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SOUTH BAY SALT POND RESTORATION PROJECT
PHASE 1 PONDS A16 AND A17

BIOLOGICAL ASSESSMENT

U.S. FISH & WILDLIFE SERVICE
U.S. ARMY CORPS OF ENGINEERS
CALIFORNIA DEPARTMENT OF FISH AND GAME

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A. EXECUTIVE SUMMARY

Alviso Pond A16 will be reconfigured to create 242 acres of high quality managed pond habitat, incorporating islands for nesting birds and shallow water habitat for foraging shorebirds. Pond A17 will be modified to provide water to Pond A16, but hereafter the action at these two ponds is referred to as the "Pond A16 action" unless specific reference to activities at Pond A17 is being made. The Pond A16 action is part of the first phase of the South Bay Salt Ponds (SBSP) Restoration Project, and as a result, the Biological Assessment (BA) for the Phase 1 activities at Pond A16 is tiered to the Programmatic BA. The goals of the A16 project are consistent with the goals and objectives of the Programmatic SBSP Project. The Programmatic BA summarizes the status of federally listed and proposed species, designated Critical Habitat, and Essential Fish Habitat (EFH) that occur within the region and indicates those that do and do not occur within the Programmatic Action Area. As indicated in the Programmatic BA, a number of federally listed or proposed species are known to occur in the region but are not present within the SBSP Project Action Area, and thus will not be affected by the Project, including the A16 Phase 1 project. This document addresses the federally listed and proposed species, designated Critical Habitat, and EFH that may be affected by the A16 project.

Table 1 contains a list of all species federally listed as threatened or endangered, or species proposed for federal listing, as well as Critical Habitat for these species, that may be affected by the proposed activities at Pond A16. EFH within the Pond A16 Action Area is also included in Table 1.

Table 1. Listing Status and Effects Determinations for Federally Listed/Proposed Species, Critical Habitat, and Essential Fish Habitat for Proposed Pond SF2 Project.

Scientific Name	Common Name	Listing Status*	Effect Determination**
Reithrodontomys raviventris raviventris	salt marsh harvest mouse	FE, SE, SP	LAA
Rallus longirostris obsoletus	California clapper rail	FE, SE, SP	LAA
Charadrius alexandrinus nivosus	western snowy plover (coastal population)	FT	LAA
Sternula antillarum browni	California least tern	FE, SE, SP	LAA
Pelecanus occidentalis californicus	California brown pelican	FE, SE, SP	NLAA
Oncorhynchus mykiss	Central California Coast steelhead ESU	FT	NLAA
Critical Habitat, *Oncorhynchus mykiss*	Central California Coast steelhead ESU	Designated	NLAA
Acipenser medirostris	Southern DPS North American green sturgeon	FT	NLAA
Northern anchovy (*Engraulis mordax*), Pacific sardine (*Sardinops sagax*), jack mackerel *Trachurus symmetricus*)	Coastal Pelagics Fishery Management Plan (FMP)		MAA

Scientific Name	Common Name	Listing Status*	Effect Determination**
(e.g., leopard shark [*Triakis semifasciata*], soupfin shark [*Galeorhinus galeus*], Pacific sanddab [*Citharichthys sordidus*], starry flounder [*Platichthys stellatus*])	Pacific Groundfish FMP (Estuarine Composite)		MAA
	Pacific Groundfish FMP - Eelgrass Habitat Area of Particular Concern (HAPC)		MAA
	Pacific Groundfish FMP -Estuary HAPC		MAA
Chinook salmon (*Oncorhynchus tshawytscha*), Central Valley fall-run ESU	Pacific Coast Salmon FMP		MAA

* Status: Federal Endangered (FE), Federal Threatened (FT), State Endangered (SE), State Protected (SP)

** Effects: No Effect (NE), Not Likely to Adversely Affect (NLAA), Likely to Adversely Affect (LAA), May Adversely Affect (MAA)

B. DESCRIPTION OF THE PROPOSED ACTION

Alviso Pond A16 will be reconfigured to create islands for nesting birds and shallow water habitat for foraging shorebirds (Figure 1 and Figure 2a). Water in Pond A16 will be managed with 3 new water control structures (including a new intake structure between Coyote Creek and Pond A17, where water will enter the A16/A17 system), and development of an internal water circulation system using a series of berms and control structures such as flashboard weirs. In addition, a viewing platform and two interpretive stations will be constructed at Pond A16. Buffers between nesting islands and outboard levees have been built into the design to limit the impacts of recreational activities on nesting and roosting birds.

The design elements within Pond A16 will be the subject of an applied study which will test the effects of different island spacing and shapes on use by, and reproductive success of, nesting and roosting birds. In addition, different water management regimes will be tested to determine the best method for managing the pond for the target wildlife during the breeding and non-breeding seasons. The effects of public access on bird use of, and reproductive success on, nesting islands will also be studied.

Project Location

Pond A16 is located in the South San Francisco Bay and is bordered by Pond A17 and Coyote Creek to the north; Artesian Slough to the east; New Chicago Marsh and the Don Edwards San Francisco Bay National Wildlife Refuge (Refuge) Environmental Education Center (EEC) to the south; and the New Chicago Marsh intake channel, Union Pacific Railroad (UPRR), and Alviso Ponds A15 and A13 to the west (Figure 1). Pond A16 is owned by the U.S. Fish and Wildlife Service (USFWS) and is part of the Refuge.

Proposed Design Elements

The Pond A16 design includes the following features intended to create islands for nesting birds and shallow water habitat for foraging shorebirds, as well as to allow public access and interpretive public education at this site:

- Nesting islands.
- Earth berms.
- Water control structures.
- Borrow ditch filling.
- Recreational Access/Facilities.

These features are described in more detail in the following sections.

Nesting Islands. Nesting islands will be constructed within Pond A16 to provide bird nesting habitat (Figure 2a and Figure 2b). Figure 3 and Figure 4 show typical plans and sections for the circular and linear nesting islands, respectively. Material needed to construct islands will be borrowed onsite, from the windward side of the islands, with a minimum 10-foot bench between the borrow area and toe of the new island. It is estimated that due to soil characteristics, side

slopes will need to be 5:1 or flatter to construct stable islands. Currently 25 circular islands and 25 linear islands are proposed in Pond A16 (Figure 2b). Each island will be approximately 3 ft high, have a surface area of approximately 15,000 ft^2, and a minimum distance of 100 ft from other islands. To isolate islands from recreational trails and land-based predators, they will be at least 300 ft from outboard levees, 100 ft from internal berms, and 600 ft from the public viewing platform (Figure 5).

The nesting islands are expected to settle over time due to the weak and soft condition of the Bay mud. Maintenance is expected to be required within about 5 to 10 years to raise the nesting islands, unless the lower, subsided nesting island elevations are used successfully by nesting birds.

In locations where the borrow areas for the nesting islands are near historic channels in the cells, the borrow areas will be excavated to connect to these channels. This is expected to facilitate circulation within these borrow areas. In other locations, connections will not be excavated to borrow areas except to facilitate construction access.

Earth Berms. Earth berms will be constructed in Pond A16 to divide the pond into three cells. Berm design may vary slightly for berms along the intake canal, outlet canal, and those between cells. As with islands, material needed to construct the berms will be borrowed onsite, with a minimum 10-foot bench between the borrow area and toe of the new berm. The berms will range in height from approximately 2 to 6 ft. It is estimated that berm side slopes will also need to be 5:1 or flatter. As discussed for the nesting islands, maintenance is expected to be required within about 5 to 10 years to raise the berms due to settlement.

Water Control Structures. Water control structures for the Pond A16 restoration will include culverts and flashboard weirs. The water control structures are designed to achieve an average cell water depth of approximately 6 in (range: 2 in to 1 ft), provide adequate flushing for bird habitat and water quality objectives, prevent salmonid entrapment, and minimize manual management while increasing management flexibility. The preliminary design includes the water control structures described below.

Pond A17 Intake Structure. Water will enter the A16/A17 pond system through a new Pond A17 intake structure between Coyote Creek and Pond A17 (Figure 2a). This structure will consist of two new 4-ft intake culverts with combination slide/flap gates on each end (i.e., on both sides of the culverts), in addition to the single existing 4-ft culvert with combination slide/flap gates. The culverts will have trash racks on the Coyote Creek side. Also, there will be a new structure consisting of four culverts with a fish screen on one of the culverts on the Coyote Creek side, and flap gates on the Pond A17 side. . In order to prevent entrainment of salmonids, the fish screen will be the only intake for the ponds between 1 February through 31 May when steelhead are most likely to be present; in summer other intakes will be opened to provide inflow to the ponds. Fish screens may require protection from large floating debris and maintenance to remove deposited sediment (Figure 6). These issues will be evaluated during final design. The average summer inflow at Pond A17 will be 63 cfs, with a maximum of 353 cfs. Average and maximum winter inflows will be 23 cfs and 118 cfs, respectively.

A pilot channel will be excavated from Coyote Creek to the structure through the existing fringe marsh. The preliminary design includes a 20-ft long trapezoidal pilot channel with 3:1 side slopes. The channel is anticipated to have a 75-ft top width and a 28-ft bottom width. The channel will be excavated to a depth of approximately 7.5 ft below the adjacent marsh plain; the channel bottom will be about 1 ft below the culvert invert.

The currently proposed location of the structure is the northwest corner of Pond A17, near the western end of the levee between Coyote Creek and Pond A17; however, the final location of this structure, and the potential for flow to the structure to cause scour at the Coyote Creek railroad bridge, are still being evaluated. The outboard marsh is narrowest in this location, therefore installing the culvert in this location will reduce the area of outboard marsh excavation required for the pilot channel.

Pond A16 Intake Structure. Three new 4-ft intake culverts, with combination slide/flap gates on the ends of each will be added between Pond A17 and Pond A16 (Figure 2a). This structure will be located in the existing channel cut between the ponds. The new Pond A16 intake structure is recommended to provide flexibility and ease of managing water levels in Pond A17.

