source not found.**). However, the habitat conversion's success and consistency with these policies is contingent upon the completion of all three Project phases, including the Project's ecosystem restoration components. The remaining temporal loss of waters of the U.S. from fill-based impacts will be mitigated by the anticipated 1,120 acres of converted habitat (i.e., tidal marsh and ecotone) in Ponds A12 and A18 at the end of Phase I (see Table 8).

Table 8: Summary of Restored Tidal Marsh and Ecotone Creation by Project Phase.

Phase	Maximum Anticipated Tidal Marsh Habitat Restored	Ecotone Created (Acres)	Anticipated Construction (Year)

	(Acres)[5]		
I	1,120[6]	91.52[7]	2022
II	900	0	2027
III	880	0	2032
Total	**2,900**	**91.52**	--

Mitigation for Non-Fill-Based Impacts: The Project's non-fill-based impacts will be mitigated by the corresponding conversion of pond habitat to restored tidal marsh and created ecotone, similar to the mitigation for the remaining ~~net~~ fill-based temporal impacts (see above). The restored tidal marsh and created ecotones will mitigate the Project's non-fill based impacts because the ~~size of the habitat conversion is~~habitat's expected quality and associated benefits are sufficient to offset ~~the net fill amount,~~ non-fill based impacts that may result from loss of managed pond habitat, and any temporal loss of functions and values that will occur from the time fill-based impacts occur to when the restoration is implemented~~.~~ and becomes fully established. Similar to the fill-based impact mitigation, the non-fill-based mitigation ~~is~~in each phase is associated with and contingent upon completion of ~~all three~~the respective Project ~~phases~~phase, including the proposed tidal and wetland restoration~~.~~ (i.e., Phase I pond conversion impacts are mitigated by the anticipated tidal and wetland restoration in the Phase I ponds, and similarly, impacts associated with the restoration in Phases II and III are mitigated by the restoration in Phases II and III)."

The Tentative Order requirement for a Contingency Mitigation and Monitoring Plan (CMMP) has been revised to include submittal of an analysis of the Project's consistency with the Basin Plan Wetland Fill Policy.

Provision 17. Contingency Mitigation and Monitoring Plan (CMMP).

> **"**The Discharger shall prepare a Contingency Mitigation and Monitoring Plan (CMMP) acceptable to the Water Board's Executive Officer. The CMMP shall be submitted not later

[5] These amounts are for the converted habitat on-site, not created jurisdictional waters. Mitigation credit for this conversion is only being given for the temporal loss of waters of the U.S. and functions and values of existing beneficial uses that result from the Project's fill-based impacts.

[6] Under the FRM levee landward alignment for Reaches 4 and 5, this amount would be increased by a maximum of 70 acres to approximately 1,190 acres, which would bring the total anticipated tidal marsh restoration amount to 2,970 acres.

[7] Approximately 55.52 acres of the created ecotone will initially be above the high tide line after construction. After 50 years of the sea level rise, about 27.32 acres will be above the high tide line. The ecotone above the high tide line will enhance beneficial uses associated with tidal marshes by providing high tide refugia for special-status species.

than January 31, 2020 (the year that construction along Reaches 4 and 5 is anticipated). If the Project is delayed and construction along Reaches 4 and 5 does not occur in 2020, the CMMP shall be submitted in the same year that construction along Reaches 4 and 5 is rescheduled to occur. The CMMP shall provide for a minimum mitigation amount sufficient to ~~ensure~~demonstrate consistency with the Basin Plan Wetland Fill Policy and the California Wetlands Conservation Policy (Findings 32 and 33). This shall include an analysis of issues such as ensuring no net loss of area and function, including temporal loss, of waters of the U.S. resulting from the Project. Updates to the CMMP shall be submitted if all or a portion of the Project's ecosystem restoration components is not implemented. Any updates to the CMMP shall be submitted to the Water Board's Executive Officer no later January 31 in each year that changes to the Project described in the Order are proposed. ~~The~~If the Project's impacts described herein are reduced or increased, a description of the impacts and the difference in acreage from the quantities described herein shall be submitted to the Water Board's Executive Officer. If the updated impacts reflect a net loss of zero acres of jurisdictional waters, then the CMMP shall consist of the Project described herein. Otherwise, the CMMP shall include the following:

a. ~~A~~An analysis of the Project's consistency with the Basin Plan Wetland Fill Policy and the California Wetlands Conservation Policy, as described above, and including a description of any changes to Project components or impacts as compared to the Project description in this Order.

~~a.~~b. Consistent with the analysis, a mitigation proposal, workplan, monitoring plan, performance standards, and other information, as appropriate, sufficient to ~~ensure providing~~provide appropriate mitigation of permanent and temporal losses of functions and values of waters of the U.S. resulting from Project implementation~~, and to ensure that the Project results in no net loss, and a long-term net gain, in wetland and waters area, functions, and values~~.

