



United States Department of the Interior



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In reply refer to:
2024-0130642-S7-001

February 7, 2025

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San Francisco District
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Subject: Reinitiation of the Programmatic Formal Endangered Species Consultation on the Proposed Long-Term Management Strategy for Placement of Dredged Material in San Francisco Bay, California

Dear Jessica Vargas:

This letter is in response to the U.S. Army Corps of Engineers' (Corps/USACE) August 14, 2024, request for reinitiation of formal consultation with the U.S. Fish and Wildlife Service (Service/USFWS) on the 1999 and 2004 amended Programmatic Formal Endangered Species Consultation on the Proposed Long-Term Management Strategy for Placement of Dredged Material in San Francisco Bay, California (Service file numbers: 1-1-98-F-62 and 1-1-04-F-0199; 1999 Programmatic Biological Opinion and 2004 Amended Programmatic Biological Opinion/Amendment, respectively) to evaluate programmatic-level effects on the federally endangered San Francisco Bay-Delta distinct population segment (DPS) of the longfin smelt (longfin smelt/longfin smelt DPS; *Spirinchus thaleichthys*). The request was provided by the Corps on behalf of the Corps and the U.S. Environmental Protection Agency (EPA). This response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act), and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402).

In reviewing this reinitiation request, the Service has relied upon: (1) the 1999 and 2004 biological opinion and amended biological opinion; (2) the Corps' August 14, 2024, letter; (3) the *Programmatic Biological Assessment for San Francisco Bay-Delta Distinct Population Segment of Longfin Smelt Long-Term Management Strategy (LTMS) for the Placement of*

Dredged Material in San Francisco Bay Region (BA) dated October 1, 2024; (4) several meetings and emails between the Service, Corps, EPA, and other stakeholders; and (5) other information available to the Service.

Background and Implementation

On March 12, 1999, the Service issued the Programmatic Biological Opinion to the Corps and EPA for the endangered salt marsh harvest mouse (*Reithrodontomys raviventris*), endangered California clapper rail (*Rallus longirostris obsoletus*; now taxonomically and regulatorily identified as the California Ridgway's rail [*Rallus obsoletus obsoletus*]), endangered California least tern (*Sterna antillarum browni*), then endangered and now delisted California brown pelican (*Pelecanus occidentalis*), threatened coastal population of the western snowy plover (*Charadrius alexandrinus nivosus*) (plover), threatened delta smelt (*Hypomesus transpacificus*) and its critical habitat, and the then threatened and now delisted Sacramento splittail (*Pogonichthys macrolepidotus*). On May 28, 2004, in response to a request to reinitiate consultation to reflect a change in Sacramento splittail listing status, clarification of species distribution, and refinement of protective measures during operations, the Service issued the 2004 Amended Programmatic Biological Opinion, which included removing longfin smelt protections from the Long-Term Management Strategy for Placement of Dredged Material program (LTMS/LTMS Program). Because the longfin smelt was not federally proposed or listed at the time, the longfin smelt was not part of either 1999 Programmatic Biological Opinion or 2004 Amended Programmatic Biological Opinion but was a part of the LTMS Program. These consultations are included as enclosures and incorporated by reference.

The BA and 1999 Programmatic Biological Opinion use the terms “LTMS agencies” and “resource agencies”. The LTMS agencies are made up of EPA, Corps, San Francisco Bay Regional Water Quality Control Board (SFBRWQCB), San Francisco Bay Conservation and Development Commission (BCDC), and State Water Resources Control Board (SWRCB). The resource agencies are made up of the Service, National Marine Fisheries Service (NMFS), and California Department of Fish and Wildlife (CDFW).

The purpose of the programmatic consultation was to expedite LTMS projects with relatively small effects on listed and proposed species and critical habitat. The Corps and EPA may request separate review under the Act for those projects which could not meet the requirements specified in the Programmatic Consultation Guidelines and Implementing Procedures (both restated below) in the 1999 Programmatic Biological Opinion or which exceed the programmatic threshold. Any project proposing to conduct dredging activities under the LTMS program is required to comply with the LTMS Programmatic Biological Opinion, as implemented through the LTMS Management Plan. At the time the 1999 Programmatic Biological Opinion was completed, many existing dredging projects already met the requirements specified by the Programmatic Biological Opinion and permits issued by the Corps' Dredge Material Management Office (DMMO) reflected that inclusion, but it is not explicitly stated in either the 1999 Programmatic Biological Opinion or 2004 Amended Programmatic Biological Opinion. Similarly, all current Corps navigation dredging projects existed and were analyzed programmatically, not individually. Initial implementation of the Programmatic Biological

Opinion focused on evaluating actions as part of the LTMS program rather than on an individual basis.

All of the existing projects: (1) that occurred within the Action Area; (2) were able to meet minimization and mitigation measures; and (3) the impacts from the dredging activities were analyzed as effects of the action were essentially grandfathered under the Programmatic Biological Opinion without needing to follow the steps outlined in the Implementing Procedures below. Currently, as projects come up for permit renewal, i.e., every 10 years (non-Corps projects) and every 5 years (Corps projects), projects previously considered compliant with the Programmatic Biological Opinion that have no changes to project description are issued permits with no further consultation or communication. While a more formal tracking database could be created for reporting, the continued compliance with the Programmatic Biological Opinion is captured by the Corps and EPA in the administrative record for each issued permit. Because there is no formal tracking database or reporting, the Service has been unable to reevaluate the consultation annually per the 1999 Programmatic Biological Opinion to ensure that its continued application does not result in unacceptable effects on listed and proposed species and critical habitats. The Service has also noted inconsistent implementation over the years and between different divisions within the Corps. The *Environmental Baseline* attempts to capture the previous LTMS project consultations within and without the LTMS Programmatic Consultation.

Programmatic Consultation Guidelines in 1999 Formal Programmatic Consultation

Proposed projects that will receive consideration for inclusion under this programmatic consultation must meet the following criteria:

1. The projects must be reviewed and processed via the DMMO, which is comprised of representatives of the LTMS agencies.
2. Any adverse effects on listed and proposed species and their habitats resulting from the proposed project must be minor, as determined by the Service.
3. Any new upland and wetland disposal or reuse site(s) for dredged materials must be authorized to accept dredged materials through separate review under the Act.

Implementing Procedure in the 1999 Formal Programmatic Consultation

The LTMS agencies and Service will implement the following procedures when evaluating proposed dredging and dredged material disposal projects relative to this programmatic consultation:

1. Federal and non-Federal project proponents or the LTMS agencies will request a species list from the Service to determine whether any listed and proposed species and critical habitat occurs in the vicinity of the project site. To obtain a species list, applicants may submit a written or verbal request to the Service's Section 7 Biological Technician and provide a short project name, the name of the U.S. Geological Survey (USGS) 7:5 minute quadrangle(s) on which the project occurs, and a return address. Requests can be

submitted in writing to the Service's Section 7 Biological Technician at 3310 El Camino Avenue, Suite 130, Sacramento, CA 95821, or by calling (916) 979-2753. The Service typically responds to requests for Species Lists within a few days of when they are received.

*Please note, the Service no longer has an office located at this address and has updated and automated the process to obtain an official species list using the Information for Planning and Consultation internet application available at: <https://ipac.ecosphere.fws.gov/>.

2. If any listed and proposed species and critical habitat are present in the vicinity of the proposed project site, the Corps will determine whether the proposed project may affect those species or destroy or adversely modify any critical habitat. If the Corps determines that the proposed project is not likely to adversely affect any listed and proposed species and is not likely to destroy or adversely modify any critical habitat, then the Corps will submit to the Service a written request for the Service's concurrence. If the Corps determines that the proposed project is likely to adversely affect any listed and proposed species and critical habitats, then the Corps will submit to the Service a request to append the proposed project to this programmatic biological opinion or will request separate endangered species consultation. The Service requires approximately 30 days to review and respond to these requests. For each project that may affect listed and proposed species and critical habitat, the Corps will submit information to the Service that adequately describes the proposed project, any species that may be affected, and the nature of the potential effects, as required under Part 402.14 (c) and (d) of the regulations governing interagency cooperation (51 FR 19957). Any proposed minimization measures should be incorporated into the project description.

*Please note, the implementing regulations pertaining to interagency cooperation (50 CFR 402) have been revised several times since the 1986 regulations referenced above. The most recent revision final rule was published on April 5, 2024. The updated regulations are available online at: <https://www.ecfr.gov/current/title-50/chapter-IV/subchapter-A/part-402>.

3. The Service will review the proposed project and any proposed additional permit conditions to determine if the project proposed: (1) is not likely to adversely affect listed species or destroy or adversely modify critical habitat; (2) is appropriate to append to this programmatic biological opinion; or (3) will require separate formal consultation.
4. In our letter appending proposed projects to this programmatic biological opinion, we may issue additional terms and conditions to further minimize incidental take resulting from individual proposed projects.

LTMS projects not grandfathered into the 1999 Biological Opinion have been appended to the programmatic consultation or received separate consultation (see *Environmental Baseline*).

Document Overview

The BA is organized in a manner that blends the project description with the Regional Dredged Material Management Plan (a potential future action currently in planning but not included in this reinitiation), background information, and previous implementation. However, the BA states the Corps and EPA propose to continue implementation of LTMS dredging and dredged material placement projects with no changes to the project description as presented in the Service's 1999 Programmatic Biological Opinion or 2004 Amended Programmatic Biological Opinion. This document will analyze the effects of the project, as previously described, on the longfin smelt DPS with the additional species-specific measures articulated in the BA. The non-project description components of the BA are captured in the following introductory paragraph or *Environmental Baseline* section in the Programmatic Biological Opinion below. Additionally, because the most recent amendment was 20 years ago for the 50-year program (1999-2049), this document will also update the *Status of the Species* and the *Environmental Baseline* sections for the salt marsh harvest mouse, California Ridgway's rail, California least tern, western snowy plover, and the delta smelt and its critical habitat. This document is intended to supplement, not replace, the 1999 Programmatic Biological Opinion or 2004 Amended Programmatic Biological Opinion.

