

San Francisco Bay Conservation and Development Commission

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December 4, 2015

Application Summary

(For Commission consideration on December 17, 2015)

Number: Consistency Determination No. C2015.006.00

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60th Day: December 27, 2015

75th Day (as extended by the U.S. Army Corps of Engineers):

January 12, 2016

Staff Assigned: Bob Batha (415/352-3612; bob.batha@bcdc.ca.gov)

Summary

Applicant: U.S. Army Corps of Engineers (Corps)

Partners: United States Fish and Wildlife Service (USFWS), the State Coastal Conservancy (Conservancy), the Santa Clara Valley Water District (SCVWD), and the City of San Jose.

Background: The Corps is requesting a Consistency Determination for the concept plan for the South Bay Shoreline Phase 1 Project, primarily to support Congressional authorization and funding for the project. On July 10, 2015, the Executive Director sent a letter stating that it was staff's opinion that the project was generally consistent with the Commission's law and policies. The Corps briefed the Commission on the project on September 17, 2015. The Corps requested more formal Commission support for the project and subsequently, after another project briefing on November 5, 2015, the Commission unanimously voted to support the project and to request the Commission chair to send a letter, dated October 30, 2015, stating that the Commission believes that the concept plan for the South Bay Shoreline Project is generally consistent with Commission policies.

This consistency determination is unusual in that, typically, consistency determinations are submitted during the Preconstruction Engineering and Design (PED) phase of project development. This consistency determination has been submitted at the *feasibility* level of design and there is not enough detail to complete a full analysis of the project. In addition, because of the very compressed time allowed in the Coastal Zone Management Act for processing consistency determinations (a maximum of 75 days, unless the federal entity agrees to extend the time) and the size of the project, there has been little time for Commission staff and the Corps to discuss and clarify project details that are normally included in a staff summary. Many of the numbers and dimensions cited in the South Bay Shoreline concept plan are fluid, approximate, and sometimes in conflict with each other. Other project elements are not yet defined. For all these reasons, the Corps and Commission staff have agreed to implement a phased consistency determination for the project. That is, at this time the Commission will only be evaluating whether the *conceptual* plan is *generally* consistent with the Commission's law and policies. The project will need to return to the Commission for an as yet undetermined number of subsequent consistency determinations (the number and content of future consistency determinations is one of the many details missing from this first consistency determination) as plans for the project are developed and prior to any actual construction.

Location: The proposed project spans a large area of several thousand acres owned primarily by the USFWS and the City of San Jose. The project site runs along the inland berms of former salt ponds from Coyote Creek to Alviso Slough in Santa Clara County (see Exhibits A and B).

Project: The proposed project involves constructing 3.8 miles (19,776 feet) of levees to replace existing salt pond berms, installing a flood gate at the Union Pacific railroad tracks, installing a tide gate at Artesian Slough, constructing an approximately 245-foot-wide ecotone (at a 30:1 slope) bayward of most of the

new flood protection levees to create transitional habitat, installing ditch blocks, excavating pilot channels through fringing tidal marsh, breaching outer levees to allow tidal marsh establishment in the majority of these former salt ponds, constructing a multiuse public access trail on the top of the new flood protection levees, constructing new pedestrian bridges across the Union Pacific Railroad tracks and Artesian Slough, installing seating areas with benches and interpretive signs, and connecting the levee trail to adjacent trails.

The levees would protect approximately 6,000 residents and people working in the area from tidal flooding and would provide flood protection from 100-year floods (floods with a one percent annual chance of exceedance) with projected sea level rise through 2067.

**Issues
Raised:**

The staff believes that the application raises four primary issues: (1) whether the project is consistent with the McAteer-Petris Act and Bay Plan policies regarding fill in salt ponds; (2) whether the project would provide maximum feasible public access, consistent with the project; (3) whether the project is consistent with the Bay Plan's Climate Change policies; and (4) whether the project is consistent with the Commission's natural resource policies, including Fish, Other Aquatic Organisms and Wildlife; and Tidal Marshes and Tidal Flats.

Background

Historically, the project site was once part of the open water and tidal marshes of South San Francisco Bay. In the late 19th century, much of South Bay's marshlands were diked (surrounded by levees) and converted to salt ponds and managed for salt production. Most of these former salt ponds are now part of the USFWS Don Edwards San Francisco Bay Wildlife Refuge, established in 1972. The first salt ponds were acquired by USFWS in 1979 and federal acquisition of the ponds proceeded even as commercial salt production continued in adjoining and acquired ponds.