At a minimum, the CMMP shall propose ~~the creation of an area of waters equivalent to the net loss of area resulting from the Project. In addition, the CMMP shall propose~~ additional mitigation to address delays of greater than 5 years between the timing of impacts and construction of restoration from the schedules listed in the Findings in implementation of the Project's tidal restoration."

Project Impacts

Several commenters suggest that the project is a multipurpose project, self-mitigating, and requires no additional mitigation.

We recognize that the proposed Project is both a flood management and an ecosystem restoration project. The Tentative Order would conditionally authorize construction of all Project phases – both construction of the levee and the ecosystem restoration. The Tentative Order would

conditionally authorize, but does not require, restoration of tidal action to 2,900 acres of diked Baylands. The mitigation provisions of the Tentative Order are therefore drafted to recognize expected adaptive management actions and account for uncertainties associated with the Project.

As Water Board staff stated in our written comments on the *Draft Interim Feasibility Report and Environmental Impact Statement/Report for the South San Francisco Bay Shoreline Phase I Project, Santa Clara County, CA, SCH No. 2006012020* (Water Board, February 23, 2015) (Joint EIS/EIR), the Project will result in a large amount of fill of waters of the U.S. The large fill amount is due to the FRM levee, which has independent utility, and its associated ecotones, which are aspects of levee design that reduce the levee's expected long-term impacts and provide a restoration benefit with respect to anticipated sea level rise, while also reducing anticipated costs for levee operation and maintenance.

The FRM levee has impacts to waters of the State of up to 58 acres. Even if the restoration elements of the Shoreline Project were not being proposed, the FRM levee would be necessary because: the Alviso area has experienced subsidence in response to historic over drafting of groundwater aquifers; the existing salt pond levees were not designed or constructed to provide FEMA-approved flood protection, and are in a state of poor repair; and sea level rise is likely to result in Bay waters overtopping the existing salt pond levees. If the FRM levee were proposed as a stand-alone project, then compensatory mitigation would be required.

The ecosystem restoration component could not move forward without sufficient flood risk management, which the levee is intended to provide. The restoration is an efficient means to provide necessary compensatory mitigation for the permanent and temporary impacts of fill placement associated with the levee. As the Conservancy and other Project stakeholders have noted in meetings, finding alternate mitigation is likely to be difficult and expensive.

The Order considers, generally, two types of fill-based impacts to jurisdictional waters: first, potential net loss of waters associated with the permanent fill of jurisdictional waters, including wetlands; and, second, temporal losses associated with a delay of 10 to 25 years between initial impacts and the completion of the restoration (i.e., the anticipated establishment of the associated mitigation). For the latter (temporal impacts), the Order has been revised to clarify that they would be fully addressed by completion of the restoration of tidal action to Ponds A12 and A18 during Project Phase I, and that the Phase II and III restoration work, by itself, is considered a self-mitigating restoration project (see above discussion of revisions).

For the former (permanent fill), current Basin Plan Wetland Fill Policy, while flexible, requires, in essence, no net loss and a long-term net gain in the quality, permanence, and area of jurisdictional wetlands. In part as a result, the Revised Tentative Order identifies proposed work in Phases I, II, and III that would mitigate for fill impacts in Phase I, with the goal of achieving no net loss of areal extent. Phase I includes an estimated 132 acres of permanent fill-based impacts that would be mitigated, by a combination of: being placed below the high tide line as ecotones (36 ac); anticipated sea level rise over the next fifty years (28.2 ac); creation of new jurisdictional area in Phase I through a combination of dike breaches, berm lowering, and excavation (19.24 ac); and by approximately 40 acres of new jurisdictional habitat created from berm breaching and lowering during the Phase II and Phase III restoration. If Phases II and III are not completed, there would be a net loss of waters of the U.S. of up to 77 acres immediately following Phase I completion in 2022 and approximately 50 acres in 2067, after subtracting out

the credit given for expected new jurisdictional area that will be created by anticipated sea level rise.

The Tentative Order includes a requirement for a Contingency Mitigation and Monitoring Plan (CMMP)—a key part of the mechanism that allows the Project as a whole to be authorized while still addressing areas of uncertainty about Project design, timing, and impacts. That requirement has also been revised to incorporate an analysis of the developing Project's consistency with the Basin Plan Wetland Fill Policy. As such, the revision both requires and allows the Discharger to use the analysis to provide the then-most-up-to-date information about Project impacts and benefits to address any potential inconsistencies with the Policy. In addition, as we noted in our response to Comment 1, the Corps' description of the Project as a multipurpose project does not establish a minimum threshold for tidal marsh restoration that would be necessary to demonstrate that the project is self-mitigating. That approach, however, could be developed in the CMMP's consistency analysis.