The existing channel cut between Ponds A17 and A16 could remain open without installing culverts; however, Pond A17 water levels would need to be managed by adjusting the Pond A16 cell intake structures (multiple weirs as discussed below). As the restoration will increase flows between Pond A17 and A16, measures would be required to reduce scour of the levees along the existing channel cut, such as enlarging or armoring the channel. Hydraulic modeling indicates that the existing channel would need to be enlarged to twice the existing dimensions. The option of leaving the channel cut between A16 and A17 open (and possibly widening it), rather than installing new A16 intake culverts in this channel, will be further evaluated as the design progresses.

Cell Intake and Outlet Structures. Weirs with adjustable flashboard risers (flashboard weirs) will be used to control flow in and out of cells (Figure 2a). Each cell in Pond A16 will have two intake and two outlet structures, each consisting of multiple 4-ft wide weirs. Cell 1 will have two 4-ft wide flashboard weirs per intake and outlet structure, and Cells 2 and 3 will have three 4-ft wide flashboard weirs per intake and outlet structure. Additional flashboard weirs may be included and buried in the adjacent berm to provide stability.

In addition, Cells 2 and 3 will have "auxiliary" structures to provide management flexibility for seasonal operations and intermittent management (e.g., draining). Some cell outlet structures will be located where deeper historic channels and borrow ditches cross the berms. These structures will include culverts to flush deeper water from these channels. These culvert structures will also have flashboard weirs to control flows and water levels. Similar structures will connect the intake canal to the outlet canal in two locations.

Pond A16 Outlet Structure. Six new 4-ft outlet culverts, with combination slide/flap gates on both ends of each culvert, will be added between Pond A16 and Artesian Slough (Figure 2a). This new structure will be located to the south of the existing outlet culvert, which is a single 4-ft outlet culvert with combination slide/flap gates. A pilot channel will be excavated through the

existing fringe marsh from the structure to the Artesian Slough side channel along the southeastern edge of Pond A16. The preliminary design includes a 50-ft long trapezoidal channel with 3:1 side slopes. The channel is anticipated to have a 105-ft top width and a 48-ft bottom width. The channel will be excavated to a depth of approximately 9.5 ft below the adjacent marsh plain; the channel bottom will be about 1 ft below the culvert invert. If necessary, Pond A16/A17 may be managed as 2-way flow in summer to address water quality issues. Average summer inflow will be approximately 15 cfs and maximum inflow will be approximately 106 cfs. The existing and proposed structure between A16 and Artesian Slough will be constructed so that they can be operated as intake or outlet structures. However, they will be operated as discharge only in the winter and primarily discharge but with potentially small intakes in the summer to maintain water levels (outlet only 1 February to 31 May, and no restrictions 1 June to31 January).

Borrow Ditch Filling. Imported fill material will be used to fill the borrow ditches, if and when fill material of acceptable quality is readily available. Filling the borrow ditches is expected to improve water quality by reducing the potential for water column stratification and hypoxic conditions in the bottom layer. The borrow ditches will be filled in stages through an adaptive management process. This process will require different sections of the borrow ditch to be filled to varying elevations in stages. The section of the borrow ditch used as the Pond A16 intake canal will be filled first to improve cell intake water quality. Water quality monitoring in sections of the borrow ditches, with different fill elevations (or no fill), will determine the effectiveness of, and need for, additional borrow ditch fill in the pond. Borrow ditches provide island-nesting birds with some protection against mammalian predators, and thus, filling these ditches could increase predation risk for these birds to some extent. However, predator control will be implemented as part of the larger SBSP Project, and predation problems noted at Pond A16 will be addressed appropriately.

Approximate fill elevations and volumes are based on neat line quantity estimates and do not include the effect of settlement of underlying Bay mud, which is expected to decrease fill elevations over time. The fill elevations are intended to decrease borrow ditch depths while maintaining the hydraulic function of the intake and outlet canals and berm stability (i.e., not filling the intake canal borrow ditch above the elevation of the pond bed). Determining the optimal amount of fill will require additional analysis, and a review of the trade-offs between improving water quality and maintaining the canals as deterrents to access of nesting islands by mammalian predators. Stage order and fill elevations may change due to adaptive management and fill availability.

Recreational Access/Facilities. The recreational features within the Alviso pond complex would be managed by the Refuge as part of the current public access program. Currently, the Refuge allows pedestrian and bicycle access (no dogs) on the Alviso Slough Trail, including the levees around A16 and A17. Phase 1 will continue to allow the same public access around these ponds. However, studies of the effects of public access on use of islands by nesting birds, and reproductive success of nesting birds, will be conducted, and results of those studies will be used to determine whether periodic closures of trail segments to protect sensitive wildlife are needed.

The public access and recreation plan for the Phase 1 actions at Pond A16 includes a proposed viewing platform and two interpretive stations that would be accessible from the existing levee along the Pond A16 and Artesian (Mallard) Slough levee trail network that currently encircles Ponds A16 and A17 (Figure 5). These recreational features would be accessed from the Refuge Environmental Education Center (EEC), or possibly from the trail network originating at the Alviso Marina County Park. The interpretive stations would be located at strategic locations along this existing trail network to provide visitors with unique viewing, birding and educational opportunities, as well as information about the transformation of Pond A16 as a managed pond. These interpretative stations will be constructed of a combination of wood and steel and sized based on the site location. A portion of the levee will need to be resurfaced to provide a firm and stable surface to conform with Americans with Disabilities Act (ADA) standards.

Pond A16 Viewing Platform. The Pond A16 viewing platform would be installed at the southern edge of Pond A16 (Figure 5), approximately 0.75 miles from the existing EEC boardwalk, allowing visitors relatively easy access to this station. The platform would be raised between 5 and 10 ft above the existing grade of the levee, allowing visitors to overlook the managed pond restoration in Pond A16. An interpretive station would be incorporated into the design of the viewing platform. The year-round trail from the EEC to the viewing platform will be incorporated into the levee along the southern edge of Pond A16 and will bisect Pond A16 and New Chicago Marsh. The platform would be constructed of steel and recycled plastic and accessed by an ADA-compliant ramp and a set of stairs, which are configured to minimize circulation areas while maximizing useable gathering and viewing space (Figure 7). A railing will be designed to provide a safety edge and to facilitate a comfortable birding experience. An interpretive station and seating is integrated into the platform.

Pond A16 Interpretive Station. A second interpretive station would be located adjacent to the freshwater marsh area along the eastern edge of the pond, approximately 0.8 miles from the existing boardwalk. The exact location of the station will be based on field conditions of the site. The interpretive station would be adjacent to the existing trail and would augment information provided at the other station.

Access

The land access route for both workers and equipment will be via Zanker Road, off Highway 237, and through the EEC entrance to the Pond A16 levees. The levees may require grading and widening improvements for construction access. The water access route to the site will be from the Bay via Coyote Creek, Artesian Slough, and/or the ponds to the north of Pond A16. Water access from the Bay is constrained by the Union Pacific Railroad (UPRR) railroad bridges. The Coyote Creek bridge can no longer be opened, however the Mud Slough bridge can be opened to provide barge access. From Mud Slough, barge access to the site will be allowed through the Island Pond A20 dredge lock, borrow ditch, and breach to Coyote Creek, if the contractor determines that this is possible. This route was used by Cargill prior to breaching the Island Ponds (Patrick Mapelli, pers. com.). Small modular barges may be assembled after being transported to the site. Small barges may also be launched at the San Jose boat ramp in Artesian Slough. Amphibious equipment may access the site through the ponds to the west of the UPRR and the road crossing the UPRR between Ponds A15 and A16. This road may require grading and widening improvements for access.

Water access to the Pond A16 site may occur at the new Pond A17 intake structure, new Pond A16 outlet structure, and the existing Pond A16 and Pond A17 dredge locks. Hydraulic dredging at the structure locations will be used to excavate the pilot channels and establish water access channels. Excavation for water access may exceed the pilot channel excavation dimensions, with water access channel widths of up to 150 ft, depths of up to 8 ft, and side slopes of up to 3:1, unless otherwise specified. Any structure built to provide water access (e.g., dock, piles, etc.) will be removed as part of demobilization.

A staging area will be constructed to store and refuel construction equipment. The staging area will be located on a portion of the Ponds A16 and A17 levees and may be enlarged using fill material. A second or alternative staging area may be located near the EEC. Conservation measures will be followed to enclose fueling areas and limit construction impacts, in accordance with State and County requirements and the conservation measures listed in the Programmatic BA.

Construction Process

Equipment and personnel to be used during construction will generally be as described in the Programmatic BA. Due to the location of the Pond A16 restoration project, construction methods, equipment, and access are more constrained than at a typical construction site. To assist with construction access and methods, Pond A16 will be drained prior to construction. Draining the ponds will incrementally consolidate the surface mud, increasing workability for fill operations. It is expected that this will not allow sufficient drying of the pond bottom for the use of conventional construction equipment or even low ground pressure equipment. If reconnaissance prior to construction bidding shows that sufficient drying is unlikely to take place by the start of construction, then it is anticipated that the ponds will be inundated and amphibious and/or water-based (marine) construction equipment will be required.

Islands and berms will be the primary earthwork components of the Pond A16 restoration. It is reported by Cargill (Patrick Mapelli, pers. comm.), which has constructed islands in this pond previously, that borrow material varies in this location and is not always optimal for earthwork construction. If draining and drying are insufficient, borrow material may have a high water content. Due to this and other soil characteristics, material may be prone to slumping during construction. Islands and berms will require a minimum of two lifts, with wait time in between, to achieve the desired elevation. Cargill has achieved approximately 18 inches per lift in previous island and levee construction (Patrick Mapelli, pers. comm.). Construction of the existing Pond A16 islands was done in-the-wet. New island and berm heights will need to be over-built 20% or more to allow for settlement after construction.