The San Francisco Shoreline Study, which resulted in the plan that is being put forward in this consistency determination, was first authorized by Congress in 1976 and received study authorizations in 2002 and 2007. The Consistency Determination states that the project's primary purpose is 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.
- 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 study area. The project would increase habitat for native, resident plant and animal species, including special-status species such as the Central California Coast steelhead, Ridgway's rail, and salt marsh harvest mouse.
- Provide opportunities for public access, environmental education, and recreation in the Study Area.

Project Description

Project

Details: Most of the proposed work would take place within the Commission's salt pond jurisdiction, although work would also occur in the Bay, within the 100-foot shoreline band, and within managed wetlands (*the amount of work that would occur in each of these areas of the Commission's jurisdiction is still being determined as the project is being more precisely defined*). Because the consistency determination is coming to the Commission at the feasibility stage, many of the project details are not yet defined, or defined only in the most general terms. Thus, the Commission can only consider whether the conceptual plan is **generally** consistent with the Commission's Amended Management Program for San Francisco Bay.

In the Bay, Within the 100-foot Shoreline Band, Within Salt Ponds, and Within Managed Wetlands:

1. Concur that the South San Francisco Bay Shoreline Phase 1 Feasibility Study and Conceptual Plan is generally consistent with the Commission's Amended Management Program for San Francisco Bay.

Work in the**Bay:**

The proposed project would include dredging pilot channels through the tidal marsh fringing the salt ponds to promote tidal circulation to and from the ponds when the pond berms are breached and restored to tidal action. The exact amount of dredged material, the amount of marsh lost when channels are dredged through the marsh, and the location where dredged materials would be placed is not specified, though it is suggested that the material could be used to either block borrow ditches or to raise berm remnants to create high tide refugia. Small portions of the flood protection levee would also likely involve work in the Bay (see discussion below).

Work Within**Salt Ponds and****Managed****Wetlands:**

Because the existing berms around the former salt ponds do not meet levee standards, the plan calls for removing the existing berms along the proposed flood protection levee alignment, and placing approximately 897,000 cubic yards of fill material to construct 3.8 miles of flood protection levees. The levees would be approximately 110 feet wide at the base and 16 feet wide at the top and include tie-ins to the existing levees near the Alviso Marina and Coyote Creek bypass. The alignment of the new levees would generally follow the existing inland berm alignment to take advantage of compacted soils beneath the existing berms. Because the foundation material is former Bay muds, soil compaction is expected. After settlement, the height of the flood protection levee would be 15.2 feet (NAVD 88), approximately 10 feet higher than the existing berms and the base 110 feet wide, approximately twice as wide as the existing salt pond berms.

To perform this work, the ponds would be passively drained, a process that will take many months, although pumping may be considered to speed the process. Cofferdams may also be installed to allow work to be performed in the dry.

The flood protection levees would be constructed first, which is expected to take about three years. Once a given section of levee is complete, a 30:1 slope ecotone would be constructed on the bay side of the new levees on all levee segments except for that levee segment bordering Pond A16, a managed pond (see Exhibits B, D, E, and F). The ecotone would be constructed over 12-15 years and in three phases.

The ecotone is a transition area between two distinct habitats, in this case, between wetlands and uplands. Shoreline development has destroyed or severely impaired the vast majority of the Bay's wetland-upland transition habitat. Transition habitat serves as high tide refuge for species that live in tidal marshes (such as the endangered Ridgway's rail and salt marsh harvest mouse) to move out of the marsh at high tide while remaining under vegetative cover for relative safety from predators. They are also areas that allow for the landward

migration of marshes as sea levels rise and provide protection from extreme tides and waves. It is for these reasons that the ecotone is an important project element. At this time, the design and size of the ecotone is somewhat undefined because of uncertainty in the availability of free or low cost earth and design questions about how to create an ecotone to maximize flood and ecological benefits. The project partners intend to convene a design charette to consider different configurations for the ecotone (e.g. perhaps a wider ecotone in areas where greater wave erosion is expected, or a more varied ecotone to promote greater biological diversity and visual interest).