The Interim Feasibility Study and Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) (Joint EIS/EIR) (HDR, July 2015) presents the Shoreline Project as a self-mitigating project because of the tidal marsh restoration component. However, this document does not establish how much restoration is necessary, at a minimum, to provide adequate mitigation for the project impacts to waters of the State associated with the FRM levee. The Order has been written to support the full implementation of the restoration activities. The Order also provides flexibility for modifying mitigation requirements in response to changing circumstances within the project area (e.g., insufficient sediment for tidal marsh restoration, recommendations to delay levee breaching to prevent excessive loss of tidal mudflats, recommendations to retain more managed ponds for water fowl).

In addition, there is no guarantee that the breached ponds will actually accumulate sufficient sediment to support tidal marsh vegetation. As is noted in Sections S.3.11.1 through S.3.12.4 of the Joint EIS/EIR: there is a delay of many years between the first impacts associated with the FRM levee and the initiation of tidal marsh restoration; there is uncertainty with respect to the availability of sufficient sediment in the South Bay to support the restoration of tidal marshes when the levees are eventually breached; and the rate of sediment accretion in tidal marshes may not occur at a rate that is sufficient to sustain tidal marshes as sea level rises. The U.S. Environmental Protection Agency (EPA) also expressed concern in their comment letter [8]on the Joint EIS/EIR about the time delay between the Project's first impacts and the tidal marsh restoration:

> "…it can take many decades for tidal marsh habitat to develop and the DEIS identifies a time lag between the anticipated project impacts and successful habitat restoration. While this impact is identified as less than significant because the project will result in a net increase in wetlands in the long term, the discussion in the DEIS is not adequate to demonstrate that mitigation is not needed for the loss of wetlands in the near-term."

[8] *Draft Environmental Impact Statement for the South San Francisco Bay Shoreline Study: Alviso Ponds and Santa Clara County Interim Feasibility Study Project, Santa Clara and Alameda Counties, California (CEQ # 20140371)* (U.S. EPA, February 23, 2015).

> "The FEIS should include additional discussion of likely short-term wetland impacts and further justification for the conclusion that compensatory mitigation is not required. Specifically, the FEIS should identify the acres of wetlands likely to develop within 3-5 years after predicted construction-related impacts. This can be done by estimating the acreage that will fall within the tidal range known to support marsh vegetation. If this acreage of expected short-term wetland development is less than the acreage of wetlands fill, then the FEIS should estimate how long it will take to achieve no net loss of wetlands."

The Tentative Order Contains a Flexible Mechanism for Determining If Any Additional Mitigation Is Necessary.

Several commenters assert that the Tentative Order requires a 330:1 mitigation ratio. That is incorrect. That ratio assumes the Project will be constructed, as proposed, in its entirety, that the only Project component requiring mitigation will be about 9 acres of permanent fill, and it equates the benefits from the conversion of existing jurisdictional waters to tidal action with the impacts from the permanent fill of jurisdictional waters. It is a simplified analysis that does not consider the range of potential impacts associated with the Project, the Water Board's Wetland Fill Policy and associated Basin Plan policies, or suggest how potential shortcomings in those policies might be addressed in the face of climate change and anticipated sea level rise. The Tentative Order, including the revisions discussed here, is intended to provide a more-nuanced approach that allows the Discharger to play a significant role in describing Project benefits and, in a more thoughtful way, balance issues like the benefits of conversion with the impacts of fill.

The restoration activities will likely provide sufficient mitigation for impacts to waters of the State associated with constructing the Project. The 2,900 acres of anticipated tidal restoration proposed in Phases I, II, and III would mitigate the loss, through conversion, of 2,900 acres of former salt ponds, which is a permanent non-fill based impact. The Tentative Order recognizes that 2,900 acres of tidal marsh restoration, if successful, are consistent with Bay-wide collaborative science-based guidance including the Baylands Habitat Ecosystem Goals Project, and will provide enhanced beneficial uses over the existing beneficial uses on-site and provide further shoreline resiliency. The use of an ecotone levee design adds to the resilience over time of the proposed restoration design, while improving the range of habitat types present and the beneficial uses those types support. The anticipated enhanced beneficial uses are being counted towards mitigation for the temporal loss of functions and values of beneficial uses and waters of the U.S. that is associated with the time lapse between fill and pond breaching until a fully functional tidal marsh becomes established.