Culvert pipe water control structures in existing and new levees will be installed by cutting a trench in the levee. Culvert pipes will be placed on a layer of rock base over a geofabric layer between the underlying Bay mud and the rock. Backfill will be compacted in lifts. Wood headwalls and wingwalls on either side of the levee will be supported by wood piles. Sheetpile cofferdams will probably be needed on the creek and slough sides of the Pond A17 intake structure and Pond A16 outlet structure. The need for limited dewatering is anticipated while the trench is open. The fish screen at the Pond A17 intake structure will be placed close enough to

the existing levee so that it can be removed for maintenance with a backhoe. Pre-cast concrete flashboard weirs will be placed in new berms within Pond A16. The contractor will determine whether flashboard weirs are placed first and the berm built around them, or vice versa.

Construction preparation:

- Water control will be necessary to drain the site for land-based equipment and/or maintain depth for floating equipment.
- Equipment will be transported to the site on trucks via existing levee roads or sloughs (see *Access* section).
- Sheet pile will be installed around the water control structure locations and the construction areas will be de-watered with portable pumps.

Design element construction details:

- Low check berms will be constructed to create a series of 3 cells. Check berms will range in height from approximately two to six feet (0.6 to 2.0 meters). The berms will be constructed by excavating fill material on-site.
- Water control structures, such as flashboard weirs, will be installed in the berms to regulate flow into and out of the cells.
- New intake/outlet water control structures with tide gates will be installed (or existing water control structures will be modified) between Coyote Creek and A17, and between A16 and Artesian Slough.
- Intake and outlet canals will be created in Pond A16 to convey flow in and out of individual cells. The canals will be located around the perimeter of the cells in portions of the deep existing borrow ditch and remnant tidal channels in Pond A16.
- Intake and outlet canals will be constructed to convey water to and from individual cells.
- A fish screen will be installed on any culvert(s) within the intake structures into Pond A17 that are operated as intakes from 1 February to 31 May.
- Approximately 50 nesting islands (25 circular and 25 linear) will be constructed within the four cells. Each island will be approximately three feet high and have a surface area of approximately 15,000 ft^2. The islands will be constructed using fill material excavated from the windward side of the islands.
- Water levels will be managed to provide an average depth of approximately 6 in, with depths ranging from approximately 2 in to 1 ft though with some deeper areas around islands, in borrow ditches, and in other portions of the pond.
- A viewing platform will be constructed in the southwestern corner of Pond A16. The platform will be raised above the existing grade of the levee between 5 and 10 ft and will be constructed of steel and recycled wood with ramps and railings as needed.
- An additional interpretive station will be located on the eastern edge of Pond A16 in a central location, approximately 0.8 miles from the existing boardwalk.

Construction Schedule

Restoration construction at Pond A16 is expected to occur over 2 to 3 seasons within a 24 to 36 month period. Unless measures are implemented to prevent sensitive species from nesting in the

project area, the timing of construction (construction window) will avoid impacts to special-status species, such as western snowy plovers, and other sensitive species, including nesting birds such as terns, avocets, and stilts that currently nest on existing island in A16.

Construction can start at the beginning of the dry season if nesting is prevented. Nesting may be prevented by hazing or by removing the existing islands prior to the breeding season. Regardless, when the pond is drained for construction, it likely will serve as nesting habitat for some species, most likely including gulls, terns, avocets, stilts, and potentially western snowy plovers. Therefore, the construction windows and/or pre-construction surveys for nesting gulls, terns, avocets, stilts, and western snowy plovers will be implemented.

If the pond needs to be dry during work, hazing, beginning prior to nesting, may be employed to try to prevent nesting. Once the pond is dry, pre-construction surveys will be performed before work begins to make sure that no plovers (or other nesting birds) will be disturbed. Using disturbance-free buffers around active nests might be acceptable if there are few nests (allowing the work to occur outside the buffers). After the plovers have chicks, work on portions of the pond can be performed as long as the chicks are able to move well away from the work area and safely forage (possibly with some monitoring to ensure that the plovers stay away from the work area). If construction occurs with amphibious or floating equipment, then the pond may be flooded to prevent nesting in the pond bottom prior to construction. In this case, a combination of hazing prior to nesting, pre-construction surveys, and/or buffers around existing nests would be implemented with respect to the possibility of nesting on the existing islands, or these islands would be removed prior to the breeding season.

After construction has been completed, inundation of the pond during the western snowy plover nesting season of February 1 to September 20 (which encompasses the nesting season of other potential pond-breeding birds) can occur only if pre-construction surveys (and monitoring, if plovers are detected within the pond) determine that no plovers are actively nesting within the pond (i.e., there are no nests with eggs) and all young have fledged. Start dates between September 20 and February 1 for construction activities that do not involve inundating the pond will be allowed only if pre-construction surveys and monitoring determine that no plovers are actively nesting within the pond and all young have fledged, or that active nest sites with eggs are located more than 600 ft from the construction site. After the plovers have chicks, work in specific portions of the pond, not involving inundating the pond, can be performed as long as the chicks are able to move well away from the work area and safely forage (possibly with some monitoring to ensure that the plovers stay away from the work area). These same considerations will be made for other waterbirds, including terns, avocets, and stilts, that may breed in Pond A16. These species are finished nesting by August 1 in most years, but a few late pairs may have young through August.

An abbreviated call-count survey protocol (e.g., two surveys using tape playbacks during the February to mid-March primary calling period) will be conducted to confirm the absence of California clapper rails prior to any construction or excavation work that will take place along Coyote Slough during the breeding season (i.e., between February 1 and August 31). If these surveys indicate the presence of California clapper rails, construction activities between February 1 and August 31 will be allowed only at a distance greater than 700 feet from rails in adjacent

marsh areas and a distance greater than 200 feet from rails across a major slough channel from the construction site. Otherwise, such construction and excavation activities will take place during the non-breeding season.

Juvenile steelhead outmigrate from freshwater rearing habitats to estuarine habitats March-May and adult steelhead in the South Bay usually migrate upstream to spawning areas from late December through early April, with peak of migration occurring January through 1 March. Activities associated with construction and excavation that increase turbidity and suspended sediment, or increase the risk of entrainment or stranding, will not occur when juvenile and adult steelhead are most likely to be present.

Construction and excavation activities may affect EFH species as well, although fall (when construction is most likely to occur due to nesting bird-related constraints) tends to be the time of year when the least number of EFH species occur in the Action Area. Leopard sharks pup between March and August with a peak in April and May. English sole larvae and juveniles are most common in the South Bay in the spring and summer months. Northern anchovy and starry flounder can be present year-round, but abundance tends to decrease in the late-fall and winter months. Chinook salmon smolts migrate to the estuary in mid-March to early May. Adult Chinook salmon generally migrate from the ocean to the South Bay tributaries from late September through November.

Conservation Measures

Conservation measures will follow appropriate measures as outlined in the South Bay Salt Pond Restoration project Conservation Measures Addendum.

Phase 1 Applied Studies

A number of applied research studies will be implemented as part of Phase 1 to answer questions regarding key project uncertainties related to ecosystem restoration. Specific applied studies that may be conducted in Pond A16 include studies to test the effects of island density, shape and distribution on bird nesting use and reproductive success. As part of Phase I, applied studies will be implemented to examine the potential impacts of landside public access on birds or other target species within Pond A16, as well as Pond SF2. Additional studies may be performed to study the effectiveness of management approaches to control vegetation encroachment on the nesting islands and shallow water foraging areas and to control mammalian and avian predation on waterbirds.

C. ACTION AREA

The Pond A16 Action Area includes Ponds A16 and A17, the adjacent reaches of Artesian Slough and Coyote Creek, outboard fresh and brackish marshes, adjacent portions of New Chicago Marsh and Triangle Marsh, and staging areas on Pond A16 and A17 levees. Water access may be gained from Mud Slough via the Island Pond A20 dredge lock, a borrow ditch and breach to Coyote Creek, from Pond A15, from the road crossing between Ponds A15 and A16, or via the City of San Jose boat ramp at Alviso Slough.. Land access to Pond A16 levees may also occur from Highway 237, Zanker Road, and the EEC. The Action Area also includes portions of San Francisco Bay that will be affected by discharge of water or sediment from A16 during construction and pond operation or that will be traversed by water-based equipment accessing Pond A16, and any other areas in the immediate vicinity of Pond A16 that could be directly or indirectly affected by noise, dust, or other factors resulting from the project.

D. ENVIRONMENTAL BASELINE

The description of species and their habitat in the Pond A16 Action Area were generally described in the Programmatic BA for the SBSP Project. The following descriptions are more precise with respect to the Pond A16 Action Area.

Salt marsh harvest mouse

The salt marsh harvest mouse is known to occur in New Chicago Marsh to the south and Triangle Marsh to the west of the project area. It likely occurs in the marshes immediately north of pond A17, and it may also be present in marsh habitat around the Pond A20 dredge lock.

California clapper rail

California clapper rails are known to be present in Triangle Marsh west of Pond A17 and are expected to breed there. They likely use the outboard marsh between Pond A17 and Coyote Creek only for foraging, due to the relatively narrow nature of this marsh, although use by breeding rails is possible. Although this marsh is brackish, dominated by alkali bulrush, such brackish marshes have been found to support breeding and wintering California clapper rails in the South Bay at least some years (H. T. Harvey & Associates 1990a, 1990b). Clapper rails may occasionally forage in the freshwater habitat of Artesian Slough (e.g., one was recorded along Artesian Slough near the Environmental Education Center in January 1999 and January-February 2001 [Santa Clara County Bird Data Unpublished]), but nesting in this freshwater habitat is not expected.

Western snowy plover

Western snowy plovers are not known to occur in Ponds A16 or A17. However, if these ponds are drained prior to construction, the pond bottom will provide potentially suitable nesting habitat. Plovers have been recorded in New Chicago Marsh to the south, though not in close proximity to Pond A16, and the species has not been recorded breeding in that marsh. Snowy plovers have occasionally bred in the impoundment to the southwest of Pond A16, between the UPRR tracks and Pond A12.