To build the levees and ecotone, earth fill would be placed on approximately 136 acres of salt ponds of the total 2,900 acres of salt pond that would have full tidal exchange when all the ponds planned for tidal restoration are breached (approximately 4.7 percent of the acreage of the ponds that would be returned to tidal action). However, because the ponds have subsided, the lower end of the ecotone would become intertidal immediately once tidal action is introduced into the ponds (approximately 66 of the 96 acres filled to create the ecotone). With projected sea level rise, another 10 acres of the ecotone would likely become intertidal over the next 50 years, which is the period of analysis the Corps used in evaluating the effects of the proposed actions. Along with breaching the salt pond berms, approximately 80 percent of the outer (bayward) salt pond berms would be lowered to promote tidal circulation to the restored ponds, and to create vegetated marsh habitat in the short term as the subsided pond bottoms evolve from mudflat to vegetated marsh. Because many of the ponds have subsided, several feet of sediment would need to be deposited through natural processes before the pond bottoms reach elevations suitable for marsh growth. Thus, most of the ponds would be open water or intertidal mudflats initially after breaching, and gradually vegetate as sediment builds in the ponds.

**Public
Access:**

Approximately 3.8 miles of public access would be provided on top of the new flood protection levees. In addition, two pedestrian bridges would be constructed as part of the project: (1) an 80-foot-long, 10-foot-wide bridge would be constructed over the Union Pacific Railroad tracks near the northwest corner of Pond A12 spanning the flood gate proposed at this location and providing access across the railroad tracks; and (2) a second pedestrian bridge would be constructed across Artesian Slough to connect Pond A16 and Pond A18 levee segments. In addition, the project would construct a trail segment along the north side of State Route 237 “to provide bicycle commuters an alternative to trails on the Refuge’s property (to reduce possible conflicts between higher speed bicycle commuters and school and birdwatching groups)”. This trail is some distance from the Bay and would provide little or no experience of the Bay (see Exhibit G). Except for the trail along State Route 237, which would be

paved, all of the other trail segments will be either gravel or decomposed granite. Most of the trails, bridges, and public access facilities would be ADA-accessible.

However, some existing trails would be eliminated when outer salt pond berms are breached and lowered in order to return the former salt ponds to full tidal action once the flood protection levees have been completed. The Corps estimates that approximately 7.4 miles of existing trails would be lost with full implementation of the project. The public access on the new flood control levee would add approximately 3.6 miles of new access, and the bicycle path along State Route 237 would add 1.6 miles, though well outside the Commission's jurisdiction. While it is expected that the existing levee trails would remain open to public access until the salt pond berms are breached (except where access may be restricted to allow construction), at project completion there would be 3.8 miles less public access to the Bay than currently exist (this number excludes the bike trail along State Route 237).

Schedule

and Cost:

It is anticipated that project construction would commence in 2018 with levees being completed in 2021. Ecotone construction and other restoration activities would proceed in three phases. It is anticipated that the first phase would be complete in 2021, the second in 2026, and the third in 2031. The estimated project cost is \$174,000,000.

Staff Analysis

- A. **Issues Raised:** *The staff believes that the consistency determination for the first phase of a phased consistency determination raises four primary issues: (1) whether the project is consistent with the McAteer-Petris Act and Bay Plan policies regarding fill in salt ponds, and to a lesser extent, fill in the Bay; (2) whether the project would provide maximum feasible public access, consistent with the project; (3) whether the project is consistent with the Bay Plan's Climate Change policies; and (4) whether the project is consistent with the Commission's natural resource policies, including Fish, Other Aquatic Organisms and Wildlife; and Tidal Marshes and Tidal Flats.*
1. **Fill.** Most of the fill proposed for the project would involve fill in salt ponds or in managed wetlands. The tide gate in Artesian Slough would constitute Bay fill, as would the two pedestrian bridges, and while the design details of constructing the pilot channels through tidal marsh are not complete, sometimes material from such excavation has been placed in the Bay to create low berms or upland refugia. The Commission may allow fill in the Bay, certain waterways, salt ponds, or managed wetlands only when the fill meets the requirements identified in Section 66605 of the McAteer-Petris Act, which states, in part, that: (a) the public benefits from fill must clearly exceed the public detriment from the loss of water areas, and fill should be limited to water-oriented uses or minor fill for improving shoreline appearance and public access; (b) no alternative upland location is available (policies (a) and (b) apply to fill in the Bay and certain waterways only); (c) the fill authorized should be the minimum necessary to achieve the

purpose of the fill; (d) the fill should minimize harmful effects to the Bay including the water volume, circulation, fish and wildlife resources, and marsh fertility; and (e) the fill should be authorized when the applicant has valid title to the properties in question (policies (c), (d), and (e) apply to fill in the Bay, certain waterways, salt ponds, and managed wetlands.

