



**United States Department of the Interior  
U.S. FISH & WILDLIFE SERVICE**

**San Pablo Bay National Wildlife Refuge**

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March 9, 2009

Mr. Gary Stern  
National Marine Fisheries Service  
777 Sonoma Ave, Room 325  
Santa Rosa, CA 95404

SUBJECT: Request for Letter of Concurrence for the Lower Tubbs Island / Tolay Creek Marsh  
Enhancement Project Sonoma County, California

Dear Mr. Stern:

The purpose of this correspondence is to provide the National Marine Fisheries Service (NMFS) with information necessary to support their determination of the potential effects of the U.S. Fish and Wildlife Service's (USFWS) Lower Tubbs Island/Tolay Creek Marsh Enhancement Project (proposed project) on anadromous fish. The proposed project is located on the San Pablo Bay Wildlife Refuge, which is managed by USFWS. This refuge is located on the northern border of San Pablo Bay and was established in 1970 for the purpose of protecting and providing habitat for migratory birds and endangered or threatened species. Both the Lower Tolay Creek and Lower Tubbs Island marsh complexes are integral parts of the Refuge.

This letter addresses potential project effects on two evolutionarily significant units (ESU) of steelhead trout (*Oncorhynchus mykiss*) (federally-listed as threatened) – the Central Valley ESU and the Central California Coast ESU; two runs of Sacramento River Chinook salmon (*O. tshawytscha*) spring-run (federally-listed as threatened) and winter-run (federally-listed as endangered); and the Southern distinct population segment (DPS) of green sturgeon (*Acipenser medirostris*) (federally-listed as threatened). San Pablo Bay has been designated as critical habitat for both ESUs of steelhead and winter-run Chinook salmon. In addition, all tidally influenced areas of San Pablo Bay have been proposed critical habitat for green sturgeon.

We are submitting this letter both as the federal proponent of the proposed project, and to support the Clean Water Section 404 Nationwide permit requirements for the U.S. Army Corps of Engineers (USACE). The information being provided in this correspondence consists of the following:

1. proposed project description;
2. description of potential project effects; and
3. minimization and avoidance measures to reduce potential project effects on anadromous fish and critical habitat.

Based on the findings presented in the attached document the proposed project is not likely to jeopardize the continued existence of two ESUs of steelhead or critical habitat for this species, spring-run/winter-run Sacramento River chinook salmon or Essential Fish Habitat (EFH) for these races, or the Southern DPS of green sturgeon or critical habitat for this species. We hope to receive concurrence from you that the proposed project is not likely to jeopardize the continued existence of the above-listed fish species.

We look forward to working with you on this project. Please do not hesitate to contact me with questions or requests for further information.

Regards,

Christy Smith, Refuge Manager

cc: Giselle Block, Biologist, USFWS  
San Francisco District Regulatory Division, USACE  
Mr. Bill Hurley, RWQCB  
Mr. Stuart Siegel, Wetlands & Water Resources  
Ms. Brook Vinnedge, Vinnedge Environmental Consulting  
Mr. Larry Wyckoff, CDFG  
Ms. April Zohn, Biota Pacific

# Project Description

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## Project Location

The proposed marsh enhancement project would be located within the San Pablo Bay Wildlife Refuge (Refuge) in Sonoma County, California (Figure 1). The following provides specific project location information.

- **Latitude and Longitude.** 122° 26' 56" W / 38° 7' 31" N (at the center of the project area)
- **Assessors Parcel Number.** 068-160-005;H2O
- **USGS 7.5-Minute Quadrangle Map Name.** Petaluma Point and Sears Point
- **Section, Township, Range.** T3N, R5W (Petaluma Point)
- **Zoning Designation.** Resources and Rural Development B6 100 Second Unit Exclusion; Biotic Resource; Floodplain; and Water.

## Context and Project Purpose

The marshlands of Lower Tubbs Island and Lower Tolay Creek lie adjacent to the shores of San Pablo Bay. They are located within the Refuge, which encompasses over 13,000 acres of open bay/tidal marsh, mud flats, and seasonal managed wetland habitats, including the largest remaining continuous patch of pickleweed-dominated tidal marsh in the northern San Francisco Bay (USFWS 2008). The Refuge, which has been managed by the U.S. Fish and Wildlife Service (USFWS) since 1970, provides critical migratory and wintering habitat for shorebirds and waterfowl, and protected habitat for salt marsh-dependent plant and animal species.