California least tern

California least terns forage in nearby ponds, and may occasionally forage in either pond A16 or A17, although no large numbers of this species have been recorded in the immediate project area. The USGS has recorded no least terns in either A16 or A17 during their monthly surveys from October 2002 to October 2007 (USGS, prelim. data). There are no records of California least terns breeding on or near the project area.

California brown pelican

California brown pelicans occasionally forage and roost in Ponds A16 and A17. The USGS recorded 79 brown pelicans in pond A16 in August of 2006, but no other brown pelicans at all during their monthly surveys from October 2002 to October 2007 (USGS, prelim. data).

Central California Coast (CCC) steelhead

Steelhead are not known to occur within Pond A16 or A17, but are present in Coyote Creek during upstream migration of adults (January-April) to spawning areas in the Coyote Creek watershed and downstream migration of both adults and smolts (February–May) heading toward the ocean. Steelhead could potentially move into these ponds, or into Artesian Slough, Mud Slough, or Pond A20 within the Action Area, although such occurrence is expected to be infrequent, and by small numbers of individuals.

Green sturgeon

Green sturgeon have been caught infrequently by anglers in the South Bay. Although the distribution of this species in the Action Area for Pond A16 restoration activities is poorly known, it is likely that green sturgeon occur very infrequently, and in low numbers, within Coyote Creek, Artesian Slough, Mud Slough, or Pond A20.

Essential fish habitat (EFH)

All subtidal and intertidal habitats within Artesian Slough, Lower Coyote Creek, Mud Slough, Pond A20, and in the portions of the open Bay within the Pond A16 Action Area represent essential fish habitat (EFH) for a number of species federally-managed under three fisheries management plans (FMPs; see Tables 8 and 9 in Programmatic BA). No FMP species are known to occur in Pond A16 and A17 at this time. Northern anchovy, starry flounder, and leopard shark have been collected from other ponds in the Alviso salt pond complex (see Programmatic BA for details). These three species and English sole are likely to use tidal channels, mudflats, and marsh edge habitats of the lowermost reaches of Coyote Creek as nursery and foraging habitat. In addition, juvenile and adult Chinook salmon use the lower portion of Coyote Creek as migration corridors between estuarine habitats and upstream spawning and rearing habitat in Coyote Creek and Guadalupe River. Juvenile Chinook salmon also use marsh edges, protected tidal channels and creeks for foraging and growth. Species that may occur in the A16 Action Area but much less frequently and in low numbers, are Pacific sardine, sand sole, and other elasmobranches (e.g., spiny dogfish, soupfin shark).

E. EFFECTS OF THE PROPOSED ACTION

Tables 2 and 3 outline the direct impacts of the proposed Phase 1 actions at Pond A16 on wetlands and other aquatic habitats. Direct impacts to 0.4 acres of fringing wetlands and 166.1 acres of "other waters", primarily within the existing pond and most due to excavation rather than fill, will ultimately lead to the creation of 242 acres of high-quality nesting and shallow water foraging habitat for waterbirds.

Table 2. Impacts to Wetlands or Other Waters from Public Access and Restoration Construction Activities of the SBSP Restoration Project: Alviso Pond A16.

Phase 1 Activities	**Pond A16**	
	Wetland	**Other Water**
a) Construct Interpretive Station		
• Approximate Length of Impact, *ft*	0	0
• Estimated Volume of Fill Material for Construction, *cubic yards*	0	0
• Estimated Area of Impact for Construction, *acres*	0.04	0
b) Improve and Extend Bay Trail Spine and Other Trails (assume 8 ft wide)		
• Approximate Length of Impact, *ft*	0	0
• Estimated Volume of Fill Material for Construction, *cubic yards*	0	0
• Estimated Area of Impact for Construction, *acres*	0	0
c) Construct Raised Viewing Platforms		
• Approximate Length of Impact, *ft*	40	0
• Estimated Volume of Fill Material for Construction, *cubic yards*	0.0001	0
• Estimated Area of Temporary Impact, *acres* (assume entire footprint over jurisdiction)	0.03	0
• Estimated Area of Impact for Construction, *acres*	0.04	0
d) Excavate Pilot Channel		
• Approximate Length of Impact, *ft*	94	0
• Estimated Volume of Excavated Material for Construction, *cubic yards*	2000	0
• Estimated Area of Impact for Construction, *acres*	0.225	0
e) Fill Borrow Ditches	future, if need	future, if need
• Approximate Length of Impact, *ft*	0	18,251
• Estimated Volume of Fill Material for Construction, *cubic yards*	0	450,000
• Estimated Area of Impact for Construction, *acres*	0	1.62
f) Install Outboard Water Control Structure	2	2
• Approximate Length of Impact, *ft*	20	20
• Estimated Volume of Fill Material for Construction, *cubic yards*	72	0
• Estimated Area of Temporary Impact, *acres* (assume 20 ft on either side for coffer dam/dewatering impacts)	0.031	1.36
• Estimated Area of Impact for Construction, *acres*	0.002	0.084
g) Rock Protection		
• Approximate Length of Impact, *ft*	25	17
• Estimated Volume of Fill Material for Construction, *cubic yards*	0	6200
• Estimated Area of Temporary Impact, *acres* (assume 20 ft on either side)	0	0.943
• Estimated Area of Impact for Construction, *acres*	0	0.21
h) Create Intake and Outlet Canals		
• Approximate Length of Impact, *ft*	0	15,425
• Estimated Volume of Excavated Material for Construction, *cubic yards*	0	340,000

Phase 1 Activities	Pond A16	
	Wetland	Other Water
• Estimated Area of Impact for Construction, *acres*	0	55.98
i) Construct Low Internal, Earthen Berms	1	1
• Approximate Length of Impact, *ft*	0	20,505
• Estimated Volume of Cut Material for Construction, *cubic yards*	0	27,340
• Estimated Volume of Fill Material for Construction, *cubic yards*	0	27,340
• Estimated Area of Impact for Construction, *acres*	0	11.4
j) Install Fish Screen on Culverts, as Required		
• Approximate Length of Impact, *ft*	10	10
• Estimated Volume of Fill Material for Construction, *cubic yards*	0	0
• Estimated Area of Temporary Impact, *acres* (assume 20 ft on either side for coffer dam/dewatering impacts)	0.03	0.03
• Estimated Area of Impact for Construction, *acres*	0.121	0
k) Construct Nesting Islands	50	50
• Approximate Length of Impact, *ft*	0	13,500
• Estimated Volume of Borrow Material, *cubic yards*	0	23,222
• Estimated Volume of Fill Material for Construction, *cubic yards*	0	23,222
• Estimated Area of Temporary Impact, *acres* (assume 10 ft outside of impact)	0	19.18
• Estimated Area of Impact of Excavation Material for Construction, *acres*	0	41.28
• Estimated Area of Impact of Fill Material for Construction, *acres*	0	21.44
l) Remove Four Existing Islands		
• Approximate Length of Impact, *ft*	0	2480
• Estimated Volume of Excavated Material for Construction, *cubic yards*	0	1857
• Estimated Area of Temporary Impact, *acres*	0	0.59
• Estimated Area of Impact for Construction, *acres*	0	0.28

Table 3. Summary of Fill and Excavation Activities in Wetlands and Other Waters for Pond A16 Phase 1 Construction.

Work Area	Excavation Volume cubic yards		Excavation Acreage acres		Fill Placement Volume cubic yards		Fill Placement Acreage acres		Temporary Disturbance acres	
	Wetland	Other Water	Wetland	Other Water	Wetland	Other Water	Wetland	Other Water	Wetland	Other Water
Pond A16	2000	599,562	0.2	109	2072	506,762	0.2	35	<0.1	22.1
Summary of Activities	**4072 cubic yards; 0.4 acres Wetland 1,106,324 cubic yards; 166.1 acres Other Water**									

Effects of this action on listed species (and EFH) within the Action Area for the Pond A16 restoration activities are discussed below.

Salt marsh harvest mouse

Direct Loss of Individuals

The implementation of conservation measures will minimize direct injury or mortality of salt marsh harvest mice, but it is possible that some mice will be killed or injured due to excavation

of pilot channels and levee breaching in the marshes outboard of Pond A17, and possibly during dredge lock access at Pond A20.

Loss of Habitat

There will be a small loss of habitat due to the construction of the intake channel for the new water control structures at A17, and possibly a temporary loss due to excavation during access to the Pond A20 dredge lock. This loss is compensated on a programmatic basis at other nearby sites, notably and concurrently with the tidal restoration of Pond A6.

Construction Disturbance

There is some chance that construction activities will disturb salt marsh harvest mice in the vicinity of the water control structures and adjacent to routes used for access. These areas may include New Chicago Marsh, Triangle Marsh, and marshes outboard of Pond A17. This disturbance is likely to be temporary and minimal, relative to railroad traffic that generates noise on a regular, recurring basis in the Action Area. Therefore harvest mice in the vicinity of the project may be habituated to constructed related noise.

Effects of Public Access

Human use of the levees around A16 and A17, including the view platform and interpretive station, may result in disturbance of salt marsh harvest mice immediately adjacent to the trail. However, given the dense pickleweed cover in which these mice occur, individual mice are likely to be disturbed little by activities along the trail. Human presence along the trail during extremely high tides, when mice are forced to the edge of the levee by rising water, could potentially limit harvest mouse use of high-tide refugia, but more likely would reduce predation by gulls, corvids, herons, and raptors if human presence along the trail deterred predators from the area.

California clapper rail

Direct Loss of Individuals

It is extremely unlikely that individual California clapper rails will be directly lost due to construction activity during either excavation of the pilot channels through marshes, levee breaches, or accessing the Pond A20 dredge lock. Nevertheless, if construction in or adjacent to suitable habitat is to occur during the breeding season, surveys (e.g., two surveys using tape playbacks during the February to mid-March primary calling period) will be conducted prior to construction to determine whether nesting rails are present in the vicinity, and buffers between rail activity centers and construction will be respected. With the implementation of conservation measures, direct injury or mortality of clapper rails, including the loss of nests, eggs, or young, is unlikely.