Regional Dredged Material Management Plan

Per the BA, there is currently an effort underway to develop a new Federal Standard Base Plan for the 10 Federal navigation channels over the next 20 years, beginning in 2025, known as a Regional Dredged Material Management Plan (RDMMP). The stated benefit of a RDMMP is the flexibility to identify a regional Federal Standard Base Plan, recognizing the interconnectedness of the Federal channels and associated dredged material placement sites, and leveraging economic efficiency at a regional scale to increase beneficial use within the Federal Standard Base Plan. The Corps is currently drafting a RDMMP with the intent to maximize beneficial use of dredged material within the Federal Standard by realizing cost savings in certain navigation channels (e.g., Richmond Inner Harbor Channel) to be applied to the higher cost of beneficial use in other navigation channels (e.g., Oakland Harbor Federal Channel). Under the current Corps Operations and Maintenance dredging program, the No Action Alternative is defined as dredging Richmond Outer Harbor and Pinole Shoal every year via hopper dredging. In practice, the Corps only dredges one of these channels every year via hopper dredge due regulatory constraints. This is the Federal Standard Base Plan.

Under the new RDMMP, the Proposed Action will consist of phased implementation of a combination of alternatives. Alternative 1 takes one Federal dredging project planned for deep ocean disposal at SF-DODS and places it at a beneficial use site instead. Alternative 2 increases hopper dredging in the San Francisco Bay to offset the increased cost of beneficial use. The future Federal Standard Base Plan will consist of either the No Action Alternative, Alternative 1, or Alternative 2, or a combination of the three. The Corps and the SFBRWQCB published a Draft Environmental Assessment/Environmental Impact Report for public comment on October 30, 2024, to address the potential environmental effects of the maintenance dredging of federal

navigation channels in San Francisco Bay and the associated placement of dredged materials for dredging years 2025 to 2034 (Corps and SFBRWQCB 2024). While the Corps discussed the RDMMP in the BA, it is still in the planning phase and not part of the current project description or this reinitiation and will not be discussed further.

Consultation History

Because activities from the initial issuance of the Programmatic Biological Opinion and Amendment span over 20 years, this section is not all inclusive of meetings or discussions but rather serves to provide a brief history of implementation of the consultation and recent discussions since the proposed listing rule for the longfin smelt. Throughout this time the Service has participated in various LTMS Management Committee and stakeholder meetings.

March 12, 1999	The Service issued the Programmatic Biological Opinion.
April 9, 2004	The Corps and EPA requested an amendment to the 1999 Programmatic Biological Opinion for changes to several species measures including removing longfin smelt protections as the species was not federally listed at the time.
May 28, 2004	The Service issued the Amended Programmatic Biological Opinion.
December 14, 2015	The Service issued a letter to the Corps' Regulatory Division appending the City of Napa's Upper Napa River Federal Navigation Channel Maintenance Dredging Project to the Amended Programmatic Biological Opinion for the delta smelt in response to their June 29, 2015 request.
September 23, 2016	The Service issued a letter to the Corps' Environmental B Section appending formally the Lower Napa River Federal Navigation Channel Project to the Amended Programmatic Biological Opinion for the delta smelt in response to their April 22, 2016 request.
April 2, 2024	The Service received an email from the Corps' DMMO with a draft of the BA.
April 30, 2024	The Service met with the Corps and EPA to discuss the draft BA.
May 3, 2024	The Service emailed comments on the draft BA to the Corps and EPA.
May 21, 2024	The Service met with the Corps to discuss the Service's comments on the draft BA.
June 20, 2024	The Service received an email from the EPA with a revised version of the draft BA.

June 21, 2024	The Service issued a letter to the Corps' DMMO appending the Vulcan Landing Way Pier Dredging Project informally to the Amended Programmatic Biological Opinion for the California Ridgway's rail with a separate longfin smelt not likely to adversely affect conference concurrence in response to their May 28, 2024 request.
June 25, 2024	Non-regulatory representatives of the Service's Lodi Fish and Wildlife Office and San Francisco Bay-Delta Fish & Wildlife Office participated in a multi-agency meeting regarding LTMS and current science on longfin smelt DPS.
July 8, 2024	The EPA emailed meeting notes and power point presentation slide decks and scientific literature referenced in the June 25, 2024 meeting. The Service's Lodi Fish and Wildlife Office followed up with a clarifying email.
July 12, 2024	A follow-up multi-agency meeting was held to discuss longfin smelt DPS and LTMS implementation and conservation measures. The Service was unable to attend. Meeting notes were not provided to the Service.
August 13-14, 2024	The Service received the formal conference request for reinitiation and revised BA dated August 13, 2024 from the Corps over a series of emails.
August 27, 2024	The Service emailed the Corps an information request letter and the August 13, 2024 BA annotated with the Services comments and suggested edits.
October 1, 2024	The Service received a revised BA dated October 1, 2024 from the Corps.
October 30, 2024	The Service emailed the Corps, EPA, and other agencies copied on the October 1, 2024 email that review of the BA was complete and how the Service plans on incorporating the information in the BA into the biological opinion.

BIOLOGICAL OPINION

Description of the Proposed Action

The proposed action is unchanged from the 2004 Amended Programmatic Biological Opinion with the exception of specific longfin smelt DPS measures. The BA described the LTMS

Program operations and maintenance dredging within San Francisco Bay, San Pablo Bay, and Suisun Bay (the Bay, not the Federal channel) as well as areas immediately outside the Golden Gate at San Francisco Bar and Ocean Beach, conducted by the Corps, other federal agencies, and non-Federal entities through the context of the LTMS Environmental Impact Statement/Programmatic Environmental Impact Report Alternative 3 (LTMS agencies 1998). Several dredging projects have individual consultations outside of the 2004 Amended Programmatic Biological Opinion and are not part of *Description of the Proposed Action*, but they are included in the *Environmental Baseline*.

The one non-longfin smelt DPS change to the *Description of the Proposed Action* is the inclusion of the Term and Condition b of the Revised Incidental Take Statement of NMFS’ 2015 LTMS Biological Opinion included below for dredging outside of the work window. However, the Corps stated they “would re-consult with USFWS on any dredging occurring outside of the work windows shown in Attachment 3” of the BA (Figure 1).

Site	Species	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec	
		1-15	16-31	1-15	16-28	1-15	16-31	1-15	16-30	1-15	16-31	1-15	16-30	1-15	16-31	1-15	16-31	1-15	16-30	1-15	16-31	1-15	16-30	1-15	16-31
SF Bay Bridge to Sherman Island	Chinook Salmon and Steelhead	Consultation Required										Work Window													
Carquinez Bridge to Collinsville	Delta Smelt Water ≤10' *	Consultation Required																							
	Delta Smelt Water >10' *	Consultation Required												Work Window											
Napa and Petaluma Rivers, Sonoma Creek	Steelhead	Consultation Required												Work Window						Consultation Required					
Napa River	Delta Smelt	Work Window		Consultation Required										Work Window											
All areas within 45 meters of eelgrass habitat	Dungeness Crab	Work Window						Consultation Required				Work Window													
San Francisco Bay from Pinole Point to Redwood Creek	Pacific Herring	Consultation Required				Work Window												Consultation Required							
Richardson Bay & San Francisco Waterfront (Hard stop at November 30th)	Pacific Herring	Consultation Required				Work Window												Consultation Required							
Waters of Marin County from the Golden Gate Bridge to Richmond-San Rafael Bridge	Coho Salmon	Consultation Required										Work Window										Consultation Required			
Berkeley Marina to San Lorenzo Creek within 1 mile of coastline	California Least Tern	Work Window				Consultation Required										Work Window									
South of Highway 92 Bridge (San Mateo-Hayward)	California Least Tern	Work Window										Consultation Required						Work Window							
In areas with eelgrass beds	California Least Tern	Consultation Required																							
Baywide in areas of salt marsh habitat	California Clapper Rail	Consultation Required																							
Baywide within 250 feet of salt marsh habitat	California Clapper Rail	Work Window		Consultation Required										Work Window											
In and adjacent to salt marsh habitat	Salt Marsh Harvest Mouse	Consultation Required																							
Within 300 feet of known roost site	California Brown Pelican	Work Window										Consultation Required						Work Window							

For more detailed information, see Appendix F of the LTMS Management Plan or the LTMS EIR/EIS.

* Depths are represented in MLLW, and are project depth, not including over dredge allowance

**This chart is for operations and maintenance dredging of existing navigational facilities. Other species may be affected by work in other areas.

WORK WINDOW

CONSULTATION REQUIRED

Figure 1. LTMS Environmental Work Windows Chart

As an additional note from the Corps related to Figure 1, the steelhead (*Oncorhynchus mykiss*) work window for Petaluma River has been extended to a November 30 end date after discussions with NMFS and CDFW.