Certain areas adjacent to Lower Tolay Creek and within Lower Tubbs Island pond water for long periods when high water events inundate the marsh leaving water trapped within topographic depressions. Past human activities, including enclosing Lower Tubbs Island with levees, constructing berms, and modifying the hydrology of the surrounding systems, have decreased tidal circulation, leading to extended periods of water ponding on the marsh plain. Ponding results in decreased vigor of native marsh vegetation, reduced habitat functions for sensitive estuarine species, such as California clapper rail (*Rallus longirostris obsoletus*), California black rail (*Laterallus jamaicensis coturniculus*), and salt marsh harvest mouse (*Reithrodontomys raviventris halicoetes*), and can lead to high mosquito production rates. The Marin-Sonoma Mosquito and Vector Control District (MSMVCD) treats these marshes with approved chemicals when mosquito numbers exceed established thresholds. Chemical applications affect mosquito and other invertebrate species used as food by native wildlife, and result in the direct introduction of chemicals into San Pablo Bay waters and wetlands. Access for mosquito management can also disturb wildlife and plant populations.

Both the USFWS and the MSMVCD seek to improve drainage within the project area (Figure 2). As such, the purpose of the proposed project is:

- To provide a longer-term solution to controlling mosquito production that reduces treatment efforts in the project area by reducing ponding through improved water circulation; and
- To improve habitat conditions for California clapper rail, California black rail, salt-marsh harvest mouse, and other marsh-dependant species, through improved water circulation.

Enhancement and restoration of tidal flows within the project area would enlarge the area of shallow channel habitat, promote improved vigor of native marsh vegetation, and promote some increase in shallow open water mudflats within a select portion of Lower Tubbs Island. An increased tidal prism could also enlarge existing deep channels, which would benefit fish and diving ducks. Increasing the area of functioning tidal marsh would expand habitat for special-status and sensitive marsh species, and would improve high-tide roosting and foraging environments for migratory and wintering shorebirds and waterfowl.

## Project Focus Areas

The proposed marsh enhancement activities would be implemented in three focus areas: Area 1, Area 2, and Area 3 (Figure 3). The following briefly describes the existing conditions (topography, hydrology) within each focus area. Please refer to the *Lower Tubbs Island and Tolay Creek Marsh Enhancement Project – Draft Enhancement Plan Report* (Enhancement Plan) (Wetlands and Water Resources 2009) for additional information about conditions within the project area. An electronic copy of the Enhancement Plan is provided on a CD included with this information packet.

### Area 1

Area 1 encompasses approximately 17 acres of tidal marsh between the Tolay Creek channel (western boundary) and the Tubbs Island perimeter levee (eastern boundary) (Figure 3). A low berm surrounds a portion of Area 1, separating it from the surrounding marsh. The elevation of the marsh plain outside the low berm falls between mean high water (MHW) and mean higher high water (MHHW), while the elevations in the ponded areas are below MHW.

Lower Tolay Creek in the vicinity of Area 1 is a fully tidal system. The Tolay Creek channel, which borders Area 1, connects to San Pablo Bay approximately 1 mile downstream from the project area. There are several small tidal channels that run from Tolay Creek into the interior of Area 1 and either border or terminate into ponded areas. These channels are generally in the size range of 1 to 2 feet wide and 6 to 24 inches deep, and narrow and shallow significantly as they meander through the marsh. Many of these channels are also blocked and constricted by slump blocks that have slid into the channels. As the tides rise, water enters the channels in Area 1, filling the ponds and other low-lying areas of the marsh plain. As the tides recede, the various topographic restrictions in the channels and on the marsh plain prevent certain areas from draining completely.

### Area 2

Area 2 encompasses approximately 35 acres within Lower Tubbs Island (Figure 3). The elevations in this area are lower than those found in Areas 1 and 3, likely due to the history of this system as a managed and muted tidal marsh system (Wetlands and Water Resources 2009). Lower Tubbs Island is currently surrounded by a perimeter levee that separates it from San Pablo Bay and the adjacent Tolay Creek system. It is connected to San Pablo Bay via four culvert arrays: two that border the bay front, a culvert that connects to Lower Tolay Creek, and a culvert that connects to lower Tolay lagoon. A portion of Area 2 is directly connected by a large channel to a borrow ditch that encircles Lower Tubbs Island and connects to the culverts. This ditch facilitates tidal exchange and water circulation to a large intertidal mudflat and surrounding marsh. The remainder of Area 2 has no or limited connection with the tidal borrow ditch. The southeast corner of Area 2 has been cut off from tidal influence by interior berms. The northern corner of Area 2 is connected to the tidal system by undersized channels that have silted in over time. Water flows into these problem areas through constricted channels and via over-marsh flow from other well-drained portions of the site as the tides rise, where it remains trapped when the tides go out.