The Bay Plan's policies for salt ponds state that, "if the owner of any salt ponds withdraws any of the ponds from their present uses, the public should make every effort to buy these lands and restore, enhance or convert these areas to subtidal or wetland habitat. This type of purchase should have a high priority for any public funds available, because opening ponds to the Bay represents a substantial opportunity to enlarge the Bay and restoring, enhancing or converting ponds can benefit fish, other aquatic organisms and wildlife, and can increase public access to the Bay.... Recognizing the potential for salt ponds to contribute to the moderation of the Bay Area climate, the alleviation of air pollution and the open space character of the Bay, and to maximize potential habitat values, development of any of the salt ponds should provide for retaining the maximum amount of water surface area consistent with the project. Water surface area retained can include a variety of subtidal and wetland habitat types including diked ponds managed for wildlife or restoration of ponds to tidal action.... Development should provide the maximum public access to the Bay consistent with the project while avoiding significant adverse effects on wildlife."

The project would result in the placement of clean earth material on approximately 136 acres of salt ponds to construct approximately 41.6 acres of flood protection levees and 96 acres of ecotone. Once the flood protection levee and ecotone have been constructed and the levees are breached, approximately 2,900 acres of former salt ponds would be returned to tidal action and are expected to become vegetated marsh once sufficient sediment is deposited through natural processes to support marsh vegetation, a process that is expected to take many years.

As stated in the policies cited above, the Commission can authorize fill for protecting shorelines, to create or enhance habitat, and to provide public access. These are the only uses proposed on fill in the South Bay shoreline concept plan. The Commission's policies require that all proposed fills in water-covered areas of the Commission's jurisdiction be the minimum necessary, and be designed to minimize adverse impacts on the Bay's natural resources.

While the size and scope of the fill proposed for shoreline protection, habitat enhancement, and public access with this proposed project is much larger than previous projects authorized by the Commission, the Commission has authorized fill in the Bay and in salt ponds for such water-oriented uses before. Most recently, the Commission concurred with the USFWS that placing dredged material on approximately 15 acres (653,400 square feet) of tidal marsh to create habitat features designed to enhance the productivity, functioning and habitat value of the surrounding marshlands was consistent with Commission law and policies (C2014.004). The Commission also concurred with USFWS's determination that placing dredged materials on approximately 4.0 acres to raise pond bottoms and create marsh mounds at lower Tubbs Island (San Pablo Bay Wildlife

Refuge) was consistent with the Commission's law and policies (C1993.011.01). In BCDC Permit No. M2012.016 and M2014.025.01 to the California Coastal Conservancy, the Commission authorized the placement of a total of 5,000 square feet of fill in tidal marshes to create high tide refugia for the endangered Ridgway's Rail at Belmont Slough in the City of Belmont, Cooley Landing in the City of Menlo Park, and Martin Luther King Jr. Marsh, in the City of Oakland. Creating ecotone habitat has also been an important design feature in large marsh restoration projects in diked baylands (Consistency Determination No. C2004.005 to the U.S. Army Corps of Engineers to construct Hamilton in Marin County, and Consistency Determination No. C2005.007 to USFWS for restoring Cullinan Ranch just north of State Route 37 in Napa County). As with the South San Francisco Bay Shoreline Phase 1 Feasibility Study and Conceptual Plan, these project elements were constructed to provide refugia for Bay marsh species and opportunities for marsh transgression with sea level rise (the inland retreat of tidal marsh to adjoining upland areas with sea level rise).

- a. **Priority Use Designation.** The entire project area is designated on Bay Plan Map No. 7 as a wildlife refuge. While the ponds currently provide habitat for many species, the habitat value of the project site is expected to be greatly enhanced by returning tidal action to these ponds and as the ponds evolve from subtidal habitat, to intertidal mudflat, to vegetated tidal marsh. The ecotone constructed along the Bay edge of the flood protection levee is designed to provide high refuge for wildlife, as well as a place for marshes to transgress upland with sea level rise. The proposed restoration could not occur without construction of the flood protection levee to protect inland areas from tidal flooding.
- b. **Alternative Upland Location.** The Shoreline Study analyzed several project alternatives, including a nonstructural alternative that did not include constructing a flood control structure. Their analysis concluded that even if the community of Alviso was relocated (at much greater cost than the proposed project), San Jose's Wastewater Treatment Facility would still need a levee to protect this costly and vital infrastructure from flooding.
- c. **Minimum Amount Necessary.** The amount of fill (41.6 acres) for the flood protection levee was determined by the engineering standards necessary to build a stable barrier to withstand a hundred year storm event with medium range projected sea level rise over the next 50 years. The appropriate size of an ecotone that would provide upland refugia both now and over the 50 year period of analysis the Corps used in evaluating the effects of the proposed project, and hence the amount of fill needed to construct the ecotone, is more subjective. In nature, ecotones vary widely in size, from a few feet to many thousands of feet. The project partners chose a 30:1 sloped ecotone for a number of reasons, including the lack of transitional habitat in the south Bay, the desire to create room for Bay marshes to transgress landward with sea level rise, and the flood control benefits provided by a relatively gentle bayward facing slope. Some ecologists have recommended as much as 100:1 ecotone slopes for this project. With the breaching of the outer pond berms, 66 of the 96 acres (69 percent of the ecotone) filled to create ecotone habitat will be below