Term and Condition b of the Revised Incidental Take Statement of the NMFS 2015 LTMS Biological Opinion

“b. Dredging and disposal of dredged materials conducted or funded (in whole or in part) by the USACE must adhere to all appropriate LTMS Program measures and best management practices, including the following:

- i. The work window for dredging and disposal is June 1 through November 30.
- ii. No dredging will be permitted from December 1 through May 31 upstream or within 1,000 feet bayward of the mouths of Larkspur/Corte Madera Creek, Napa River Channel/Mare Island Strait, Petaluma River, and Novato Creek.
- iii. Projects may plan work for the period outside the work window (December 1 through May 31) provided the project mitigates for its impacts by placing dredged material at a beneficial re-use site that will provide aquatic habitat benefits, such as a tidal wetlands restoration site. If a project is unable to place all material dredged outside the work window at a beneficial re-use site, the LTMS Program measures allow for an equivalent volume of dredged material to be placed at a beneficial re-use site from a project conducted within the work windows during the following season. This exemption does not apply to dredge sites upstream or within 1,000 feet bayward of the mouths of Larkspur/Corte Madera Creek, Napa River Channel/Mare Island Strait, Petaluma River, and Novato Creek.
- iv. Projects that incur an unplanned and unavoidable need to complete a portion of an ongoing dredging operation outside of the work window, the LTMS agencies may approve up to 50,000 cubic yards of dredging and disposal per year for this purpose. This exemption may apply to dredge sites upstream or within 1,000 feet bayward of the mouths of Larkspur/Corte Madera Creek, Napa River Channel/Mare Island Strait, Petaluma River, and Novato Creek.”

Avoidance and Minimization Measures

Best Management Practices (BMPs)

The Corps will continue to implement the following measures to avoid or minimize potential entrainment impacts by dredging:

- A worker education program will be developed for listed fish species that could be adversely impacted by hopper dredging. The program will include a presentation to all workers on biology, general behavior, distribution and habitat needs, sensitivity to human activities, legal protection status, and project-specific protective measures.
- Hopper dredging:
 - Pump priming, drag head clearing, and suction of water at the beginning and end of each hopper load will be conducted within 3 feet of the seafloor.

- Hopper drag head suction pumps will be turned off when raising and lowering the drag arms from the seafloor.
- The drag head will remain in contact with the seafloor during suction dredging.
- The drag head water intake doors will be kept closed to the maximum extent practicable in locations most vulnerable to entraining smelt. In circumstances when the doors need to be opened to alleviate clogging, the doors will be opened incrementally (i.e., the doors will be opened in small increments and tested to see if the clog is removed) to ensure that doors are not fully opened unnecessarily.

New fish entrainment avoidance and minimization measures are identified below:

- Hydraulic dredging will be sequenced so that dredging of Pinole Shoal Channel will occur as close to the time period of August through October as possible, when the Corps assumes presence of longfin smelt in San Pablo Bay is expected to be at its lowest.
- The sea chest intakes on the *Essayons* will be screened with metal plate drilled with ½ inch diameter holes staggered 60 degrees vertical.
- The Corps will assess the feasibility and if possible, conduct a pilot installation of lights, sound devices, and/or water jets, or mild electrical field on the dragarms or dragheads of the *Essayons* for the purpose of deterring fish from approaching the dragheads.
- The Corps will develop a physical and numerical model of the flow field around a hopper dredge draghead including the draghead doors to complement earlier models of a doorless draghead (Bryant *et al.* 2020).
- Cutterhead pipeline dredging: Cutterhead dredges shall not be turned on until the suction dredge head is submerged in the sediment to minimize potential for entrainment of fish in the water column.

The following BMPs will be employed to avoid or minimize incidental take or adverse effects to the ecosystem:

- Dredging at each project location would be limited to the authorized depth.
- Knockdowns may be performed in all locations except the San Francisco Main Ship Channel. The volume of material above project design depth to be knocked down is not anticipated to exceed 15,000 cubic yards (cy) per year in each deep draft channel. Knockdowns are subject to the same sediment testing requirements and approvals as full dredging episodes.
- No overflow would be discharged from any barge during transportation, except for spillage incidental to clamshell dredge operations.
- Overflow from hopper-type suction dredges would be limited to no longer than 15 minutes at the dredge site during any one excavation action (cut). Overflow would be unrestricted when dredging material is greater than 80 percent sand.

- Dredging and placement activities would be consistent with the work window requirements set out by NMFS and the Service in their respective LTMS biological opinions as amended.
- Dredging would stop immediately following any fuel or hazardous waste leaks or spills, and cleanup actions would be implemented.
- During dredging and placement activities, notes to mariners and navigational warning markers would be used as needed to prevent navigational hazards for recreational boaters.

Additionally, the following measures would be implemented for hydraulic dredging to protect longfin smelt and delta smelt (some of these repeat the measures from above):

- No dredging would occur in water ranging from 0 to 5 parts per thousand salinity between December 1 and June 30.
- At the beginning and end of each hopper load, pump priming, drag head clearing, and suction of water would be conducted within 3 feet of the seafloor.
- Hopper drag head suction pumps would be turned off when raising and lowering the drag arms from the seafloor when turning the dredge vessel.
- The Corps would implement a worker education program for listed fish species that could be adversely impacted by dredging. The program would include a presentation to all workers on biology, general behavior, distribution, and habitat needs, sensitivity to human activities, legal protection status, and project-specific protective measures. Workers would also be provided with written materials containing this information.
- The drag head, cutterheads, and pipeline intakes will remain in contact with the seafloor during suction dredging.
- The drag head water intake doors will be kept closed to the maximum extent practicable in locations most vulnerable to entraining smelt. In circumstances when the doors need to be opened to alleviate clogging, the doors will be opened incrementally (i.e., the doors will be opened in small increments and tested to see if the clog is removed) to ensure that doors are not fully opened unnecessarily.

Environmental Monitoring

Onboard fish entrainment monitoring will occur, as it has in past years, when the *Essayons* dredges Richmond Outer Harbor and Pinole Shoal Channel. This work will continue to provide information on longfin smelt life stage presence and entrainment during wet vs. dry years, tidal cycle, etc., and new information should the timing of dredging change due to new sequencing patterns. Note that alternate activities, such as wetland fish and fish prey monitoring were conducted when COVID restricted access to the *Essayons* in 2020-2022. The LTMS agencies will continue to work with the resource agencies to implement monitoring activities as deemed appropriate and necessary.

*Measures to Offset Incidental Take**Compensation*

The Corps commits to compensating for impacts to longfin smelt and their habitat by beneficially reusing sediment at an upland beneficial use site that would restore habitat for longfin smelt within the San Francisco Bay. That sediment provided for beneficial reuse shall be sediment that would have otherwise been disposed of in-Bay or at SF-DODS.

The volume of sediment for this method of mitigation shall be calculated based on the following equation:

$$\text{X acres of restored habitat} = (800 \text{ acres})(\text{volume of dredged material in acre-feet}) / 3.0 \text{ million acre-feet}$$

The formula above is based on the CDFW formula used to calculate mitigation requirements for the Central Valley and State Water Projects entrainment impacts from hydraulically pumping water from the Delta, which is considered adequate mitigation for the water projects. The Corps and EPA determined this formula is appropriate because the mechanism causing the impacts to longfin smelt (i.e. entrainment from hydraulically pumping water) is similar. Please note, the BA did not discern from which regulatory document this calculation originated, whether it was derived specific to longfin smelt individuals or food web entrainment, or the complexities of implementation.

The acres derived from the CDFW equation above shall then be multiplied by: (19,000 cy/acre).

This conversion factor was derived from the ratio of sediment supplied for beneficial use to acres restored at the Hamilton Airfield Wetland Restoration (Service file numbers: 1-1-05-F-0068, 08ESMF00-2014-F-0281 and 2023-0001232-S7-001), Bair Island Restoration (Service file number: 1-1-00-F-0171), Montezuma Wetlands Restoration (Service file numbers: 1-1-99-F-12, 1-1-02-F-0175, 1-1-04-F-270, 81420-2008-F-1861, and 2022-0074267-S7-001), and Cullinan Ranch Restoration Projects (Service file numbers: SFB-2010-01 and 81420-2010-F-0182) (9,411 cy per acre) multiplied by 2 and rounded up to the nearest 1,000 cy. A multiplier of 2 was used to account for uncertainty in the placement location, timing of restoration, and success of restoration activities at the placement site. Rounding up to the nearest 1,000 cy reflects the accuracy in measuring volumes of dredge material given limitations associated with the dredge equipment. As an alternative to beneficial reuse, the Corps will purchase mitigation credits based on the CDFW formula from a Service approved mitigation bank or in lieu fee program, if available, that would provide habitat for longfin smelt. Although the Corps is the only dredger currently using a hopper dredge in the LTMS program area, any dredger under the LTMS program that proposes to utilize hydraulic dredge methods would be required to comply with this measure through conditions to their permit. Please note at this time, beneficial or adverse effects have not been analyzed specific to longfin smelt for the above named restoration projects (the Montezuma Wetlands Restoration Project consultation is currently in reinitiation) nor have the

Corps and EPA proposed how they will track and report implementation and success of this measure.

Action Area

The Action Area is defined in 50 CFR § 402.02, as “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.” Neither the 1999 Programmatic Biological Opinion nor the 2004 Amended Biological Opinion articulated the Action Area. The BA defines the Action Area for this reinitiation with exclusion for areas that have separate LTMS program consultations. Separate consultations will be described in the *Environmental Baseline*. For this reinitiation, the Service defines the Action Area more broadly to incorporate the geographic extent of aquatic areas to be affected. Therefore, the Action Area for the LTMS program encompasses the marine and estuarine environment and bordering lands from the Pacific Ocean’s continental shelf and slope west of the Golden Gate Bridge, San Francisco Bay, and the portion of the Sacramento-San Joaquin Delta west of Sherman Island. It also includes the wetlands and low upland areas that form a margin around San Francisco Bay and its tributaries in nine counties, including: Marin, Sonoma, Napa, Solano, Contra Costa, Alameda, Santa Clara, San Mateo and San Francisco counties. See Figure 2 for a general map and Figure 3 for a more detailed map of dredging and disposal sites.