Loss of Habitat

There will be a small loss of habitat that may occasionally be used by California clapper rails due to the construction of the intake channel for the new water control structures at A17, and possibly a temporary loss due to excavation during access to the Pond A20 dredge lock. This loss is compensated on a programmatic basis at other nearby sites, notably and concurrently with the tidal restoration of Pond A6.

Construction Disturbance

There is some chance that construction activities will disturb California clapper rails in the vicinity of the water control structures, or along routes used for access. This disturbance is likely to be minimal and discountable with implementation of pertinent conservation measures, and given that clapper rails in the project vicinity are likely already habituated to regular railroad traffic.

Effects of Public Access

Human use of the levees around A16 and A17, including the view platform and interpretive station, may result in disturbance of California clapper rails immediately adjacent to the trail. Recreational use of the public access facilities at Pond A16 could disturb foraging rails, expose rails to predation (especially during extremely high tides) by limiting the rails' use of cover at the marsh edge, and limit the use of adjacent tidal marsh by rails. However, given the low density of rails in these areas, and the low probability that nesting is occurring in the outboard marsh north of Pond A17, it is unlikely that rails will be disturbed by activities along the trail.

Western snowy plover

Direct Loss of Individuals

Western snowy plovers do not currently occur on the project site. Because plovers may attempt to nest on the pond bottom if it is dewatered prior to construction, conservation measures will be implemented to prevent the loss of any individuals that may be found foraging or nesting in the area.

Loss of Habitat

No nesting habitat is present in the project area for western snowy plovers, therefore no effects are anticipated. As habitat develops on the created islands, snowy plovers may establish nests that could be disturbed may management activities. Those potential effects are described below.

Construction Disturbance

Because western snowy plovers do not currently occur on or immediately adjacent to the project site, disturbance of nesting plovers during construction is not expected to occur unless the species nests in the pond bottom after it is dewatered prior to construction. To avoid such impacts, conservation measures will be implemented.

Effects of Public Access

Pond A16 has been designed to maintain a 300-ft buffer between the 50 nesting islands and the pond edge. Because the viewing platform is expected to be a point of concentration for human activities, the island layout has been designed to maintain a 600-ft buffer between islands and the platform to avoid disturbance of nesting plovers. Nest abandonment or loss of eggs or chicks due to exposure or predation could result from disturbance of adult plovers during the breeding season, and loss of foraging opportunities could result from disturbance of foraging plovers. However, because recreational use of the Alviso Slough Trail and viewing platform will be ongoing during the nest-site selection period, plovers that are intolerant of human activities are likely to nest far enough from the pond's edge so as not to be significantly disturbed by human disturbance.

The effects of trail use on nesting birds will be studied at Pond A16. The public access trail will be open year-round and the distribution of the nests in relationship to the trails will be analyzed. The study would analyze all nesting species, but nests of snowy plovers would receive special attention both in the monitoring process and in the decisions regarding site management.

California least tern

Construction Disturbance

Although Ponds A16 and A17 may occasionally be used by foraging and roosting least terns, none have been recorded at this pond during surveys by USGS from 2002 to 2007. Therefore, construction is expected to result in little disturbance, if any, on roosting or foraging least terns.

Effects of Public Access

If least terns use Pond A16 for roosting and/or nesting, the 300-ft buffer between the 50 nesting islands and the pond edge, and the 600-ft buffer between the nesting islands and the interpretive stations, would minimize disturbance of nesting or roosting terns by human activities around the pond edge. As noted above, the effects of trail use on birds, particularly nesting birds on the islands that are created, will be studied at Pond A16. The study would analyze all nesting species, but nests of least terns would receive special attention both in the monitoring process and in the decisions regarding site management.

California brown pelican

Disturbance of Foraging Individuals

California brown pelicans occasionally forage and roost in Ponds A16 and A17, and following project construction, they may continue these activities within the Action Area. Therefore, brown pelicans may be exposed to some disturbance during construction activities. However, project effects on brown pelicans are expected to be minimal since this species is not known to forage in the immediate project area in large numbers.

CCC steelhead

Direct and Indirect Effects. Pond A16 restoration activities will create a managed pond that will be reconfigured to create islands for nesting birds and shallow water habitat for shorebird foraging. In order to prevent entrainment of salmonids, a fish screen will be constructed at the intake along lower Coyote Creek that will be the only intake for the ponds in the winter (February through May) when steelhead are most likely to be present; in summer other intakes will be opened to provide inflow to the ponds.

Potential direct effects of restoration activities include risk of entrainment and stranding associated with pumping water into trucks for dust abatement, draining ponds with pumps for land-based work, and activities associated with sheet pile dewatering that are necessary for construction. Risk of entrainment and stranding is minimized by conducting these activities during the time of year when juvenile steelhead are least likely to be in the area; outmigration is known to occur February-May.

Construction and excavation that result in soil disturbance are likely to temporarily increase turbidity and suspended sediment. Effects of increased turbidity and suspended sediment on steelhead behavior are likely to include disruption of normal behavior patterns of breeding, foraging, sheltering, and migration. Conservation measures are provided to minimize temporary increases in turbidity and suspended sediment.

Spills or other chemical contamination from construction equipment could also negatively affect juvenile and adult steelhead. Conservation measures are provided to minimize these effects. Restoration of Pond A16 is not anticipated to result in poor water quality resulting from low dissolved oxygen (DO) concentrations.

The potential negative effects associated with construction and excavation are considered to be minimal and temporary for steelhead.

Critical Habitat. Construction activities may affect designated CCC steelhead Critical Habitat in the short-term. Short-term negative effects primarily result from activities associated with disturbing sediments due to construction of intake/outlet structures, pilot channel construction, borrow ditch fill, island and berm construction, erosional and scour processes, and other ground disturbance. By conducting most of these activities when steelhead are not present in the Action Area, the short-term negative effects of the Proposed Action on designated Critical Habitats in the Action Area is not anticipated to have a significant negative effect on the conservation value for steelhead at the watershed scale. At a programmatic level, the SBSP Restoration will improve habitat quantity and quality in the South Bay by restoring commercial salt evaporation ponds to tidal marsh habitat.

Green sturgeon

Direct and Indirect Effects. Construction and excavation activities may result in short-term increases in turbidity and suspended sediment that may temporarily disrupt feeding and migratory behavior activities of juveniles and adults of the Southern distinct population segment (DPS) of green sturgeon. In-water construction or dredging activities could potentially result in

localized displacement, injury, or mortality of individual green sturgeon that do not readily move away from areas directly affected by the project. Spills or other chemical contamination from construction equipment could also negatively affect managed species. Conservation measures are provided to minimize these effects. Restoration of Pond A16 is not anticipated to result in poor water quality resulting from low DO concentrations.

Because green sturgeon are primarily benthic and because the presence of juveniles along the shoreline is not expected to be common, adverse effects including injury or death are not likely. In addition, the avoidance and minimization measures described above minimize potential turbidity and sedimentation impacts of in-water restoration activities on juvenile and adult Southern DPS of green sturgeon. Finally, the fish screen that will be constructed at the intake along lower Coyote Creek will minimize the potential for sturgeon entrainment into the managed pond.

Essential fish habitat

Direct and Indirect Effects. Construction and excavation activities, such as pilot channel excavation and water control structure installation, will result in soil disturbance and are likely to temporarily increase turbidity and suspended sediment. Effects of increased turbidity and suspended sediment may temporarily degrade water quality, reduce prey resources, disturb habitat, and impede movements of EFH species. Reconfiguration of Pond A16 is not anticipated to result in poor water quality resulting from low DO concentrations. Spills or other chemical contamination from construction equipment could also negatively affect habitat of managed species. Conservation measures are provided to eliminate or minimize these effects. Although there is no time of year when EFH species will be entirely absent from the A16 Action Area, conducting activities during the late-fall and winter will tend to minimize impacts to the juvenile stages of the species most likely to inhabit the Action Area.

Pilot channel excavation will result in the permanent loss of possible foraging or spawning habitat for EFH species. However, these losses will be compensated for on a programmatic level by the restoration of tidal marshes as part of the overall SBSP Restoration.

Egg, larval and juvenile life stages of EFH species, in particular northern anchovy, English sole, starry flounder and Chinook salmon fry may be entrained into Pond A16 through the fish screen assuming the fish screen is designed primarily to screen out juvenile steelhead. Pond A16 is being restored to provide bird nesting and shorebird foraging habitat. Although fish entrained into Pond A16 may egress through outlets, habitat conditions in Pond A16 are not likely to be favorable to early life stages of EFH species because the combination of muted tidal action and shallow water habitats can potentially result in water quality conditions that are too warm or with low DO in spring, summer and fall. In addition, after winter other unscreened inlets will be opened allowing tidal circulation to Pond A16, potentially increasing the susceptibility of EFH species to entrainment. However, tidal restoration as part of the overall SBSP Restoration Project is expected to compensate for entrainment on a programmatic level.

Cumulative Effects

Cumulative effects of projects in the South Bay on the salt marsh harvest mouse, California clapper rail, western snowy plover, California least tern, CCC steelhead, and green sturgeon are discussed in the Programmatic BA for the SBSP Restoration Project. Because of the large geographic and temporal scale of the SBSP Restoration Project, the Programmatic Project will be the primary influence on California clapper rail, salt marsh harvest mouse, and western snowy plover populations, and likely EFH as well, within the Project's Action Area, thus having a net beneficial effect on these species. By comparison, actions associated with other projects and/or in other locations (e.g., along spawning streams for CCC steelhead and green sturgeon, or at colony sites for the California least tern) are expected to be the primary drivers of population sizes of these species in the Action Area.

F. DETERMINATION

The Project may affect, and will likely adversely affect, the salt marsh harvest mouse because of the loss of a small amount of salt marsh habitat due to construction, the direct take of individuals associated with construction, disturbance (and possibly direct take) due to construction and public access, and other activities associated with the project. Such effects will be compensated on a programmatic basis at other nearby sites, notably the tidal restoration of Pond A6.