five feet Mean Sea Level and can be expected to support intertidal habitat. Above five feet Mean Sea Level, the ecotone would be expected to support a variety of upland grass and shrub species, including many nonnative species. As noted earlier, the project partners intend to convene a design charette to consider different configurations for the ecotone (e.g. perhaps a wider ecotone in areas where greater wave erosion is expected, or a more variable ecotone to promote greater biological diversity and visual interest) as well as how to most effectively use fill and in what configurations if the project partners are unable to obtain the full 1.51 million cubic yards needed to build a 30:1 ecotone. In addition, the project partners may consider ways in which the ecotone can be adapted to rising seas by placing additional fill in response to the actual sea level rise, as opposed to project sea level rise. *These are some of the issues to be resolved before the Corps submits the next consistency determination for this phased project.*

- d. **Effects on Bay Resources.** As has been stated above, a primary project purpose is to increase the habitat functions and value of the 2,900-acre project area. The primary means by which this would be accomplished is by returning the area to full tidal action once inland areas are protected from tidal flooding with the construction of a flood protection levee. An ecotone for high tide refugia, greater habitat diversity, and to allow marsh transgression inland with sea level rise would be built against the bayward face of the levee. While the scale of this project is much larger than others brought to the Commission, the approach has been tried successfully at smaller scales elsewhere. As the project has not been developed beyond a conceptual plan, it can be expected that as the project is more fully designed, the project's approach to improving habitat function would be better refined and defined. Such plans will reflect the current state of restoration science and should plan for how the site can be adaptively managed over time to increase the likelihood that the marsh restoration efforts are successful.
- e. **Valid Title.** Property ownership within the study area is complete. The USFWS owns and manages the 8,000 acre Alviso pond complex within which approximately 2,045 acres of the area included in the South Bay Shoreline Plan are located. Pond A18 (about 856 acres) is owned by the City of San Jose. Both USFWS and the City of San Jose are project partners. The Corps' consistency determinations states that "all necessary property rights will be acquired and evidence of these rights will be provided to BCDC prior to construction."

The Commission should determine whether the project is consistent with its law and policies regarding fill in the Bay and in salt ponds.

2. Public Access

- a. **Maximum Feasible Public Access.** Section 66602 of the McAteer-Petris Act states that "...existing public access to the shoreline and waters of the...[Bay] is inadequate and that maximum feasible public access, consistent with a proposed project, should be provided." The Bay Plan Public Access policies state that "a proposed fill project should increase public access to the Bay to the maximum extent feasible...", and that

“access to and along the waterfront should be provided by walkways, trails, or other appropriate means and connect to the nearest public thoroughfare where convenient parking or public transportation may be available.” Public access to some natural areas should be provided to permit study and enjoyment of these areas. However, some wildlife are sensitive to human intrusion. For this reason, projects in such areas should be carefully evaluated in consultation with appropriate agencies to determine the appropriate location and type of access to be provided. Public access should be sited, designed and managed to prevent significant adverse effects on wildlife.

The project would result in a net reduction of public access. While direct access between Alviso Slough and the trails along Coyote Creek would be improved by providing a more direct route on top of the new flood protection levee, breaching levees to return the ponds to tidal action would eliminate portions of existing trails. For example, the Corps states, “by breaching the existing A9-A15 pond berms, the project will modify the Alviso Slough Loop Trail. Once all the ponds are restored, the trail length will decrease from an approximately 9 mile loop to a 3.3 mile trail out-and-back trail system on the eastern side of Ponds A12, A13, and A15.”