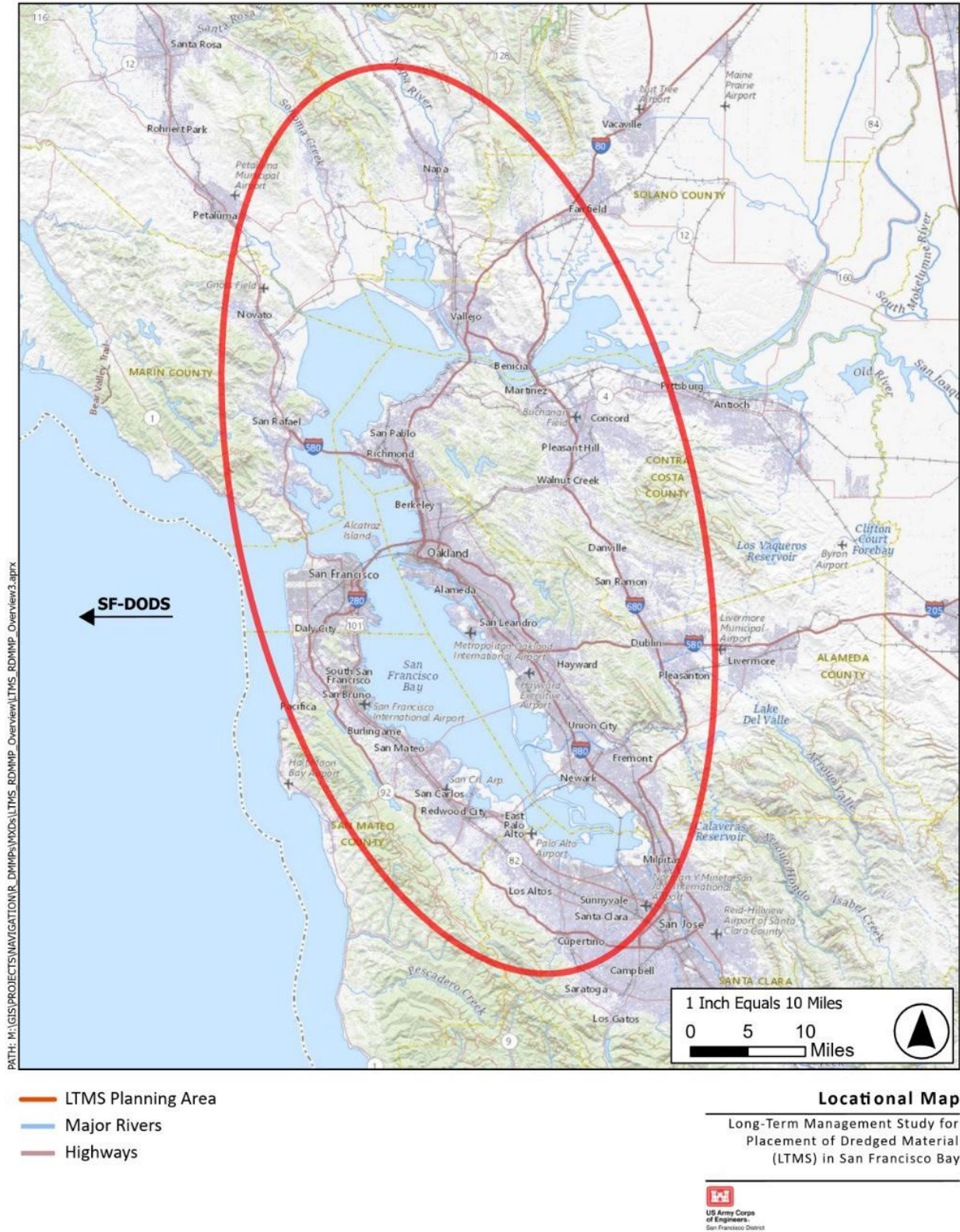
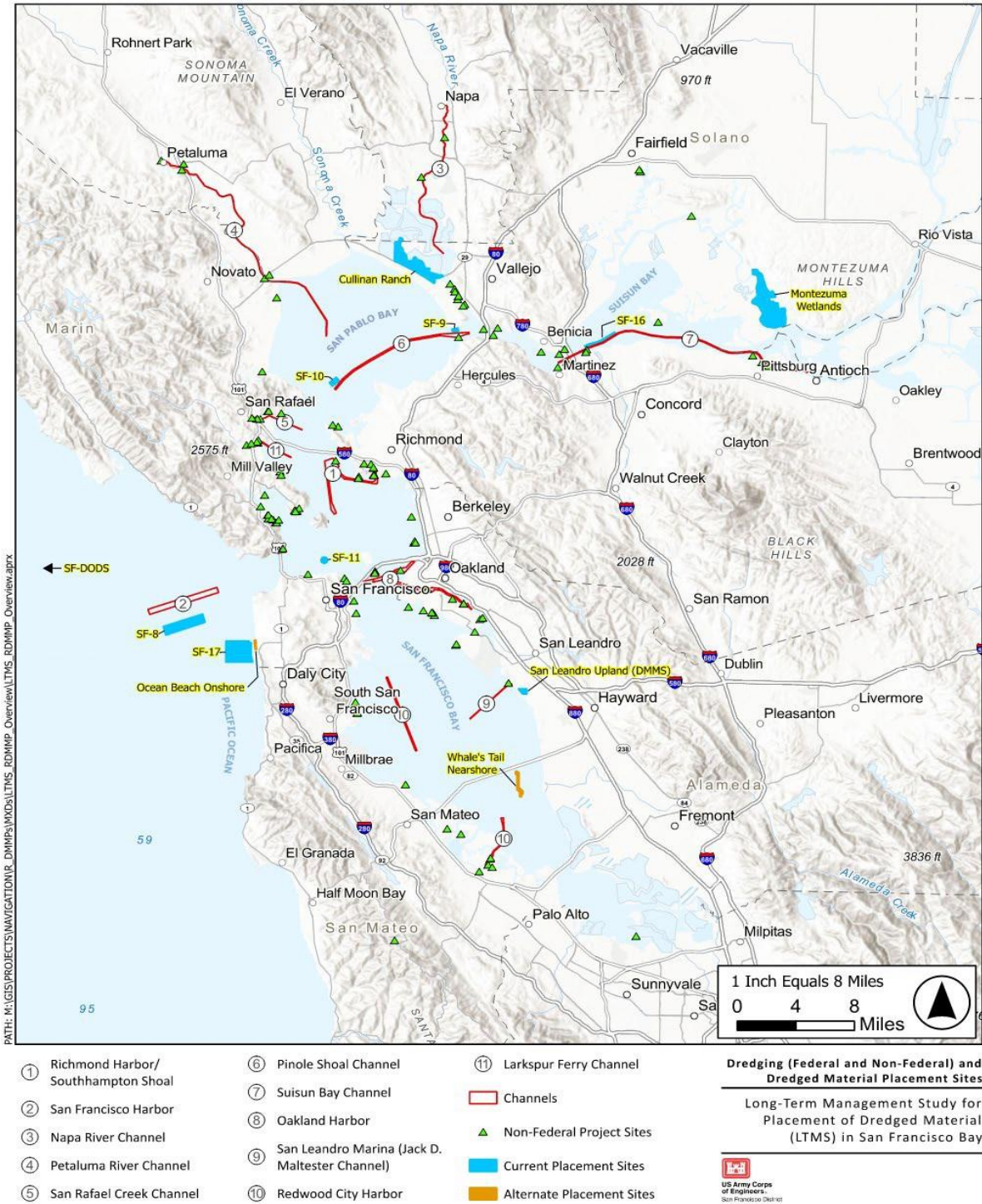


Figure 2. Locational Map of Long-Term Management Strategy Program Planning Area in San Francisco Bay



Note: Corps-dredged Suisun Bay and Oakland Harbor Federal Navigation Channels are not considered part of the proposed action because they have their own separate consultations with the Service; however, they are included for informational purposes only and considered part of the *Environmental Baseline*.

Figure 3. Long-Term Management Strategy Program Dredging (Federal and Non-Federal) and Current Dredged Material Placement Sites (upland disposal sites do not currently have consultations for the longfin smelt DPS).

Analytical Framework for the Jeopardy Determination

Section 7(a)(2) of the Act requires that Federal agencies ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of listed species.

“Jeopardize the continued existence of” means to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR § 402.02).

The jeopardy analysis in this biological opinion considers the effects of the proposed Federal action, and any cumulative effects, on the rangewide survival and recovery of the listed species. It relies on four components: (1) the *Status of the Species*, which describes the current rangewide condition of the species, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which analyzes the current condition of the species in the Action Area without the consequences to the listed species caused by the proposed action, the factors responsible for that condition, and the relationship of the Action Area to the survival and recovery of the species; (3) the *Effects of the Action*, which includes all effects that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action but that are not part of the action; and (4) the *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the Action Area on the species. The *Effects of the Action* and *Cumulative Effects* are added to the *Environmental Baseline* and in light of the status of the species, the Service formulates its opinion as to whether the proposed action is likely to jeopardize the continued existence of listed species.

Status of Species

As stated above, the statuses of the species and critical habitat have changed since the issuance of the 1999 Programmatic Biological Opinion and 2004 Amendment. Those changes are captured below with references to updated recovery plans, 5-year reviews, and other documents.