Figure 1. Project Vicinity

Figure 2. Project Area

Figure 3. Project Design Overview

### **Area 3**

Area 3 encompasses approximately 13 acres of tidal marsh between the Tolay Creek channel (western boundary) and the Tubbs Island perimeter levee (eastern boundary) (Figure 3). It is located south of Area 1 and immediately adjacent to the Lower Tubbs Island levee. The marsh plain in Area 3 is very flat and high, and devoid of tidal marsh channels. Surface water reaches this area via over-marsh flow during extreme high tide events. The water collects in a series of topographic low points along the base of the levee and ponds for long periods of time due to the absence of drainage channels. Rainwater also collects in these areas, exacerbating the ponding problems during the rainy season.

## **Proposed Enhancement Activities**

The proposed project has been designed to improve drainage and tidal circulation in hydrologically isolated portions of the project area. The following describes the design elements and construction features that would be used to implement the enhancement plan. Site specific design elements for each focus area are also provided.

### **Design Elements**

Project activities would include enlarging existing tidal channels, creating new channels into isolated ponded areas, and breaching and/or lowering exterior levees and interior berms. In addition, thin layers of soil excavated from enhanced areas would be placed in various topographic depressions throughout the project area to increase marsh plain elevation and to reduce the presence of shallow standing water.

*Channel Enhancement and Design.* Enlarging certain existing channels within the project area is intended to promote unimpeded exchange of tidal waters. Many of the tidal channels in these areas are undersized for the marsh tidal prism, have filled in with sediment due to poor connections to the tidal source, or have blockages that prevent drainage of outgoing tides. These channels would be widened and deepened to dimensions appropriate for the tidal prisms and tidal datums in the focus areas. In general, the improved channels would be 5 feet wide and would be 1.5 to 3 feet deep, depending on location within the marsh.

Additionally, in some areas, existing channels would be extended, or new channels constructed, to either connect isolated ponded areas to existing marsh channels, or to establish new channel networks with connections to the tidal source. These channels would vary in size depending on the marsh tidal prism and marsh plain elevation of the area they would drain. All new channels have been designed to allow construction from berms or existing channel alignments (assuming a 50-foot maximum excavator reach) to minimize construction impacts on adjacent marsh habitat.

*Levee and Berm Breaching.* In some areas, levees and interior berms would be breached to create new connections to tidal sources. Levees would only be breached in areas where it would not be feasible to connect to existing tidal channel networks. These breaches may drain isolated ponded areas, or connect a new channel network to drain a larger area of marsh plain. The breaches would vary in size depending on the marsh tidal prism of the area they would drain.

*Levee and Berm Lowering.* In certain areas, sections of the Lower Tubbs Island exterior levee and interior marsh berms would be lowered by up to 12 inches to allow occasional overtopping by the tides and improve connections between marsh habitats. These actions would provide a more natural connection between adjacent tidal marsh habitats and the tidal source, enhancing physical and biological habitat functions. The Refuge is interested in abandoning the exterior levee in certain areas along the Lower Tubbs Island perimeter to allow the area to return to a more natural state and reduce the need to perform regular levee maintenance.

*Excavated Soil Placement.* Soils excavated from channel enhancement and creation activities would be re-deposited as thin layers in topographic depressions on site to increase the elevations of certain marsh plain areas, and to reduce ponding problems. Soil would be placed along the alignment of channels to be enhanced / created, or along



existing levees, so that material may be deposited by excavation equipment without requiring additional tracking through the marsh. Specified soil disposal locations may change based on conditions in the marsh at the time of construction; however, the total volume of material deposited and the area of marsh covered in material would not change. Soils would be spread to varying thicknesses, depending on the existing marsh plain elevations, to ensure that the resulting habitat remains in tidal marsh, and is not colonized by upland vegetation. In general, the maximum placement thickness would be less than 8 inches.

### **Focus Area Design**

The following describes the enhancement details associated with each individual focus area.