The project proposes a number of public access improvements to offset the loss of some trails. Trails on the top of the new flood protection levee would be higher, wider, and on an improved trail surface. In addition, the proposed project includes two pedestrian bridges that would provide better connectivity for trail users. On the Wildlife Refuge, a new 380-foot-long pedestrian bridge would be constructed over the Union Pacific Railroad tracks at the northeast corner of Pond A12 and spanning the proposed flood gate to be constructed at this location. A new pedestrian bridge across Artesian Slough would allow connectivity to the new trail to be built on the flood protection levee bordering Pond A18 and eventually connecting to the trails along Coyote Creek. In addition, a 1.6-mile paved section of bicycle trail would be constructed along the western side of State Route 237 to provide bicycle commuters an alternative, more direct route than trails on the refuge. Finally, viewing platforms, interpretive signs, and benches would be installed in areas of the Refuge (see Exhibit G). *These facilities are planned but not yet designed and will be the subject of future consistency determinations in this phased consistency approach.*

In determining whether a project provides “maximum feasible public access to the Bay”, the Commission often looks to its past actions on similar projects. The Commission has authorized several large marsh restoration projects in recent years, primarily in salt ponds and all with significant public access areas and improvements. In fact, some of the access trails to be eliminated with implementation of this project were the subject of previous Commission consistency actions.

The Commission should determine whether the proposed project is consistent with the Bay Plan policies regarding public access and appearance, design and scenic views, and whether the new plan to provide public access in this area, at the expense of some existing trails, makes sense in light of the proposed tidal restoration in the project area.

3. **Safety of Fills and Climate Change.** The Bay Plan policies on Safety of Fills state that “[a]dequate measures should be provided to prevent damage from sea level rise and storm activity that may occur on fill or near the shoreline over the expected life of a project.... New projects on fill or near the shoreline should...be built so the bottom floor level of structures will be above a 100-year flood elevation that takes future sea level rise into account for the expected life of the project.” The Bay Plan policies on Climate Change state, “within areas that a risk assessment determines are vulnerable to future shoreline flooding that threatens public safety, all projects... should be designed to be resilient to mid-century sea level rise projection” and “[i]f it is likely the project will remain in place longer than mid-century, an adaptive management plan should be developed to address the long-term impacts that will arise....” The Climate Change policies go on to state that, “[u]ntil a regional sea level rise adaptation strategy can be completed, the Commission should evaluate each project proposed in vulnerable areas on a case-by-case basis to determine the project’s public benefits, resilience to flooding, and capacity to adapt to climate change impacts.” The policies also state that natural resource restoration projects “should be encouraged, if their regional benefits and their advancement of regional goals outweigh the risk from flooding.”

A primary project purpose is to protect the community of Alviso, neighboring businesses, and the San Jose Wastewater Treatment Plant from tidally flooding. The Corps states that implementation of the concept plan “...will provide protection from a one-percent annual chance of exceedance (ACE) flood through the end of the 50-year period of analysis, accounting for sea level rise under the USACE high scenario. Additionally, this project will tie into the surrounding FRM [flood risk management] projects, which also provide protection from a one-percent ACE flood.” The Corps’ consistency further states “the project is consistent with USACE planning policies, which calls for a typical period of analysis of 50 years.” “Regardless, USACE conducted an end-of-century analysis (through 2100) using the high sea level rise rate. The analysis showed that even with extremely high sea level rise, the project will be resistant through 2067. As designed, the project could likely obtain right-of-ways to expand [sic] the FRM levee beyond 2067 to 2079; however, beyond this date additional detailed analysis will likely be required and additional right-of-ways obtained.”

For the period from 2017 through 2067 (approximately mid-century), the Corps used a low rate of sea level rise of 6.12 inches and a high rate of 31.08 inches. For the period from 2017 through 2100 (end of century), the Corps used a low rate of sea level rise of 31.08 inches and a high rate of 60.6 inches. The Commission, based on the National Research Council projections, currently uses sea level rise projections ranging from 10-17 inches at mid-century (2050) and 31-69 inches through the end of the century. The Corps’ Consistency Determination states that the results of the Corps’ analysis “indicate that for the low rate, the project will provide a level of risk reduction for the one-percent bayside water level through the year 2100. The current FEMA certification requirement of two feet of freeboard will also be maintained. For the high rate the project will provide risk reduction against the one-percent bayside ACE water level through 2094; however, the 2-foot FEMA certification requirement will only be maintained through 2067.... The project is resilient to 2067 (mid-century). Based on

consideration of actionable climate science, the earliest date that would trigger a comprehensive revision of flood risk in the area would be year 2067 if a significant acceleration of sea level rise occurred, resulting in the high sea level rise scenario. The project will have adaptive capacity to elevation 16.0 feet NAVD88.... Beyond this time, additional plans will need to be made.”

The Commission should determine whether the fill proposed with the project is consistent with the Commission’s safety of fills and sea level rise policies.