Longfin Smelt

The Service listed the longfin smelt DPS as endangered on July 30, 2024 (Service 2024a). For the comprehensive assessment of the longfin smelt DPS, please refer to the listing rule at <https://www.govinfo.gov/content/pkg/FR-2024-07-30/pdf/2024-16380.pdf#page=1> and the *Species Status Assessment for the San Francisco Bay-Delta Distinct Population Segment of the Longfin Smelt* at <https://ecos.fws.gov/ServCat/DownloadFile/253023> (Service 2024b). Critical habitat was proposed on January 15, 2025 (Service 2025; <https://www.federalregister.gov/documents/2025/01/15/2024-29641/endangered-and-threatened-wildlife-and-plants-designation-of-critical-habitat-for-the-san-francisco>).

California Ridgway’s Rail

The status of California Ridgway’s rail and information about its biology, ecology, distribution, and current threats is available in the *Recovery Plan for Tidal Marsh Ecosystems of Northern*

and Central California (Service 2013). This document can be found at: https://ecos.fws.gov/docs/recovery_plan/TMRP/20130923_TMRP_Books_Signed_FINAL.pdf. It is identified by its previous name as the California clapper rail in this Recovery Plan as the species' common and scientific name was recently revised to reflect the currently accepted taxonomy and nomenclature (Service 2023a). Critical habitat has not been designated for this species. For the most recent comprehensive assessment of the species' range-wide status, please refer to the California clapper rail 5-year Review, available at: https://ecos.fws.gov/docs/five_year_review/doc6592.pdf (Service 2020a). No change in the species' listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species with loss of habitat being the most significant effect.

Salt Marsh Harvest Mouse

There are two subspecies of the salt marsh harvest mouse: the northern subspecies (*R. r. halicoetes*) and the southern subspecies (*R. r. raviventris*) both of which are listed as endangered. For the most recent comprehensive assessment of the species' range-wide status, please refer to the *Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California*, available at: https://ecos.fws.gov/docs/recovery_plan/TMRP/20130923_TMRP_Books_Signed_FINAL.pdf (Service 2013). Critical habitat has not been designated for this species. Threats evaluated during the drafting of the recovery plan and discussed in the final document have continued to act on the species since its publication, with loss of habitat being the most significant effect. For the most recent comprehensive assessment of the species' range-wide status, please refer to the salt marsh harvest mouse 5-year review at: https://ecos.fws.gov/docs/tess/species_nonpublish/3643.pdf (Service 2021). No change in the species' listing status was recommended in this 5-year review.

California Least Tern

The California least tern is a subspecies of the least tern. The California least tern was federally listed as endangered on October 13, 1970. Critical habitat has not been designated for this species. A detailed account of the taxonomy, ecology, and biology of the species is presented in the approved *Revised California Least Tern Recovery Plan* on April 2, 1980 (https://ecos.fws.gov/docs/recovery_plan/850927_w%20signature.pdf; Service 1985). For the most recent comprehensive assessment of the species' range-wide status, please refer to the 2020 California least tern 5-year review at https://ecos.fws.gov/docs/tess/species_nonpublish/3520.pdf (Service 2020b). No change in the species' listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species with loss of habitat and degradation being the most significant effect.

Western Snowy Plover

The western snowy plover is a small pale shorebird that nests on beaches and salt pannes in western North America. The Service listed the Pacific Coast population of the snowy plover (i.e., "western snowy plover") as a threatened species in 1993 because of a decline in the breeding population, loss of breeding habitat, and increased depredation by non-native predators. The Service designated critical habitat for the snowy plover in 2005 and revised the critical habitat

designation in 2012. Information about the western snowy plover biology and ecology is available in the *Recovery Plan for the Pacific Coast Population of the Western Snowy Plover (Charadrius alexandrinus nivosus)*, available at https://ecos.fws.gov/docs/recovery_plan/070924_2.pdf (Service 2007). For the most recent comprehensive assessment of the species' range-wide status, please refer to the western snowy plover 5-year Review, available at https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/19614.pdf (Service 2024c). No change in the species' listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species with loss of habitat and degradation being the most significant effect.

Delta Smelt

The Service listed the delta smelt as threatened on March 5, 1993 (Service 1993), and designated critical habitat for the species on December 19, 1994 (Service 1994). The delta smelt was one of eight fish species addressed in the *Recovery Plan for the Sacramento–San Joaquin Delta Native Fishes* (Service 1996). A 5-year status review of the delta smelt was completed on March 31, 2004 (Service 2004). The review concluded that delta smelt remained a threatened species. A subsequent 5-year status review recommended uplisting delta smelt from threatened to endangered (Service 2010a). A 12-month finding on a petition to reclassify the delta smelt as an endangered species was completed on April 7, 2010 (Service 2010b). After reviewing all available scientific and commercial information, the Service determined that re-classifying the delta smelt from a threatened to an endangered species was warranted but precluded by other higher priority listing actions (Service 2010c). The Service reviews the status and uplisting recommendation for delta smelt during its Candidate Notice of Review (CNOR) process. Each year it has been published, the CNOR has recommended the uplisting from threatened to endangered. Electronic copies of these documents are available at <https://ecos.fws.gov/ecp/species/321>. Please refer to the 2022 delta smelt Species Assessment and Listing Priority Assignment Form of the CNOR for the status of the species. Electronic copies of this document are available at https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/publication/4119.pdf (Service 2023).

Delta smelt is now considered a conservation-reliant species with most individuals completing a large majority of their life cycle in captivity at UC Davis' Fish Conservation and Culture Laboratory (FCCL; Lindberg *et al.* 2013). In December 2021, the Service, along with the CDFW, California Department of Water Resources, and U.S. Bureau of Reclamation, began experimentally releasing captively produced delta smelt into the Sacramento-San Joaquin River Delta in an experiment intended to help inform future supplementation of the species in the wild. For the past several years, most of the spawning population was composed of fish raised at FCCL. The actual numbers of fish released in each of the past three winters was 55,733 in Water Year (WY) 2022, 43,940 in WY2023, and 91,468 in WY2024 (Service unpublished). The number planned for release in WY2025 is circa 100,000. The actual number of spawning fish each year has likely been lower because some fish die before they finish maturing and start looking for opportunities to spawn. Because the delta smelt was nearly extirpated when experimental releases of captive-bred fish began in December 2021, it is unlikely that individuals without any FCCL ancestry still exist at this writing. This year's catch data do not indicate that

the species' status has improved. Thus, the delta smelt now exists only as an integrated hatchery-wild population as envisioned in the *Delta Smelt Supplementation Strategy* (Service 2020).

Delta Smelt Critical Habitat

Legal Status

The Service designated critical habitat for the delta smelt on December 19, 1994 (Service 1994). The geographic area encompassed by the designation includes all water and all submerged lands below ordinary high water and the entire water column bounded by and contained in Suisun Bay (including the contiguous Grizzly and Honker Bays); the length of Goodyear, Suisun, Cutoff, First Mallard (Spring Branch), and Montezuma sloughs; and the existing contiguous waters contained within the legal Delta (as defined in section 12220 of the California Water Code) (Service 1994).

Conservation Role of Delta Smelt Critical Habitat

The Service's primary objective in designating critical habitat was to identify the key components of delta smelt habitat that support successful completion of the life cycle, including spawning, larval and juvenile transport, rearing, and adult migration back to spawning sites. Delta smelt are endemic to the Bay-Delta and the vast majority of wild-born individuals only live one year. Thus, regardless of annual hydrology, the Bay-Delta estuary must provide suitable habitat all year, every year but as detailed below, it no longer does. The primary constituent elements (PCEs) considered essential to the conservation of the delta smelt as they were characterized in 1994 are physical habitat, water, river flow, and salinity concentrations required to maintain delta smelt habitat for spawning, larval and juvenile transport, rearing, and adult migration (Service 1994). The Service recommended in its designation of critical habitat for the delta smelt that salinity in Suisun Bay should vary according to water year type, which it does (Hartman *et al.* 2024). For the months of February through June, salinity standards in support of aquatic resources were codified by the SWRCB "X2 standard" described in its water rights decision D-1641 and its current Water Quality Control Plan.

Description of the Primary Constituent Elements

PCE 1: "Physical habitat" is defined as the structural or underwater 'landscape' components of habitat (Service 1994). The underwater landscape of the Bay-Delta has been substantially changed with many of the changes having occurred decades ago during reclamation of the upper estuary's historical tidal marshes and dredging of its shipping channels (Figure 4). The area extending from Suisun Bay and marsh up the Sacramento River into the Cache Slough Complex has been called the "North Delta Arc" and is an area that most delta smelt have been collected from during monitoring of the estuary's fish assemblages (Stompe *et al.* 2023). Several fish habitat features common in nearshore and littoral zones of many aquatic systems are not known to be relevant to delta smelt, which avoid or have limited association with submerged aquatic vegetation and other forms of in-water structure. It has been hypothesized that delta smelt spawn in intertidal habitats because their nearest evolutionary relative, the surf smelt *Hypomesus pretiosus*, does (Bennett 2005). However, this has never been confirmed. Once the embryos

hatch, the fish are believed to be generally planktonic and pelagic for the rest of their lives. However, short-term studies have shown delta smelt change their depth distribution in response to the tidal cycle moving into nearshore habitats when they do not want to be displaced downstream (e.g., Bennett and Burau 2015). Similar behaviors could facilitate their spawning ‘migration’ (Gross *et al.* 2021). To our knowledge, all free-swimming life stages of delta smelt predominantly use large, low velocity open-water areas, which has been recognized for a long time (Moyle *et al.* 1992). Thus, any role of landscape attributes for the free-swimming life stages of delta smelt is likely indirect via hydrodynamic processes (e.g., current speed (Bever *et al.* 2016 p. 12), resuspension of sediment (Bennett and Burau 2015), or in the generation of foraging microhabitats (Hammock *et al.* 2019a).