Changes to the required compensatory mitigation may be necessary, however, should there be significant changes to the anticipated Project design or implementation. The Tentative Order recognizes there is uncertainty around both the area of impacts and the area of proposed mitigation. As described in the Order, the Discharger is evaluating alternative landward levee alignments that may reduce the Project's total net fill. Furthermore, the area of waters to be gained by berm breaching and lowering is a rough estimate that will be informed by design work and adaptive management review that are yet to be completed. Water Board staff expects a portion of the levee alignment to move at least somewhat landward. This, in combination with the restoration project's beneficial impacts, would result in a Project that is at least roughly fully

self-mitigating. Finally, as noted by the commenter, adaptive management review may determine it is inadvisable to complete all or part of the proposed Phase II and III tidal action restoration.

To address the uncertainty associated with aspects of the Project, including the amount of fill associated with the levee alignment between Artesian Slough and Coyote Creek, the amount of creation that will be accomplished as part of all Project phases, including whether Phases II and III are constructed, the Tentative Order incorporates the CMMP. The CMMP is, in part, an accounting mechanism, describing impacts and proposing, as necessary, changes to mitigation. The CMMP is necessary to account for the potential loss of compensatory mitigation credit that may result if Phases II and III are not completed and, as noted above, to take into account the more-certain information about the Project that will be available the design has been finalized and then once it has been built. The CCMP also provides a means for reporting on progress and modifying the Project's compensatory mitigation, as appropriate. Order Provisions 18, 36, and 37 establish a mechanism by which the Discharger may present all relevant technical information to determine how much, if any, compensatory mitigation is necessary. Any modifications to the compensatory mitigation requirement and relevant technical information will require review and acceptance either by the Executive Officer or the Water Board, with appropriate public review and input.

The CMMP allows the Water Board to revisit the Project's consistency with the Basin Plan Wetland Fill Policy in the future, based on the ongoing performance of restoration elements and on evolving State policies with respect to climate change and sea level rise adaptation. The text of the Order allows the Discharger to implement the Shoreline Project in conformance with Corps policy, while ensuring consistency with Water Board policies.

The Tentative Order defines success in reference to the Discharger's submitted Mitigation and Adaptive Management Plan (MAMP). Monitoring reports and a continued agency collaboration through implementation of a Technical Advisory Committee (TAC) will further define ecosystem restoration success. This approach is taken because the Water Board recognizes that large-scale ecosystem restoration includes uncertainties that require an adaptive management approach. Water Board staff supports and intends to continue participating collaboratively in adaptive management efforts to identify the progress of and appropriate future changes to tidal restoration efforts in the Bay. As such, we support adaptive management efforts as an effective approach to ensure the success of Bay restoration efforts. Based on our ongoing collaborative meetings with the Discharger and other Project stakeholders, we understand that an adaptive management approach was preferred for the reasons stated in the Conservancy's comment. We concur that it is a better, more flexible approach than specifying prescriptive success measurements in the Tentative Order.

Legal Bases for Requiring Mitigation

The Tentative Order identifies the uncertainty around anticipated Project impacts, restoration actions, and expected creation of jurisdictional waters, including wetlands. Given the uncertainty, the Project's expected net fill may best be described as a range running from net creation of waters (should the FRM levee alignment be shifted to the landward-most alternative between Artesian Slough and Coyote Creek and all three Project phases be constructed) to 50-

77[9] acres of net fill, should Phases II and III not be completed and should there be no changes to the levee alignment.

Compensatory mitigation is required pursuant to the California Wetlands Conservation Policy ("No Net Loss Policy") and the State's Anti-Degradation Policy (all part of the San Francisco Bay Water Quality Control Plan). In addition, mitigation is necessary to comply with the California Environmental Quality Act, Clean Water Act and the Porter-Cologne Water Quality Control Act.

The Basin Plan

The Basin Plan incorporates by reference the No Net Loss Policy,[10] the Antidegradation Policy[11] and the Corps' 404(b)(1) Guidelines. These require compensatory mitigation for the fill-based and non-fill based impacts to waters of the U.S. and beneficial uses. The Tentative Oder's compensatory mitigation requirement for the Project's fill-based impacts and associated temporal impact is consistent with the findings in the Joint EIS/EIR and applicable State regulations.

The commenters correctly note that there are significant uncertainties with respect to the availability of sufficient sediment to support the predicted amount of tidal marsh restoration, in additional to uncertainties with respect to the ability of restored tidal marshes to survive as marshes as sea level rises. These comments support our concern that the project may not actually be self-mitigating over the long implementation period of the complete project, especially if the proposed levee lowering to tidal marsh elevations in Phases II and III does not occur, and net fill of waters of the state increases to approximately 50 to 77 acres.