Area 1. The enhancement strategy for Area 1 would consist of enlarging one existing channel (Channel 3), breaching a levee, and creating five new channels to drain ponded areas near Channel 3 and the breached levee (Figure 4). Table 1 summarizes the proposed dimensions of each of these features, as well as the volume of material that would be removed to support their construction. In total, 590 cubic yards (CY) of material would be extracted from Area 1.

All of the marsh plain materials excavated from Area 1 (approximately 470 CY) would be deposited within the marsh plain. The preferred soil placement locations for these materials are shown in Figure 5. The remaining 120 CY of material removed as a result of the levee breach in Area 1 would be placed on several eroded areas on the San Pablo Bay-front Lower Tubbs Island exterior levee (Bay-levee) (Figure 6). All soil deposited in this location would be placed atop the existing levee to facilitate maintenance and repair; no material would be placed within waters of the U.S. adjacent to that levee.

In addition, sections of the Lower Tubbs Island exterior levee and the Tolay Creek marsh interior berm would be lowered (Figure 7). A 535-foot section of the exterior levee, between the levee breaches of Area 1 and Area 3, would be graded to 1 foot below its current elevation to allow occasional overtopping by the tides. In addition, a 300-foot section of the interior berm would be lowered to allow over-marsh flow and to improve hydrologic connectivity within the marsh. Material removed as a result of these efforts would also be placed in the eroded areas along the Bay levee (between approximately 250 and 500 CY, depending on the amount of material removed).

Area 2. Enhancement activities within Area 2 would consist of enlarging Channels 7, 8 and 9; improving existing feeder channels which connect those channels to large ponded areas; breaching an interior berm at four discrete locations; constructing feeder channels at two of the berm breach locations to drain larger ponded areas; and creating one new channel to re-establish the tidal connection in the vicinity of the borrow ditch (Figure 8). Table 1 summarizes the proposed dimensions of each of these features, as well as the volume of materials that would be removed to support their construction. In total, 1,065 CY of material would be excavated from Area 2.

All of the material extracted from Channels 7, 8, and 9 (approximately 365 CY) would be deposited in low-lying areas adjacent to the channel alignments (Figure 9). Similarly, all of the materials extracted during the berm breaches and construction of the feeder channels in the southern portion of Area 2 (approximately 140 CY) would be placed in low-lying areas adjacent to the berm (Figure 9). Approximately 230 CY of material extracted during the construction of Channel 11 would be placed immediately adjacent to the channel alignment (Figure 9). The remaining 330 CY of material extracted from this area would be disposed in the preferred soil placement locations identified for Area 1 (Figure 5).

Area 3. Enhancement activities within Area 3 would consist of breaching an internal levee on Tubbs Island and constructing a long channel along a series of ponded areas adjacent to that levee (Figure 10; Table 1). All of the material excavated for Area 3 (approximately 700 CY) would be sprayed in a wide, thin pattern over the marsh plain during channel construction. Dispersed soils would be spread to a thickness of less than 4 inches.

## Potential Project Effects

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Two evolutionarily significant units (ESU) of steelhead trout (*Oncorhynchus mykiss*) (federally-listed as threatened) occur in San Pablo Bay in the vicinity of the project area – the Central Valley ESU and the Central California Coast ESU. Juveniles may rear in shallow, vegetated sub-tidal waters. Similarly, two runs of Sacramento River Chinook salmon (*O. tshawytscha*), spring-run (federally-listed as threatened) and winter-run (federally-listed as endangered), migrate through San Pablo Bay. The Southern Distinct Population Segment (DPS) of green sturgeon (*Acipenser medirostris*) (federally-listed as threatened) use San Pablo Bay and adjacent waters of the San Francisco Estuary as migratory corridors between the Pacific Ocean and their freshwater spawning grounds.

San Pablo Bay has also been designated as critical habitat for both ESUs of steelhead and winter-run Chinook salmon. In addition, all tidally influenced areas of San Pablo Bay have been proposed critical habitat for green sturgeon (NMFS 2008<sup>1</sup>). This proposed critical habitat designation includes tidal areas up to the elevation of MHHW, including tributaries upstream to the head of tide.