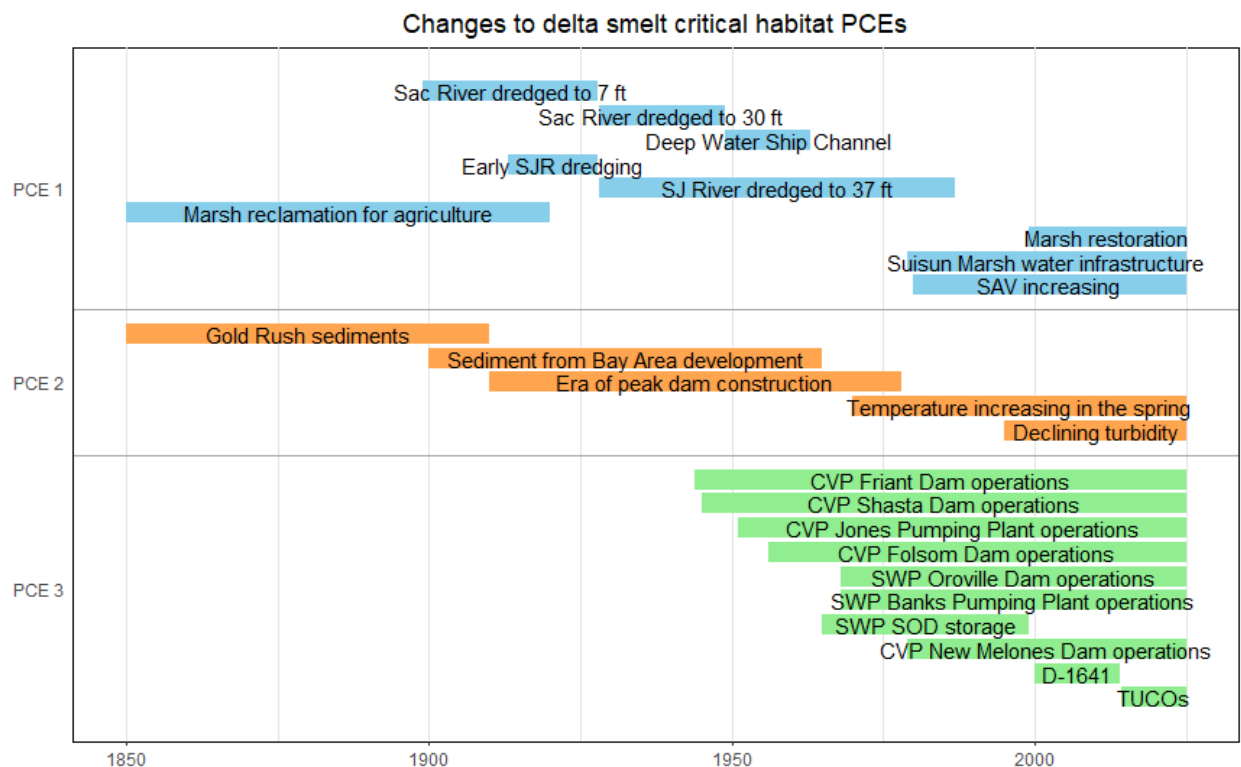


Figure 4: Drivers of Changes to Delta Smelt Critical Habitat PCEs

PCE 2: “Water” is defined as water of suitable quality to support survival and reproduction (Service 1994). Certain conditions of turbidity, water temperature, and prey density dominate the characterization of suitable “water” for delta smelt. Salinity has its own PCE (number 4). Contaminant exposure can degrade this PCE even when the basic habitat components of this PCE are otherwise suitable (Hammock *et al.* 2015; Stillway *et al.* 2024).

Turbidity: Turbidity is the measure of relative clarity of a liquid. It is an optical characteristic of water and is a measurement of the amount of light scattered by material suspended in the water when a light is shined through a water sample. The higher the intensity of scattered light, the higher the turbidity. Material that causes water to be turbid can include clay, silt, particulate organic matter, algae, dissolved colored organic compounds, and microscopic organisms. In the Bay-Delta, turbidity results mainly from sediment suspended in the water column and to a lesser

degree phytoplankton (“suspended particulate matter”; Cloern and Jassby 2012).

It has been repeatedly suggested that turbidity is affecting delta smelt vulnerability to trawling more than it represents an important habitat attribute (Latour 2016; Peterson and Barajas 2018; Duarte and Peterson 2021; Hendrix *et al.* 2023). However, the association of delta smelt with turbid water has also been reported when sampling with gears other than trawls including the fish salvage facilities (Grimaldo *et al.* 2021) and large beach seines (Nobriga *et al.* 2005) that have little trouble capturing large numbers of fish in clear water. We do not argue that turbidity plays a role in vulnerability to capture but the totality of information available to us suggests that turbidity is an important element of delta smelt’s pelagic habitat. This is conceptually supported by research elsewhere showing that turbidity plays an important role in structuring the foraging arenas of pelagic fish communities. Small fishes detect their prey over shorter distances than the larger fishes trying to eat them (Pangle *et al.* 2012). This means that turbidity does not impair the ability of small fishes to find their planktonic prey as much as it impairs the ability of larger predators to find small prey fish. As a result, small prey fish can hide in turbid water while still being able to search for and capture prey of their own. It is via this commonly occurring food web mechanism that we believe turbidity is an essential component of delta smelt’s critical habitat. This hypothesis is supported for delta smelt by evaluation of otolith microstructure that documented faster growth in turbid water (Lewis *et al.* 2021).

The decline of water turbidity has had a large negative effect on delta smelt critical habitat suitability. The quantity of sediment delivered to the estuary increased substantially following the era of hydraulic gold mining in the watershed in the latter 19th century (Schoellhamer 2011). It increased again during rapid regional population growth and development after World War II. Since then, the delivery of new sediment to the estuary has declined in large part due to reservoirs and widespread levee-building. In addition, summertime phytoplankton production has been greatly diminished (Cloern and Jassby 2012). These changes have resulted in a general clearing of the estuary’s waters; however, the clearing trend has been strongest in the freshwater Delta where expansive beds of SAV filter fine sediment from the water (Hestir *et al.* 2016; Work *et al.* 2021). Water exports from the South Delta may also have contributed to the trend toward clearer water by removing suspended sediment in exported water. However, the contribution of exports to the total suspended sediment budget in the estuary is small (Schoellhamer *et al.* 2012).

Water temperature: Several relevant temperature metrics for delta smelt are summarized in Figure 5. Air temperature is the primary driver of water temperature variation in the delta smelt critical habitat (Wagner *et al.* 2011). Water temperature in the Delta can be affected by flow volumes near inflowing water sources when inflows are low (Nobriga *et al.* 2021) but the effect dissipates as the water moves seaward toward Suisun Bay (Vroom *et al.* 2017).

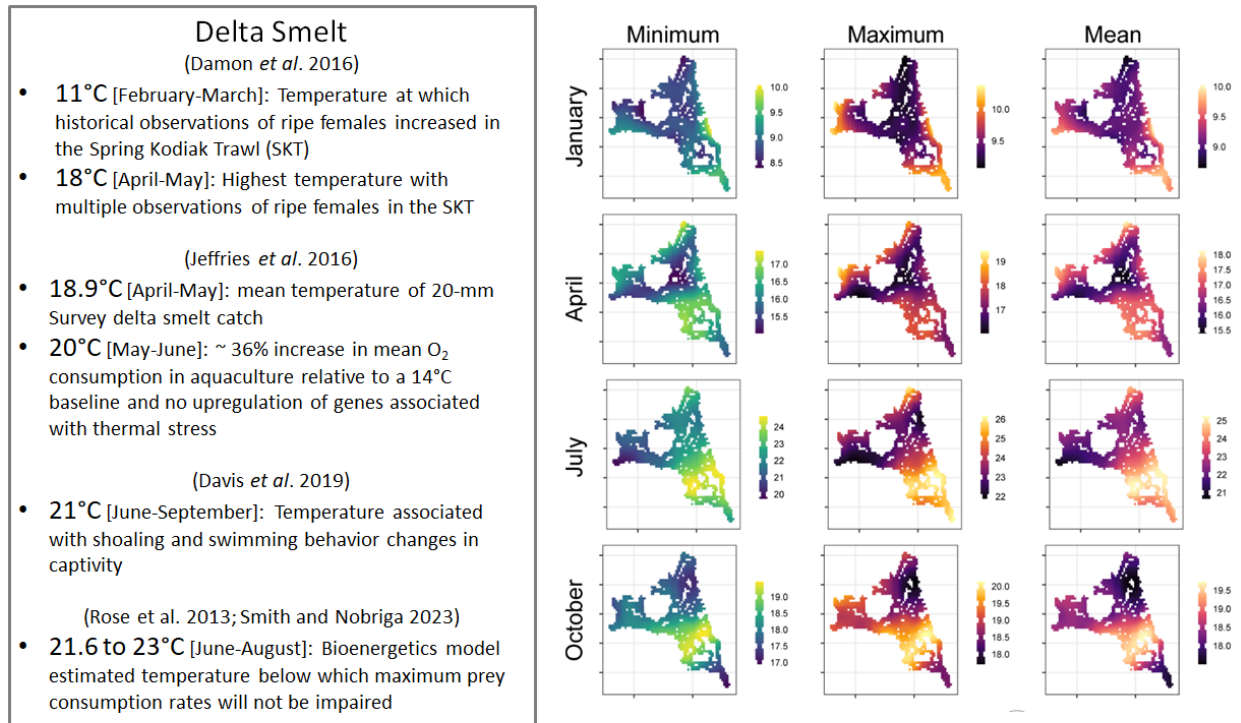


Figure 5: Summary of Selected Delta Smelt Life History Metrics Associated with Water Temperature

Food: The predominantly open-water habitat use of delta smelt is reflected in their “food” or diet composition, which is largely made up of planktonic and epibenthic crustaceans (Moyle *et al.* 1992; Slater and Baxter 2014; Hammock *et al.* 2017). Some epibenthic crustaceans (e.g., amphipods and mysids) ascend into the water column at times and are therefore available to predators foraging in open waters near the surface as delta smelt are believed to do most of the time (Moyle *et al.* 1992). A large majority of the identifiable prey of delta smelt larvae is copepods, particularly the early life stages of copepods (Nobriga 2002; Hobbs *et al.* 2006; Slater and Baxter 2014). Juvenile delta smelt feeding in the summer months also have copepod-dominated diets (Slater and Baxter 2014). Older juveniles and adults continue to prey extensively on copepods but have less reliance on them and greater diet diversity (Hammock *et al.* 2019a). All of delta smelt’s major prey taxa (e.g., copepods, amphipods) are ubiquitously distributed, but which prey species are present at particular times and locations changes from early morning to mid-day, season to season, and has changed dramatically over time (Winder and Jassby 2011).