As such, the Tentative Order appropriately applies the No Net Loss Policy. Findings 32 and 33 cite the No Net Loss Policy and Basin Plan, respectively, and Findings 21 and 22 discuss the Project impacts and the required compensatory mitigation. The comment describes the Project as having 8.76 acres of net fill. However, the Project's total fill amount, without compensatory mitigation, is more than 132 acres. The difference between those two numbers results from the Water Board staff's evaluation of the Project as a whole under the No Net Loss policy, as reflected in the Tentative Order. Aspects of that evaluation are summarized in Tentative Order Table 7 and include identifying compensatory mitigation opportunities such as the areas of ecotone-related fill that will provide habitat and remain below the high tide line (36 ac), planned outboard dike breaches and berm lowering associated with Phases I, II, and III (18.5 to 58.5 ac in total), and the areas of fill that will immediately be above the high tide line following fill placement, but will be below the high tide line after 50 years of anticipated sea level rise in 2067 (28.2 ac).

Executive Order W-59-93 is the California Wetlands Policy, more commonly known as the "No Net Loss" Policy. The first objective of the Policy is "[t]o ensure no overall net loss and long-term gain in the quantity, quality, and permanence of wetlands acreage and values in

[9] As referenced earlier herein, the low end of this range takes into account mitigation credit for anticipated sea level rise over the next 50 years, while the high end is the net fill amount immediately following Phase I construction.

[10] Basin Plan, section 4.23.1 (citing Calif Wetland Conservation Policy Exec Order 59_93).

[11] Basin Plan, at 2.1.7 (incorporating Res. 68-16, Statement of Policy with Respect to Maintaining High Quality of Waters in California).

California…."[12] The No Net Loss Policy has been incorporated into Basin Plan chapter 5, Plans and Policies, and also appears in Chapter 4, Implementation Plans (section 4.23), which states: "The Water Board will refer to [the Policy] for guidance when permitting or otherwise acting on wetland issues." The Basin Plan states that the "Water Board will evaluate both the project and the proposed mitigation together to ensure that there will be no net loss of wetland acreage and no net loss of wetland functions."[13] Mitigation is appropriate to ensure compliance with the No Net Loss Policy.

As a part of considering Project compliance with the No Net Loss Policy, the Tentative Order appropriately takes into account programmatic efforts to maintain, restore, and enhance wetlands. These include the 1999 Baylands Habitat Goals project and its associated Habitat Goals Update, as well as the Comprehensive Conservation and Management Plan for the Bay, recently updated by the San Francisco Estuary Partnership. Those planning documents, referenced in the Basin Plan, set forth the reasoning for why restoration of tidal action to historically diked Baylands is desirable, as well as limits to that restoration (e.g., the need to maintain former salt ponds in order to support the bird populations and associated species that have developed there over time). The existing diked former salt ponds are jurisdictional waters of the U.S., and converting the salt ponds to tidal marsh is a permanent impact that will affect the ponds' existing beneficial uses. The planning documents above help explain why the Project's proposed conversion is an appropriate and desirable step.

The Antidegradation Policy commits to maintaining higher quality waters of the state to the maximum extent possible.[14] These policies apply to waters of the State, including wetlands, like those at issue here.[15]

The Basin Plan also incorporates by reference the Corps' own regulations,[16] which similarly require mitigation for impacts:

> [N]o discharge shall be permitted unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem.[17]
>
> [T]he district engineer will issue an individual section 404 permit only upon a determination that the proposed discharge complies with applicable provisions of 40 CFR part 230, including those which require the permit applicant to take all appropriate and practicable steps to avoid and minimize adverse impacts to waters of the U.S. Practicable means available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. Compensatory mitigation for unavoidable impacts may be required to ensure that an activity requiring a section 404 permit complies with the Section 404(b)(1) Guidelines.[18]

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[12] Executive Order W-59-93 (Aug. 23, 1993), at p. 1.
[13] Basin Plan, § 4.34.4.
[14] *Ibid.*
[15] Classification of Wetlands, USGS (2013).
[16] Basin Plan, § 4.34.4.
[17] 40 C.F.R. § 230.10, subd. (d).
[18] 40 C.F.R. § 230.91.

CEQA, Clean Water Act and Porter-Cologne

When adopting the Joint EIS/EIR, the District identified three environmental impacts that would remain significant after implementation of feasible mitigation measures, including the following:

> "2) The Project will result in the loss of a substantial amount of human-created managed pond habitat that is used by managed-pond-specialist waterbirds (such as eared grebe, Wilson's phalarope, red-necked phalarope, and Bonaparte's gull) for foraging and roosting. Over time all the ponds in the study area would be converted. The South Bay Salt Ponds Restoration project and other tidal restoration projects in south bay have been restoring other managed ponds to tidal influence. Cumulatively there would be substantial loss of managed ponds in the Alviso pond complex. Due to the scale of the Project relative to other projects, the incremental impact of the Project would be considered cumulatively considerable. This impact could only be mitigated by replacing pond habitat being converted to tidal marsh. The conversion of other habitat to pond would be inconsistent with the objectives of the project, so no measure are available to lessen this impact. Adaptive management plans are designed to minimize significant impacts to pond-specialist birds, but given the long-term uncertainty of population trends the impact is still considered significant."