The restoration actions at Pond A16 may affect, and will likely adversely affect, the California clapper rail due to the loss of a small amount of tidal marsh habitat, disturbance to rails from construction and public access, and other activities associated with the project. Such effects will be compensated on a programmatic basis at other nearby sites, notably the tidal restoration of Pond A6.

The Pond A16 project may affect, and will likely adversely affect, the western snowy plover due to disturbance to birds from construction and public access activities, and other activities associated with the project. However, enhancement and intensive management of the pond for waterbird breeding habitat, the active control of predators, and other aspects of the project designed to benefit this species will likely increase the number of western snowy plovers in the South Bay, thereby contributing to the recovery goals for this species. These benefits to the western snowy plover are expected to compensate for any adverse effects associated with Pond A16, and we therefore conclude that the project will likely be beneficial to this species.

The Pond A16 project may affect, and will likely adversely affect, the California least tern due to disturbance of birds from public access and other activities related to the project. Construction is likely to have little effect, if any, since the least tern has not recently been recorded using this pond. The California least tern may benefit from the project because of the increase in nesting habitat quality and availability, resulting from the intensive management of these ponds for waterbirds, as well as the active control of predators. Thus, the project will likely be beneficial to this species.

The project may affect, but is not likely to adversely affect, the California brown pelican. Although this species may be present in the vicinity of Pond A16 during construction, no adverse effects are anticipated.

The Pond A16 project may affect, but is not likely to adversely affect, CCC steelhead, or designated Critical Habitat for this species. Any potential negative effects associated with construction and excavation are considered to be minimal and temporary. The project will provide a fish screen to minimize the potential for entrainment for both upstream migrating adults and downstream migrating juveniles.

The Pond A16 project may affect, but is not likely to adversely affect, the green sturgeon. Any potential negative effects associated with construction and excavation are considered to be minimal and temporary.

The Pond A16 project is likely to result in temporary adverse effects to EFH associated with construction activities that increase turbidity and suspended sediment. Effects include reduction in prey resources, barriers to movement and temporary adverse impacts to spawning or foraging habitat. Long-term effects of the Pond A16 project may be associated with an unquantifiable, but likely small, increased potential for entrainment of early life stages of northern anchovy, English sole, starry flounder, and Chinook salmon fry, as fish that enter Pond A16 may not be able to exit for one or more tidal cycles.

G. MAPS

Figure 1. Proposed Project Location

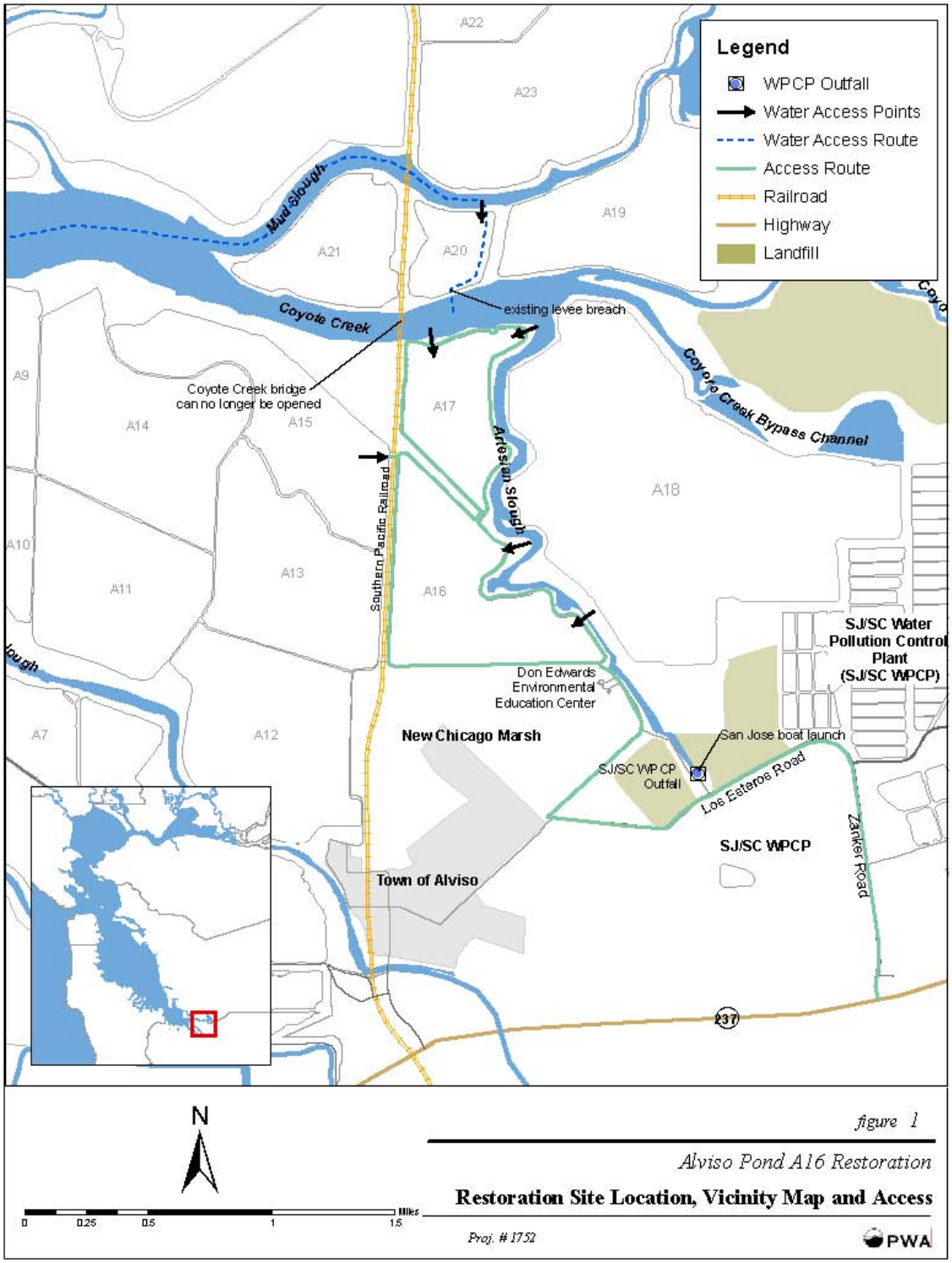

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Figure 2a. Pond A16 Restoration Site Plan