4. Natural Resources

- a. **Tidal Marshes and Tidal Flats.** The Bay Plan policies on tidal marshes and tidal flats state, “where and whenever possible, former tidal marshes and tidal flats that have been diked from the Bay should be restored to tidal action in order to replace lost historic wetlands or should be managed to provide important Bay habitat functions....” The policies also state, “[a]ny ecosystem restoration project should include clear and specific long-term and short-term biological and physical goals, and success criteria, and a monitoring program to assess the sustainability of the project. Design and evaluation of the project should include an analysis of: (a) how the system’s adaptive capacity can be enhanced so that it is resilient to sea level rise and climate change; (b) the impact of the project on the Bay’s sediment budget; (c) localized sediment erosion and accretion; (d) the role of tidal flows; (e) potential invasive species introduction, spread, and their control; (f) rates of colonization by vegetation; (g) the expected use of the site by fish, other aquatic organisms and wildlife; (h) an appropriate buffer, where feasible, between shoreline development and habitats to protect wildlife and provide space for marsh migration as sea level rises; and (i) site characterization. If success criteria are not met, appropriate adaptive measures should be taken.” The policies further state that, “[b]ased on scientific ecological analysis and consultation with the relevant federal and state resource agencies, a minor amount of fill may be authorized to enhance or restore fish, other aquatic organisms or wildlife habitat....”

The project would restore approximately 2,900 acres of tidal marsh habitat to areas long diked off from the Bay and used for salt production. While it will take many years for the area to be fully restored, each step on the way to evolving into a tidal marsh would provide benefits to Bay resources as the site moves from subtidal flats, to intertidal flats, and eventually to tidal marsh. In addition, the ecotone would provide habitat diversity, and a place where tidal marsh can transgress inland with rising seas.

The Corps is proposing a 10-year monitoring program so that it can assure the project meets ecosystem restoration objectives and to provide information allowing land managers to adaptively manage the site. Some elements of that monitoring program include: (1) measurements of water levels, sediment accretion rates, and suspended sediment concentrations; (2) tidal marsh habitat acreage; (3) abundance of non-native plants; (4) plant species composition in upland transition zones; and (5) predators of Ridgeway’s rail and salt marsh harvest mice. After 10 years, the non-

federal sponsors would be responsible for continuing any additional monitoring. However, because so much of the project area has subsided, it will likely take several years before sufficient sediments accumulate in many of the ponds sufficient to achieve elevations that will support marsh vegetation. Thus, it is likely that after 10 years, the restored ponds will only be sparsely vegetated. In addition, 10 years is probably too soon for much relevant information to be gathered about how the ecotone functions in the face of sea level rise, information of key interest to other efforts to assure that San Francisco marshlands persist as sea level rises, and the effectiveness of ecotones (AKA horizontal levees) as an adaptive strategy.

- b. **Fish, Other Aquatic Organisms and Wildlife.** The Bay Plan policies on Fish, Other Aquatic Organisms and Wildlife state that, “[t]o assure the benefits of fish, other aquatic organisms and wildlife for future generations... the Bay’s tidal marshes, tidal flats, and subtidal habitat should be conserved, restored, and increased.” These policies also state that “[t]he Commission should consult with the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service or the National Marine Fisheries Service whenever a proposed project may adversely affect an endangered or threatened plant, fish, other aquatic organism or wildlife species...and give appropriate consideration of (their) recommendations in order to avoid possible adverse impacts of a proposed project on fish, other aquatic organisms and wildlife habitat.”

A primary project purpose is restoring approximately 2,900 acres of former salt ponds to full tidal action and their eventual evolution to tidal marsh habitat. While the population of some species in the area are likely to decline with the loss of pond habitat, breaching the levees is likely to result in immediate benefits to water quality, tidal circulation, and the populations of a great many other species, including most endangered and special status species such as the Ridgway’s rail, California black rail, salt marsh harvest mouse, steelhead, and green sturgeon. Based on the results of other restoration projects, the benefits to fish and wildlife can be expected to be dramatic and significant, though it will be many years before fully functioning tidal marsh becomes established

The USFWS issued a biological opinion for this concept plan on April 27, 2015. The NMFS issued a not likely to adversely affect concurrence letter on May 19, 2015. Because the CEQA document has not yet been certified, California Fish and Wildlife has not yet issued a California Endangered Species Act incidental take permit.