The District's Board Agenda Memorandum (March 22, 2016) concedes that "the Project would result in significant impacts on hydrology, water quality, biological resources...." Impact Wat-01 (violate any water quality standard or waste discharge) lists 24 mitigation measures, further establishing the numerous Project impacts. Similarly, the Joint EIS/EIR notes the following significant impacts requiring mitigation that are within the Water Board's jurisdiction: hydrology and water quality, aquatic biological resources, terrestrial biological resources, geology and soils, and hazardous materials. The compensatory mitigation required in the Tentative Order mitigates the significant impact that was identified by the SCVWD that would "…remain significant despite implementation of feasible mitigation measures."[19]

The 404(b)(1) Analysis recognized that the increase in jurisdictional waters may be classified as mitigation from a regulatory standpoint:

> "The USACE does not consider the increase in jurisdictional waters mitigation, but does recognize that, from a regulatory standpoint, they may be classified as mitigation."

Consistent with the Discharger's own findings regarding the Project's significant impacts to waters of the U.S. and their existing beneficial uses, and the need for mitigation, the Tentative Order recognizes the conversion of pond habitat to tidal marsh (anticipated) will result in permanent, significant impacts to waters of the United States, which are also waters of the State, and their existing beneficial uses. The Tentative Order simply clarifies that the habitat conversion, while still a non-fill based permanent impact, is considered, by the Water Board, to be mitigated by the eventual success of significant tidal marsh restoration. This approach is consistent with the SCVWD's own CEQA findings and SBSPRP's Order Water Board policy

[19] *Board Agenda Memorandum, South San Francisco Bay Shoreline Phase I Study – Resolution Certifying the Final Environmental Impact Report and Adopting Findings of Fact, Statement of Overriding Considerations, and Mitigation Monitoring and Reporting Program; and Approving the Project* (March 22, 2016) (File No. 16-0113).

requires mitigation for impacts to waters of the State. For this reason, Water Board staff commented on the Joint EIS/EIR's findings regarding fill of waters of the U.S. and stated compensatory mitigation would be required. Water Board staff commented on the mitigation issue in the Water Board's EIR comment letter. The letter noted that the mitigation proposed for the Project's significant impacts to waters of the State consists of restoring open waters (former salt production ponds) to tidal marsh and outlined the issues with that approach, including uncertainty with respect to restoration success:

> "The Project presents permitting challenges, in that it would place fill into up to about 137.6 acres of waters of the State, consisting of 16.8 acres of wetlands and 120.8 acres of other waters. This is a significant amount of Bay fill. The Project would facilitate salt marsh restoration and would be part of a long-term adaptive management strategy to address the potential impacts of sea level rise in the Bay. However, the current proposal could have a significant delay between the placement of levee fill (i.e., the impacts) and the salt marsh restoration work (i.e., the mitigation), and other factors lead to uncertainty regarding the timing and potential success of the restoration."

One comment suggests that converting the existing pond habitat to tidal marsh habitat should serve as mitigation for the Project's fill-based impacts. This conversion is considered out-of-kind mitigation for permanent fill-based impacts because it does not create habitat (i.e., it results in a net loss of jurisdictional area), as the existing jurisdictional habitat is being converted into a different type of jurisdictional habitat. Therefore, as Water Board staff has noted on several occasions, and documented in the Project's CEQA record, the conversion of habitat in Ponds A9 to 16 and A18 may not serve to fully mitigate for the Project's significant fill impacts to waters of the State. However, the anticipated tidal marsh and areas of restored tidal action will serve as mitigation for the lost former salt pond habitat, the ponds' existing beneficial uses, and the temporal loss of function and values related to the time lapse between the beginning of Project construction and full tidal marsh establishment.