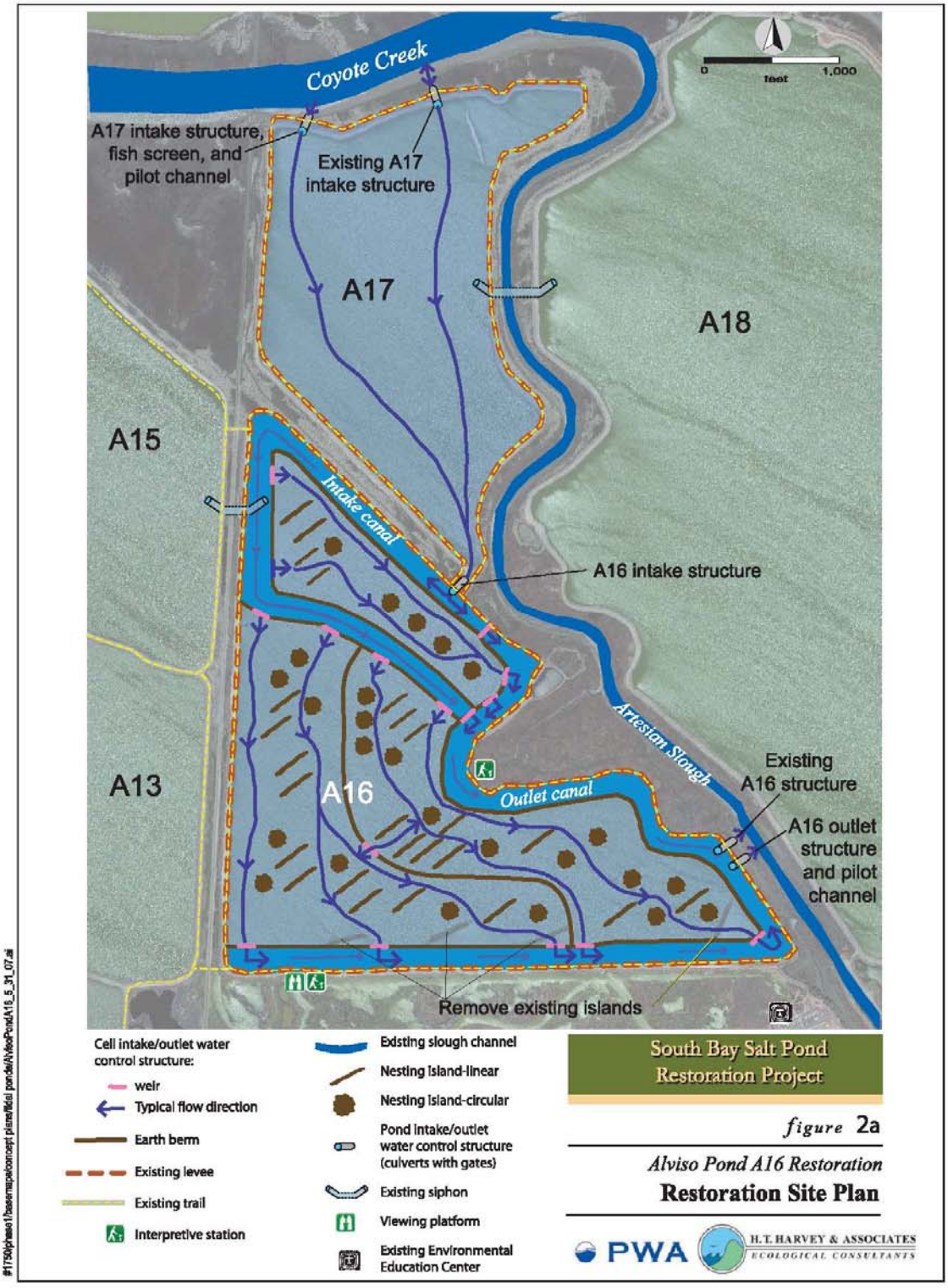


Figure 2b. Nesting Island Layout

Figure 3. Circular Nesting Island Design

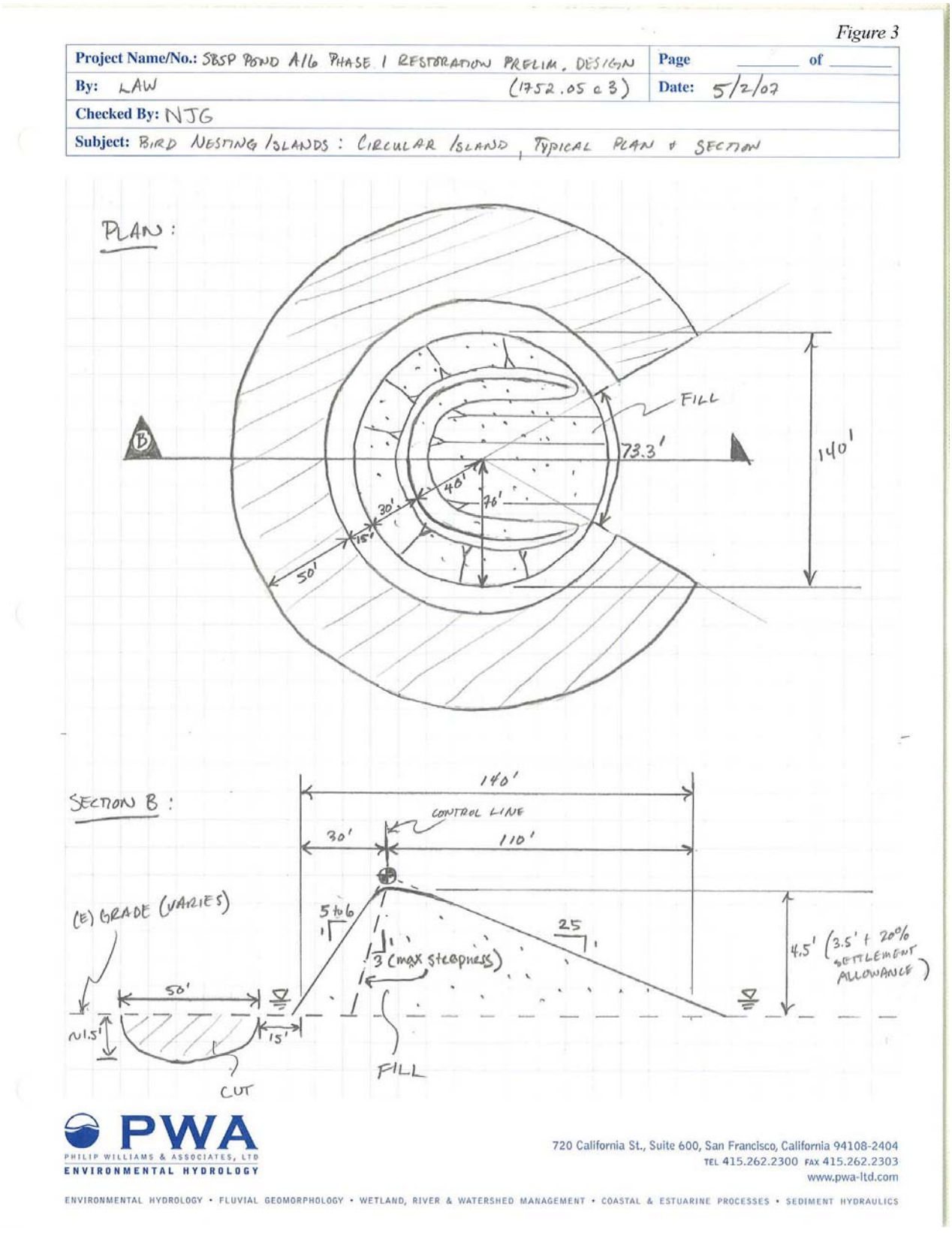


Figure 4. Linear Nesting Island Design

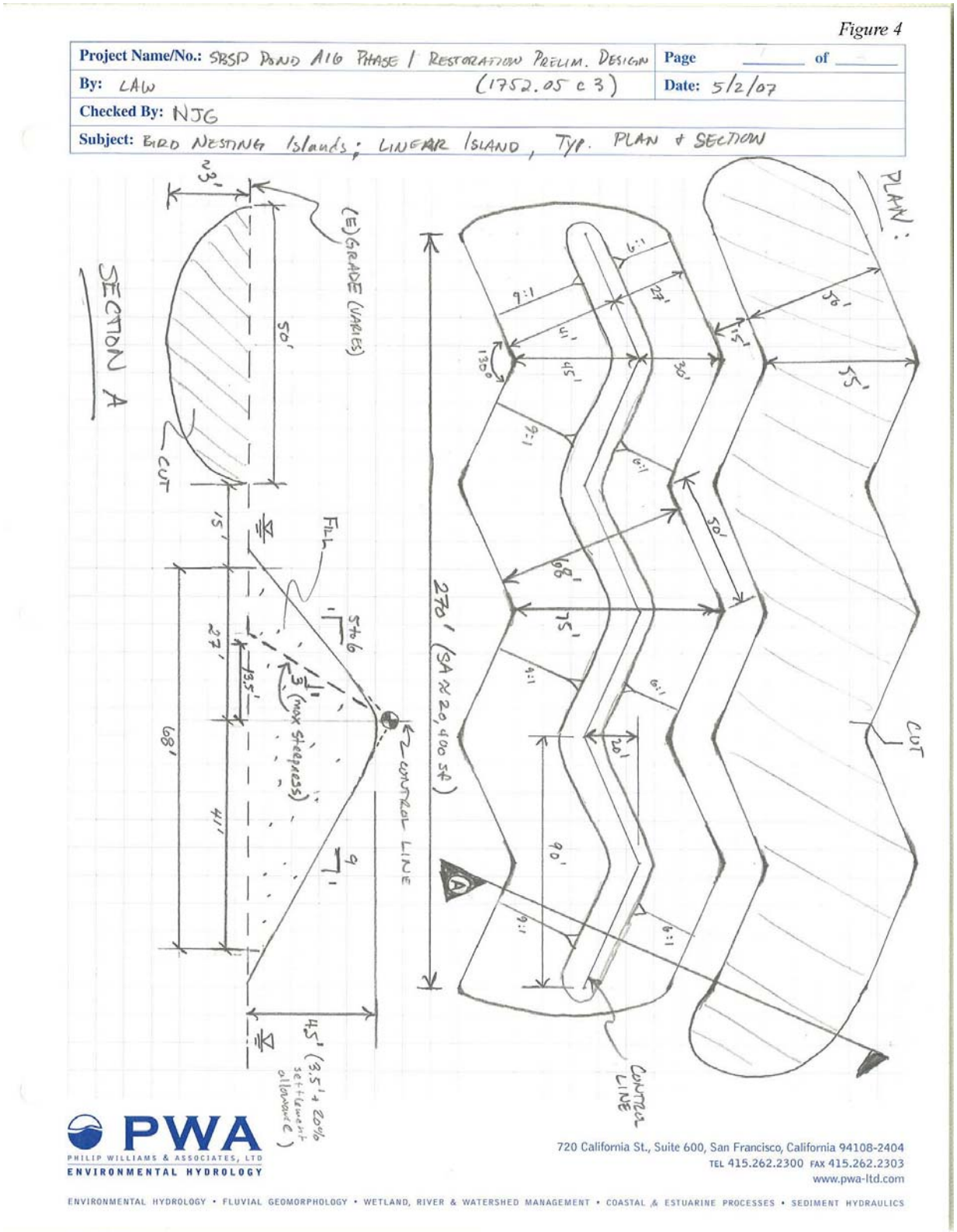


Figure 5. Nesting Island Constraints and Layout

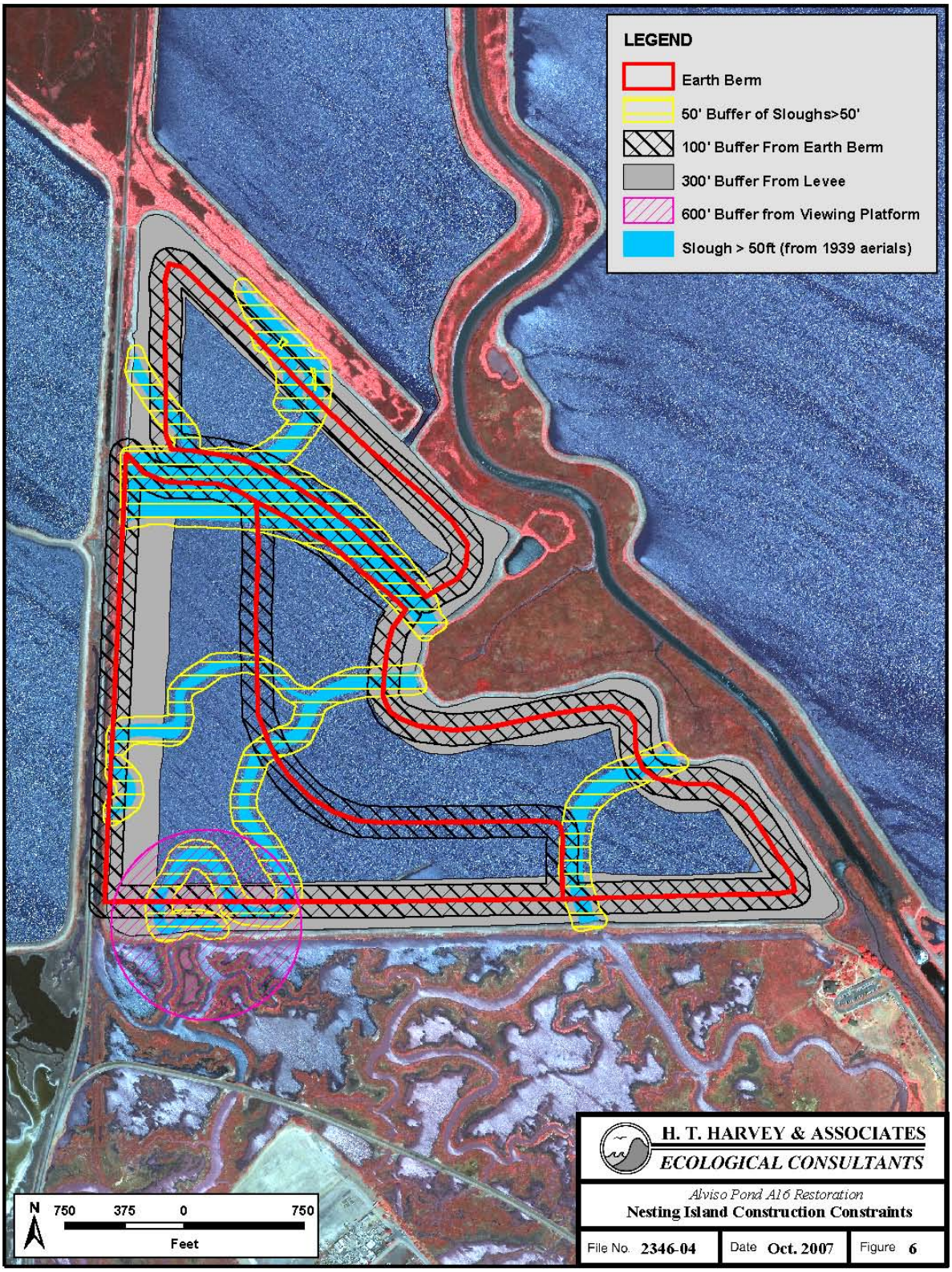


Figure 6. Pond A16 Fish Screen Design

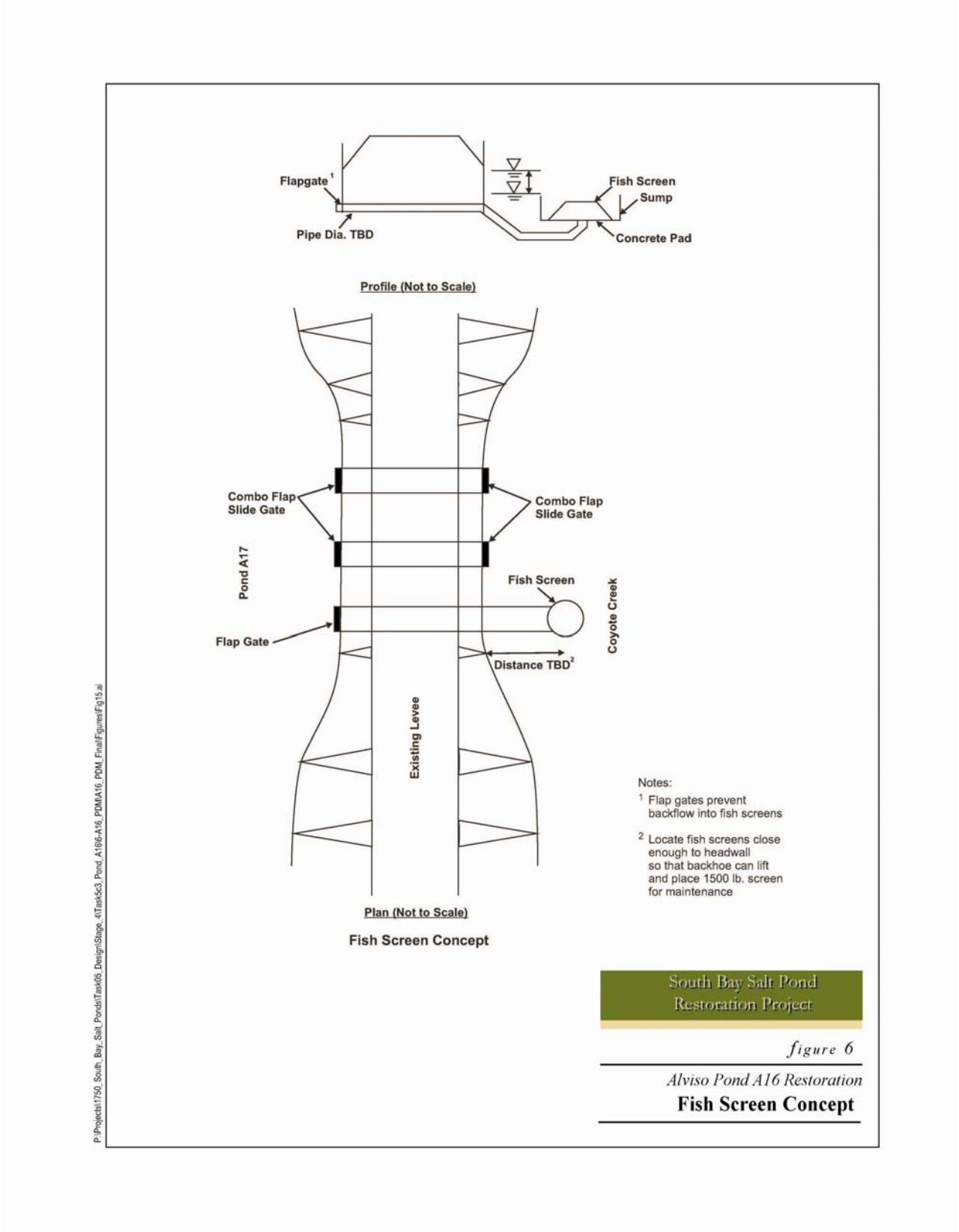
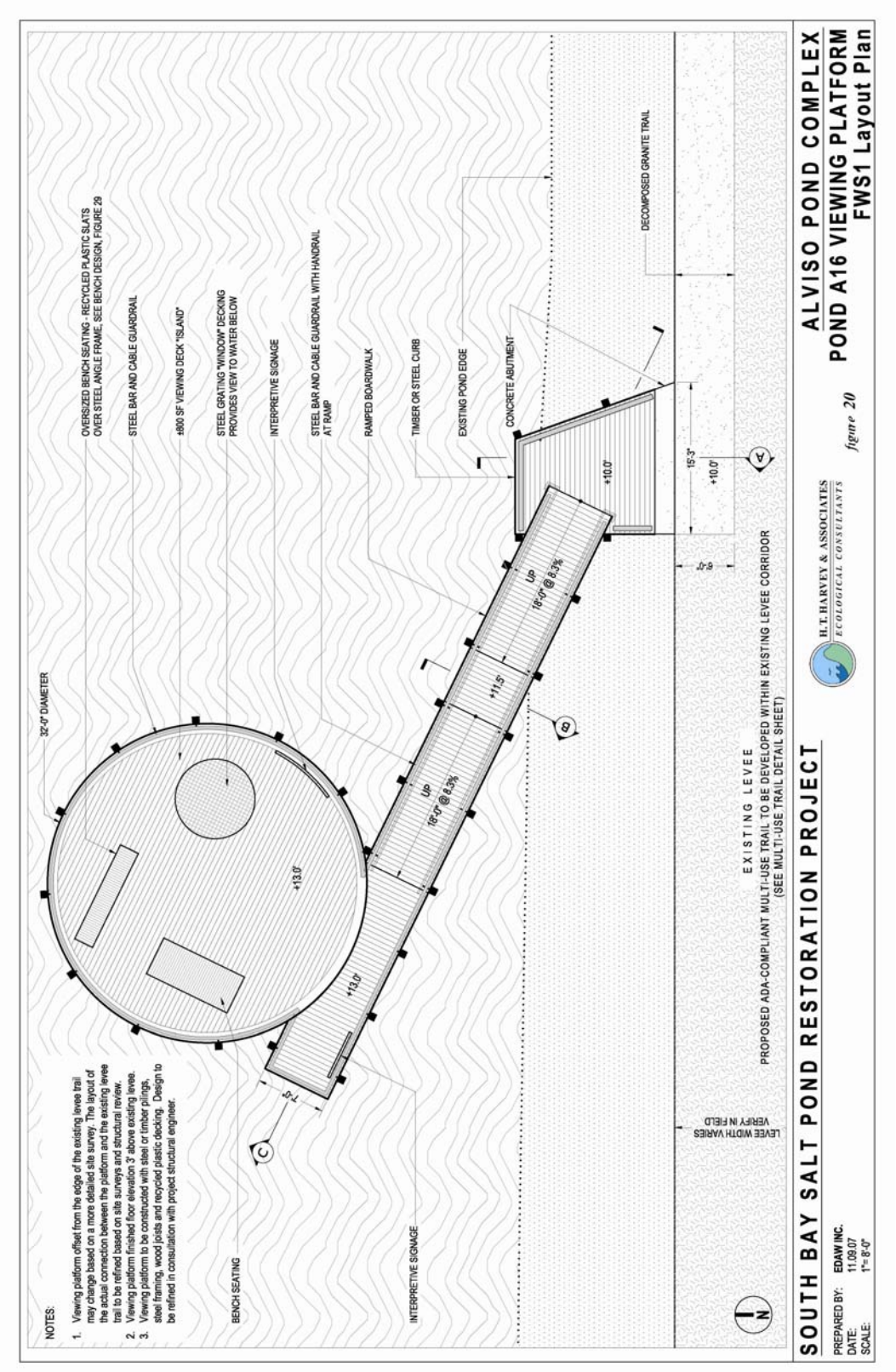


Figure 7. Viewing Platform Layout Plan



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H. T. Harvey & Associates. 1990d. San Jose permit assistance program California Clapper Rail 1990 winter pilot survey. Prepared for CH2M Hill. Report nr 477-06. 19 p.

Santa Clara County Bird Data. Unpublished. Data compiled by William G. Bousman for the Santa Clara Valley Audubon Society.

Personal Communications

Mapelli, Patrick (Cargill) pers. comm. to Nick Garrity and Bob Battalio (PWA) in April and May 2007.