### Temporary Construction Impacts

To implement enhancement activities, construction equipment would have to access specific portions of the project area. To the extent possible, construction equipment would utilize levees and berms to maneuver around the project area, and to relocate excavated materials to preferred disposal locations within the low-lying marsh plain. However, some compaction of marsh soil and vegetation from the operation of construction equipment would be inevitable. It is estimated that 2.11 acres of tidal marsh wetlands, outside of the area permanently impacted by enhancement activities, would be temporarily impacted by the operation of construction equipment.

The proposed project could also result in temporary and localized increases in suspended sediments in the project area or adjacent receiving waters during project construction.

### Permanent Impacts to Waters of the U.S

Proposed enhancement activities, including enlarging and creating tidal channels, breaching and/or lowering levees and berms, and depositing excavated soil in low-lying areas of the marsh plain, would result in permanent impacts to waters of the U.S. In total, approximately 0.60 acres of marsh plain habitat would be converted to marsh channel habitat, and 3.99 acres of marsh plain habitat would be augmented with soil additions to create higher elevation marsh plain. Approximately 2,235 CY of material would be deposited on the marsh plain as a result of marsh plain enhancement activities. These impacts would not result in a net loss of wetland habitat in any of the focus areas and, over the long term, would greatly improve wetland habitat function in the project area.

## Proposed Minimization and Avoidance Measures

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Construction is scheduled for the fall of 2009 and it is estimated that the proposed project would take approximately 4 weeks to construct. Implementation of the following minimization measures during construction activities would reduce project-related effects on anadromous fish.

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<sup>1</sup> National Oceanic and Atmospheric Administration. 2008. Endangered and Threatened Wildlife and Plants: Proposed Rulemaking To Designate Critical Habitat for the Threatened Southern Distinct Population Segment of North American Green Sturgeon. 50 CFR Part 226. September 8, 2008.

1. Equipment used to construct the proposed project would access the site on existing roads, and staging areas would be established on existing levees. Where possible, the proposed project has been designed to allow construction from berms or existing channel alignments (assuming a 50-foot maximum excavator reach) to minimize construction impacts on adjacent marsh habitat. When necessary, low-ground pressure equipment, such as amphibious excavators and low ground pressure dump trucks, would be used to implement enhancement activities on the marsh plain. Contractors would also be instructed to minimize soil disturbance by following the best management practices (BMP) outlined in an approved storm water pollution prevention plan (SWPPP).
2. When performing any type of work that involves work within the active channel, general BMPs and sediment control practices would be implemented. BMPs would be implemented to reduce potential water quality effects, and/or the direct loss or injury to federally-listed fish species within the project area during construction activities. Implementation of BMPs would minimize the potential for re-suspension of sediments, turbidity, and the potential for contaminant spills.
3. No construction would be performed during extreme high tides when the marsh plain is inundated to reduce the transport of sediments into adjacent water bodies. It is anticipated that the proposed fall construction window would be the time when high tides would be at relatively low levels.
4. Construction would be performed between September and mid-October to accommodate approved construction windows for California clapper rail and salmonids.
5. Areas disturbed during construction, including marsh plain vegetation temporarily impacted as a result of soil disposal activities, would be allowed to re-vegetate naturally over time. In addition, up to 1,000 upland and marsh-upland transitional plants would be planted along levees to enhance the marsh-upland transitional zone. Refuge biologists would monitor native plant cover relative to invasive plant cover in the marsh plain and the marsh-upland transition zone to ensure that project areas is not colonized by invasive species.

## Summary of Findings

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Proposed project activities would eventually restore tidal connectivity with San Pablo Bay and increase available suitable migratory and rearing habitat for anadromous fish; however, if these special status fish species are present in the channels during implementation of the breaches, direct mortality of individuals of this species could occur. The modification or removal of suitable habitat or direct mortality of individuals of this species during construction could constitute an adverse effect. Implementation of the minimization and avoidance measures provided in this letter would reduce the potential for construction activities to adversely affect anadromous fish.

In the long term, enhancement of Lower Tubbs Island and Tolay Creek within the Refuge would result in beneficial effects on steelhead, Chinook, sturgeon and their critical habitat through establishment of tidal connectivity with San Pablo Bay and creation of more natural stream channels. When considered collectively, the beneficial activities achieved through implementation of the proposed project would help build a healthier and more functional marsh complex and watershed. The findings of this letter are that enhancement activities would not adversely affect steelhead the two ESUs of steelhead trout; the two runs of Sacramento River Chinook salmon and/or the Southern DPS of green sturgeon or designated critical habitat for these species.