The Water Board has a duty as a responsible agency to require mitigation where necessary, pursuant to CEQA Guidelines 15096, subdivision (g), and 15126.4, subdivision (a)(1)(B). Once the Discharger identified potential impacts within the San Francisco Bay Water Board's jurisdiction, it triggered the Board's duty to evaluate the project and add any necessary mitigation. *Riverwatch v. Olivenhain Mun. Water Dist*. (2009) 170 Cal.App.4th 1186, 1207 holds that a responsible agency has an independent duty to review the EIR and "issue its own findings regarding the feasibility of relevant mitigation measures or project alternatives that can substantially lessen or avoid significant environmental effects."[20]

The CEQA Guidelines, the California Code of Regulations, the Clean Water Act, and Porter-Cologne affirm that a responsible agency may require additional mitigation and, in fact, imposes a *duty* to do so upon the responsible agency to do so if there are significant effects. The CEQA Guidelines provide:

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[20] Citing Remy et al., Guide to the Cal. Environmental Quality Act (CEQA) (11th ed.2007) ch. III, subd. (B)(2), p. 53; Pub. Res. Code § 21081; and 1 Kostka & Zischke, Practice Under the Cal. Environmental Quality Act (Cont.Ed.Bar 2d ed.2008), § 3.22, p. 126.

> • "When considering alternatives and mitigation measures, a responsible agency has responsibility for mitigating or avoiding the direct or indirect environmental effects of those parts of the project which it decides to approve."[21]
>
> • "When an EIR has been prepared for a project, the Responsible Agency *shall not* approve the project as proposed if the agency finds any feasible alternative or feasible mitigation measures within its powers that would substantially lessen or avoid any significant effect the project would have on the environment."[22]

In addition to the CEQA Guidelines, Title 23 of the California Code of Regulations, Section 3742, provides additional regulations specific to regional water boards when acting as responsible agencies:

> The Board, when acting as a responsible agency may … condition the discharge of waste … for any project subject to CEQA to protect against environmental damage to water resources, to minimize adverse environmental impacts on water resources, or to ensure long-term protection of water resources….[23]

Clean Water Act section 401(d) similarly requires that the regional water boards "*shall* set forth" limitations to ensure the permit will comply with "any other appropriate requirement of State law" in the certification. The Corps' section 401(b)(1) guidelines similarly require mitigation where the Project will have adverse effects, or will degrade the existing aquatic ecosystem including fish.[24]

Finally, Water Code section 13263(a) requires that regional water boards "(i)mplement any relevant water quality control plans that have been adopted." As discussed below, the Basin Plan requires mitigation for impacts to beneficial uses to ensure no net loss of wetlands.[25]

These above authorities consistently require the San Francisco Bay Water Board to act affirmatively to ensure mitigation measures are included in the Order.

The District suggests that once it had adopted mitigation measures in its EIR, there was no role for the Water Board to play, citing *Ogden Environmental Service v. City of San Diego* (S.D. Cal. 1988) 687 F.Supp. 1436, 1450-1452 (*Ogden*). In *Ogden*, the issue was more fundamental: whether an EIR was required at all. The lead agency made the determination that an EIR was not required; a responsible agency (the City) believed that an EIR was necessary and denied approval of the project because there was no EIR.[26] The court held that the City had not properly challenged the lead agency's CEQA determination.[27] In doing so, the court construed sections 15096, subdivision (e) and 15162 of the CEQA Guidelines, pertaining to the steps a responsible agency must take to challenge the lead agency's determination where the responsible agency

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[21] Cal. Code Regs., tit. 14, § 15096, subd. (g) (1).
[22] *Id*. at § 15096, subd. (g)(2) [emphasis added].
[23] Cal. Code Regs., tit. 23, § 3742.
[24] 40 C.F.R. § 230.12, subd. (a).
[25] Emphasis added.
[26] *Ogden, supra,* 687 F.Supp. at p. 1441.
[27] *Id.* at pp. 1451-52.

believes the final EIR or negative declaration is not adequate for use by the responsible agency.[28] *Ogden* does not squarely address the situation here, however, where the District has prepared an EIR, identified significant impacts, and a responsible agency is identifying mitigation measures to address those impacts. Here, where the findings in the EIR determine that mitigation is necessary to reduce impacts, the Water Board "shall not" approve the project where, as here, there are feasible alternatives or mitigation measures within its powers that will substantially lessen or avoid significant effects.[29]

Consistency With Prior Orders

As noted above, the FRM levee is necessary to protect Alviso against current flooding risks and against the additional flooding risks associated with sea level rise. The FRM levee and ecotone creation will result in net fill of a minimum of 8.67 acres of waters of the State if the Project is constructed, as proposed, in its entirety. They may result in net fill of about 50 to 77 acres of waters of the State if levee lowering associated with tidal marsh restoration is not implemented in Phases II and III. The precedent of the Water Board requiring mitigation for such fill is well established. Not requiring mitigation for fill would be contradictory to long-established Water Board precedent.