Contaminants: Delta smelt live in an environment that is chronically toxic to them, though the intensity of contaminant effects has been shown to vary in space and time (Hammock *et al.* 2015; Teh *et al.* 2020; Stillway *et al.* 2024).

The loading of some contaminants into the habitats occupied by delta smelt can be functions of freshwater flow (e.g., Kuivila and Moon 2004; Stillway *et al.* 2024) so in some instances, the impacts of contaminants can be thought of as freshwater flow mechanisms. However, the impacts of others may be more strongly related to where individuals are located (Hammock *et al.*

2015), when and where they are foraging (Weston *et al.* 2019; Teh *et al.* 2020), or what salinity they occupy (Segarra *et al.* 2021). All of these complexities affect the quantities of potentially toxic substances that get ingested over the life span of the fish, ultimately affecting their growth and reproductive potential (e.g., White *et al.* 2017).

New inputs of contaminants that can contribute to accumulated toxicity and body burdens can occur at any time of year but are often associated with increased inflows to the Delta during the winter and spring (Bergamaschi *et al.* 2001; Weston *et al.* 2019). Increased gill lesion scores in delta smelt at Decker Island (Stillway *et al.* 2024) may have been associated with the Fall X2 action and increased liver lesions in the Toe Drain and Cache Slough (Stillway *et al.* 2024) with the Yolo Bypass food pulse experiment in 2019. Spatially, Cache Slough and Suisun Bay have been more frequently associated with biomarkers of contaminant exposure in delta smelt than Suisun Marsh, the Sacramento-San Joaquin River confluence, or the Sacramento Deepwater Ship Channel, but healthy and impaired fish have been collected from throughout the regularly occupied portion of critical habitat (Teh *et al.* 2020).

PCE 3: “River flow”. California has a Mediterranean climate with a pronounced wet and dry season that can be differentiated by the likelihood that the monthly volume of outflow from the Delta exceeds 1 billion cubic meters (~ 13,000-14,000 cubic feet per second or ~ 800 thousand acre feet per month; Figure 6). We use this threshold to differentiate our use of ‘wet season’ and ‘dry season’. Prior to significant human development of surface water storage and conveyance, the wet season spanned December through June, and the dry season was July through November. The probability that monthly outflows were lower than 1 billion cubic meters was nearly zero from January through May. The substantial year to year variability of California’s climate can still generate extreme flows similar to what occurred predevelopment. However, median contemporary outflow is lower than pre-development outflow from December through June, and generally higher or skewed toward the higher end of the historical distributions from July through November to avoid excessive salinity intrusion into the Delta. The contemporary estuary has a shorter wet season and a longer dry season than what occurred pre-development (Figures 6 and 7) and climate change is likely interacting with water use to convert May into a ‘dry season’ month as well.

Month	Circa 1850 probability that Delta outflow exceeded 1 billion m ³	Circa 2008 probability that Delta outflow exceeded 1 billion m ³	Approximation of present-day to anticipated circa 2037 flow regime
December			
January			
February			
March			
April			
May			
June			
July			

August			
September			
October			
November			

Figure 6: Modeled Volumes of Delta Outflow. Source Gross *et al.* 2018.

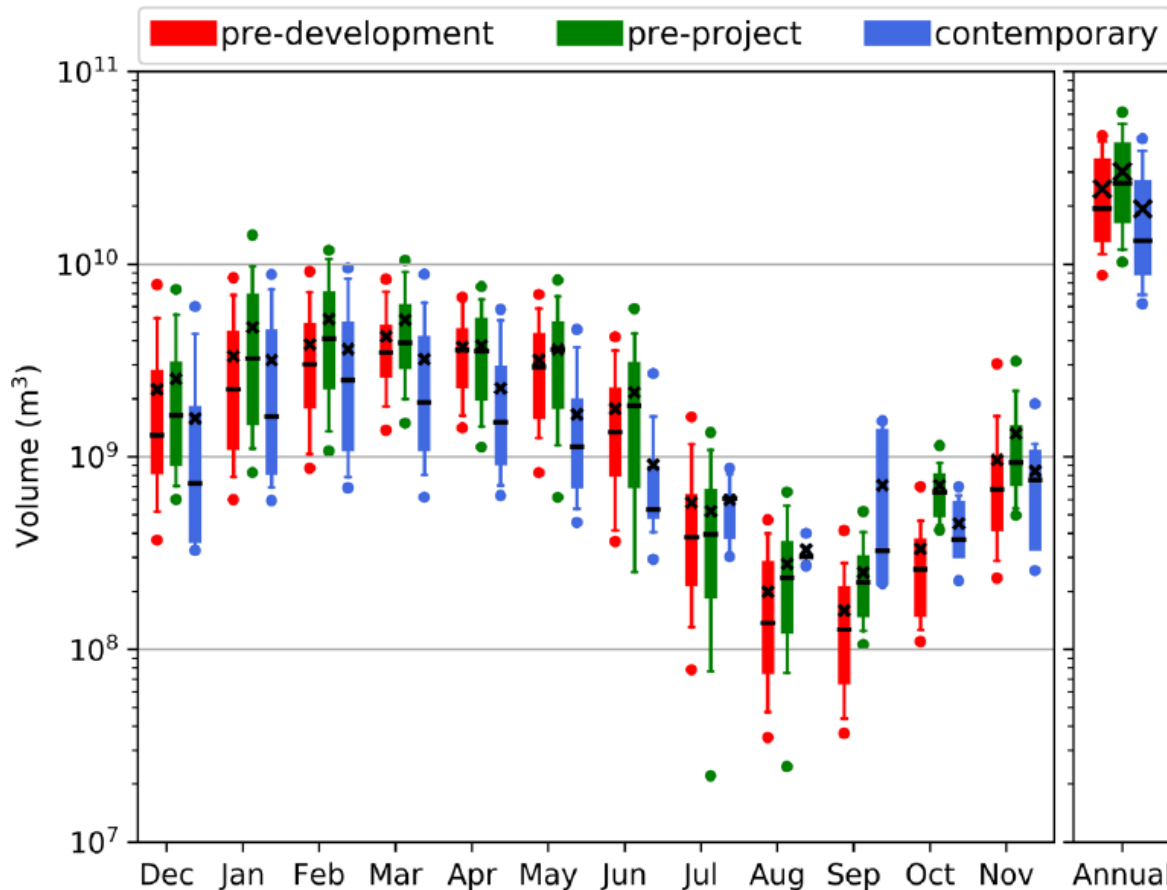


Figure 7: Conceptual Depiction of How Climate Change and Water Development Have Interacted to Change the Freshwater Flow Regime. Source: Gross *et al.* 2018.

“River flow” was originally described as critical to facilitate an extended spawning migration by adult fish and the subsequent transport of offspring to rearing habitats in the low-salinity zone (Service 1994). Both of these are now understood to be affected by combinations of tidal flows and river flows (e.g., Kimmerer *et al.* 2014; Bennett and Burau 2015; Gross *et al.* 2021). Historically, many delta smelt made a short spawning migration, but some did not (Hobbs *et al.* 2019). By a short migration we mean on the order of 50 kilometers or less. However, for the past several years, a large majority of the spawning population has been released from captivity using a variety of techniques, but most releases have occurred near the City of Rio Vista. The fish have been observed to rapidly disperse from release sites, but these movements should not be conflated with migration. To some degree, delta smelt larvae include an element of passive drift in their suite of behaviors but the variable timing of their return to the low-salinity zone (Hobbs

et al. 2019) and their retention well upstream of X2 until they do (Dege and Brown 2004) suggest they have additional behaviors they can deploy to keep affiliated with desired habitat conditions.

Net water movements in the Delta have experienced strong time trends since water exports began (Hutton *et al.* 2019). In particular, cross-Delta flows have increased during the summer and fall, Rio Vista flows have decreased in the winter and spring and increased in the summer, and San Joaquin River flows have decreased year-round. The operations of the Central Valley Project and State Water Project were the largest contributor to these net flow changes except for Jersey Point flow in the spring, which is also strongly influenced by in-Delta irrigation demand (Hutton *et al.* 2019). The net flow changes ultimately influence the Delta outflow, which except in the summer, has been trending downward for more than 100 years (Hutton *et al.* 2017; Reis *et al.* 2019).