- c. **Water Quality.** The Bay Plan policies on Water Quality state, “Bay water pollution should be prevented to the greatest extent feasible. The Bay’s tidal marshes, tidal flats, and water surface area and volume should be conserved and, whenever possible, restored and increased to protect and improve water quality.” The policies also state, “[w]ater quality in all parts of the Bay should be maintained at a level that will support and promote the beneficial uses of the Bay as identified in the San Francisco Bay Regional Water Quality Control Board’s (RWQCB) Basin Plan and should be protected from all harmful or potentially harmful pollutants.” The policies, recommendations, decisions, advice, and authority of the State Water Resources

Control Board and the Regional Board should be the basis for carrying out the Commission's water quality responsibilities." Finally, the Bay Plan policies on Water Quality state that "new projects should be sited, designed, constructed, and maintained to prevent or, if prevention is infeasible, to minimize the discharge of pollutants into the Bay by: (a) controlling pollutant sources at the project site; (b) using construction materials that contain nonpolluting materials; and (c) applying appropriate, accepted, and effective best management practices; especially where water dispersion is poor and near shellfish beds and other significant biotic resources."

With the introduction of tidal action into the ponds and the project elements designed to promote tidal circulation (e.g. dredging starter channels, lower outer salt pond berms, placing ditch blocks in former borrow ditches), water quality in the area would improve. With improving on-site circulation and drainage patterns and the establishment of marsh vegetation, these areas would have enhanced wetland function which, in turn, would increase the natural water-filtering capability of the marsh. There is the potential for temporary impacts to water quality during construction activities, but several measures are proposed to reduce construction impacts on water quality, including the installation of a berm or silt fences around stockpiled soils during construction to minimize erosion and sediment migration, locating construction staging areas in uplands and confining them to as small an area as possible, and providing environmental sensitivity training to contractors working on the project.

One potential water quality concern is the project's potential to expose fish and wildlife to methyl mercury. Alviso and Artesian Sloughs are known to have relatively high mercury concentrations from sediments washed from historic mercury mines in the upper watershed. Mercury is taken in by wildlife primarily through prey contaminated with methyl mercury, which readily binds to living tissue and accumulates in aquatic food webs. We are beginning to understand better how mercury becomes methylated and hence, bioavailable. Mercury is converted to methyl mercury in anoxic conditions. Hence, a site with well oxygenated tidal water regularly flushing the site is not expected to methylate mercury as readily as ponds. However, construction activities, such as dredging connecting channels across fringe marshes to connect breaches to adjacent slough may expose some wildlife to mercury buried in the muds. There are studies underway to increase our understanding about how mercury is methylated in wetlands and how best to manage and reduce the methylation of mercury in restored wetlands. *As project plans are developed, it is expected that the project partners will use the best available science to reduce the risk of mercury exposure, measures likely to be required in future project consistency determinations.*

Water Quality Certification will not be obtained from the San Francisco Bay Regional Water Quality Control Board until the preconstruction engineering and design (PED) phase of the project.

The Commission should determine whether the project is consistent with its laws and policies regarding natural resources and water quality.

B. Review Boards

1. As the Shoreline Plan is still conceptual, and because of the very limited time allowed to review consistency determinations under the CZMA, neither the Engineering Criteria Review Board nor the Design Review Board have reviewed the project to date. Future reviews by these review boards are anticipated.

- C. **Environmental Review.** The CEQA document prepared for the project has not yet been certified, which will occur after final state and agency review of the final EIR and statement of overriding consideration. A summary of the *draft* EIR is attached.

D. Relevant Portions of the McAteer-Petris Act

1. Section 66602
2. Section 66605
3. Section 66632

E. Relevant Portions of the San Francisco Bay Plan

1. *San Francisco Bay Plan* Policies on Fish, Other Aquatic Organisms, and Wildlife
2. *San Francisco Bay Plan* Policies on Water Quality
3. *San Francisco Bay Plan* Policies on Water Surface Area and Volume
4. *San Francisco Bay Plan* Policies on Tidal Marshes and Tidal Flats
5. *San Francisco Bay Plan* Policies on Subtidal Areas
6. *San Francisco Bay Plan* Policies on Safety of Fills
7. *San Francisco Bay Plan* Policies on Climate Change
8. *San Francisco Bay Plan* Policies on Public Access
9. *San Francisco Bay Plan* Policies on Salt Ponds

Exhibits

- A. **Project Vicinity**
- B. **Levee Impact**
- C. **BCDC Jurisdictional Areas**
- D. **Typical Levee Cross Section**
- E. **Typical Cross Section of the Proposed Ecotone with 30:1 Side Slopes at Year 2021**
- F. **Typical Cross Section of the Restored Ecotone at Year 2067**
- G. **South Bay Shoreline Phase I Proposed Public Access and Recreational Trail System**
- H. **Environmental Impact Report (EIR) Summary**