Some of the comments suggest that the Tentative Order is inconsistent with Order No. R2-2008-0078 and R2-2005-0034. We disagree. Findings 16 and 74 of Order R2-2008-0078 noted, in essence, that the authorized restoration project was self-mitigating. Finding 96 reflected that order's requirements to timely complete adaptive management actions necessary to achieve restoration goals. The lack of a penalty refers to the absence of a typical time-based penalty (e.g., a 10 percent increase in mitigation for a specified amount of delay), imposed for failure to timely complete required compensatory mitigation. However, that order did set forth deadlines and related requirements to implement restoration actions, including adaptive management actions, necessary to maximize the restoration's success and ensure the project's self-mitigating nature. Additionally, fill associated with the portions of the SBSPRP authorized by Order No. R2-2008-0078 did not include significant amounts of fill associated with providing flood protection for developed areas inland of the former salt ponds. Such fill likely would have been referenced separately in that order, similar to the approach in the Tentative Order.

Separately, Order No. R2-2005-0034, adopted for the Hamilton/Bel Marin Keys wetland restoration project, evaluated the restoration project's impacts and mitigation together, stating "[t]his project is consistent with the Basin Plan Wetland Fill Policy that establishes that there is to be no net loss of wetland acreage and no net loss of wetland value when the project and any proposed mitigation are evaluated together…" (Finding 37).

The Tentative Order's compensatory mitigation requirements are consistent with Water Board practice at other sites and take into consideration anticipated sea level rise over the coming 50 years. There are significant differences between a typical mitigation site and the Project's anticipated tidal marsh restoration. These differences are recognized in the Tentative Order, and the Tentative Order requires compensatory mitigation for the Project's fill based impacts and associated temporal loss. Consistent with other projects that fill waters of the U.S., the new

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[28] *Ibid.*

[29] Cal. Code Regs., tit. 14, § 15096, subd. (g)(2).

jurisdictional waters created in Phases I to III, which provide similar or increased habitat value, will serve as compensatory mitigation. At most tidal wetland mitigation sites, the elevation of the mitigation site is set at an elevation appropriate to the desired type of tidal marsh vegetation in the same year that authorized impacts to waters of the State are implemented. These mitigation sites usually attain final performance criteria for tidal marsh vegetation and hydrology within five years of authorized impacts to waters of the State. In the Project, however, there will be a significant lag between when the Project's impacts take place and when work is completed on the associated mitigation components. The former salt ponds will not be breached to tidal action until at least five years after the Project places fill in waters of the State. After levee breaching, 10 to 20 years (or more) of sediment accumulation will be necessary before the pond bottom elevations are high enough to support the growth of tidal marsh vegetation. In other words, it will take the restoration ponds at least 15 to 25 (or more) years after initial impacts to get to the physical condition that most tidal marsh mitigation sites attain in their first year. As noted in the Tentative Order, Project impacts are associated significantly with a beneficial public purpose: reducing flood impacts to Alviso and shoreline infrastructure.

As discussed above, there is some uncertainty as to the benefits to be gained by restoring tidal action. These include uncertainty in the time required for sediment to accrete to mud flat or tidal marsh levels in deep ponds (and uncertainty as to whether it will ever accrete to such levels), whether accretion will keep pace with anticipated sea level rise, potential water column chemistry impacts, and other issues. The MAMP speaks to this uncertainty in that it provides the framework for making adaptive management decisions, including discontinuing or delaying future pond breaches, which are based on not only sediment dynamics and wetland vegetation establishment, but also bird use of changing habitats, non-avian species, invasive and nuisance species, and ecotones.[30] In addition, although the anticipated tidal marsh restoration is expected to result in habitat that is regionally scarce, provides beneficial uses, and increases shoreline resiliency, the long-term success of tidal marsh restoration and funding mechanism to sustain long-term marsh restoration and monitoring are unclear at this point. Although there is uncertainty in the long-term success of tidal marsh restoration, the Tentative Order recognizes the increased habitat value from the anticipated tidal marsh habitat and allows it to serve as mitigation for the temporal loss of waters of the U.S beneficial uses from permanent fill-based impacts. This approach is consistent with the SBSPRP's Order requirements with respect to the restoration components. In addition, the Tentative Order allows the anticipated tidal marsh restoration enhancement to beneficial uses and shoreline resiliency to mitigate the substantial temporal impact associated with the time lapse between the fill-based impacts' implementation and the anticipated tidal anticipated tidal marsh establishment (see response to SCVWD Comment 28 and Corps Comments 43 and 44). Therefore, the Tentative Order is consistent with the requirements set forth in the SBSPRP's Order and with Basin Plan policy. It goes a step further in that it recognizes the anticipated potential range of Project benefits to offset the Project impacts to the maximum extent that can be allowed by Water Board's governing regulations and policies.

[30] *South San Francisco Bay Shoreline Study, Monitoring and Adaptive Management Plan for Ecosystem Restoration* (September 2015).