PCE 4: “Salinity”. The salinity of estuary waters is determined by mixing of freshwater, which has very low salinity, and seawater, which typically has a salinity of about 33-34 practical salinity unit (psu). On average, the salinity of the upper estuary declines in a landward direction, and is most strongly influenced by Delta outflow, at least at time scales longer than a couple of weeks (Jassby *et al.* 1995). As such, the seasonal and interannual patterns in salinity track variation in Delta outflow as do spatial locations and intensity of turbulent mixing, water column stratification and other outcomes of fresh- and brackish water mixing that help aggregate sediment and planktonic organisms in the low-salinity zone (MacWilliams *et al.* 2015). Higher freshwater flow generally lowers the salinity of delta smelt critical habitat, so salinity is at its annual minimum during the highest flows of the wet season and typically reaches an annual maximum sometime in the August through October timeframe. The “Salinity” PCE helps define delta smelt nursery habitat because nursery habitat is defined in part, by a range of salinity (Service 1994). Most delta smelt spend at least some of their life in the low-salinity zone, which has been alternately defined in the literature as 0.5 to 5 or 0.5 to 6 psu. Both definitions were derived from interpretations of where historical phyto- and zooplankton densities were elevated due to hydrodynamic retention. These definitions of the low-salinity zone salinity range are approximations that should not be expected to precisely match where delta smelt occur (Kimmerer *et al.* 2013). Most delta smelt larvae occupy freshwater or very low salinity water to ~ 2 psu. The juveniles are mostly in freshwater to a salinity of ~ 4 psu, and the older sub-adults have been found in salinity up to ~ 20 psu but were still mostly associated with freshwater and the low-salinity zone to ~ 6 psu.

Environmental Baseline

Environmental Baseline refers to the condition of the listed species or its designated critical habitat in the Action Area, without the consequences to the listed species or designated critical habitat caused by the proposed action. The *Environmental Baseline* includes the past and present impacts of all Federal, State, or private actions and other human activities in the Action Area, the anticipated impacts of all proposed Federal Projects in the Action Area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. The impacts to listed species or designated critical habitat from ongoing Federal agency activities or existing Federal agency facilities that are not within the agency's discretion to modify are part of the *Environmental Baseline*.

LTMS Program

The ongoing 50-year LTMS program covers all Federal and non-Federal operations and maintenance dredging and dredged material placement in the region. Dredging takes place at 10 Federal navigation channels (Table 1) and approximately 106 maintenance dredging sites associated with ports, marinas, and homeowners associations (Table 2); one open ocean disposal site (SF-DODS); and six in-water placement locations that are currently in use: San Francisco Bar (SF-8), Carquinez Strait (SF-9), San Pablo Bay (SF-10), Alcatraz (SF-11), Suisun Bay (SF-16), and the Ocean Beach Demonstration Site (expected to be formally designated as SF-17 by January 2025). Figure 3 presents locations of the federally maintained navigation channels, non-Federal navigation channels and dredged material placement sites. The Service attempted to capture all of the consultations for the LTMS program below but given the time frame of the 1999 Programmatic Biological Opinion not all consultations are electronically available.

Federal Dredging Projects

Table 1. Corps Maintained Federal Navigation Channels

Channel	Typical Dredging Recurrence Interval (years)	Range of Volume Dredged per Episode (cy) ¹	2019 -2023 Annual Average (mcy)	Total Surface Area (acres)
Richmond Inner Harbor	1	10,000 – 800,000	0.316	326
Richmond Outer Harbor	1	50,000 – 800,000	0.129	618
San Francisco Harbor – Main Ship Channel	1	50,000 – 700,000	0.371	1,204
Napa River Channel*	6-10	50,000 – 200,000 ²	0.327	163
Petaluma River Channel (and Across the Flats*)	4-7	50,000 – 300,000	0.560	315
San Rafael Creek Channel	4-7	10,000 – 400,000 ²	0.596	39
Pinole Shoal	1	50,000 – 600,000	0.125	879
Suisun Bay Channel and New York Slough ³	1	50,000 – 500,000	0.143	788
Oakland Inner and Outer Harbor ⁴	1	100,000 – 1,250,000	0.791	1,050
San Leandro Marina (Jack D. Maltester Channel)	4-6	100,000 – 200,000 ²	-	92
Redwood City Harbor	1-2 (Harbor Channel) 10 (San Bruno Channel)	10,000 – 700,000 (Harbor Channel) 30,000 (San Bruno Channel)	0.237 -	344 (Harbor Channel) 209 (San Bruno Channel)

Larkspur Ferry Channel ⁵	4-7	20,000 – 700,000	0.700	70
<p>Notes:</p> <p>cy = cubic yards; mcy = million cubic yards</p> <p>* For areas not dredged since 2000, the last dredging event is reported.</p> <ol style="list-style-type: none"> 1. Range of volume dredged per fiscal year. For areas not dredged recently, the last dredging event is reported. 2. Due to the lower frequency at which these channels are dredged, future dredge volumes could be greater. 3. Suisun Bay Channel and New York Slough dredging by the Corps is covered under a separate biological and conference opinion with the Service for delta smelt and longfin smelt (Service File No. 2024-0024863-S7-001). Clamshell-bucket is used as proposed by the Corps and restated in the Suisun Bay Channel Dredging Biological Opinion; aside from regularly scheduled maintenance, the Corps would take urgent action outside the work window, as needed, to remove the hazardous shoaling at Bulls Head Reach. 4. Oakland Inner and Outer Harbor dredging by the Corps is covered under a separate biological opinion with the Service for the California least tern (Service File No. 2022-0085090-S7-001). As of this writing, the Corps has not reinitiated to include the longfin smelt DPS. 5. Larkspur Ferry Channel was last dredged by the non-Federal sponsor, Golden Gate Bridge Highway and Transportation District in 2022. 				

Richmond Inner and Outer Harbor

The Corps has consulted several times separate from the LTMS Programmatic Biological Opinion and Amendment on Richmond Inner and Outer Harbor Federal Navigation Channel dredging and material disposal (Service file numbers: 81420-2000-I-3075 [not original number], 81420-2008-I-0984, 81420-2010-I-0667, and most recently in 2024 during this reinitiation).

Napa River Channel

On December 14, 2015, the Service issued a biological opinion (Service file number: 08FBDT00-2015-F-0034) to the Corps’ San Francisco District Regulatory Division appending the City of Napa’s Upper Napa River Federal Navigation Channel Maintenance Dredging (Corps file number: SPK-2013-00117N) to the December 1, 2004, Formal Programmatic Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat (Service File Number: I-1-04-F-0345). The City of Napa never used the Corps permit before it expired and the Corps, via the BA for this longfin smelt reinitiation, has withdrawn the consultation request.

On September 23, 2016, the Service issued a biological opinion (Service file number: 08FBDT00-2016-F-0144) to the Corps’ San Francisco District Environmental B Section appending the Lower Napa River Federal Navigation Channel Project to the 1999 Programmatic Biological Opinion/2004 Amendment regarding effects to delta smelt. To date, the Corps has not reinitiated this consultation to include the longfin smelt DPS and this project is now included via this reinitiation.

Oakland Harbor

Previous consultations separate from the 1999 Programmatic Biological Opinion/2004 Amendment were issued in 2009, 2010 and 2019 (Service File Numbers: 81420-2009-F-0654,

81420-2010-F-0561 and 08FBDT00-2018-F-0356) for dredging episodes outside of the California least tern LTMS work window.

On February 27, 2023, the Service issued a separate individual consultation for the effects of the Oakland Harbor Maintenance Dredging Project between 2023-2029 on the California least tern outside of the LTMS work windows (Service file number: 2022-0085090-S7-001). The Service recommended including the optional conference consultation process for the at the time proposed to be listed longfin smelt to which the Corps declined. To date, the Corps has not reinitiated this individual consultation to include the longfin smelt DPS.

Suisun Bay

Numerous separate individual and emergency consultations have been issued regarding the effects to delta smelt and its critical habitat for dredging the Suisun Bay Federal channel in Suisun Bay using both hydraulic and clamshell methods.

The Service issued biological opinions for hydraulic dredging in 2013 and 2014 (Service file numbers: 08FBDT00-2013-F-0022 and 08FBDT00-2014-F-0019). The Service issued biological opinions for clamshell dredging only in 2015, 2016, 2017, 2018, 2019 (for fiscal years 2019-2023) (Service file numbers: 08FBDT00-2015-F-0013-2, 08FBDT00-2016-F-0081, 08FBDT00-2017-F-0071, 08FBDT00-2018-F-0075, and 08FBDT00-2019-F-0071). The Service issued a biological opinion on the delta smelt and its critical habitat and a conference opinion on then proposed endangered longfin smelt DPS for Suisun Bay Channel Maintenance Dredging for Fiscal Years 2024-2029 (Service file number: 2024-0024863-S7-001). To date, the Service has not received a request to confirm the 2024 conference opinion to a final biological opinion.

Excessive shoaling typically occurs at Bulls Head Reach. The shoaling creates a major navigational hazard, especially for tankers carrying petroleum products or other hazardous material, and emergency dredging at Bulls Head Reach has been requested by bar pilots and the non-federal sponsor due to repeated occurrences of shoaling at a rate that is extremely faster than expected. Hopper dredging was used in 2000, 2003, 2009, 2010, 2012, 2021 and 2022 and clamshell dredging in 2020 for these emergency shoaling occurrences, many of which happened significantly earlier than the delta smelt work window. These advanced dredging episodes were not described as project actions in prior consultations and were not included in the 2019 biological opinion. The Corps requested emergency consultation for these episodes individually in 2020, 2021, and 2022.

Prior to these consultations, both delta smelt and longfin smelt had been recorded as entrained by hydraulic dredging via entrainment monitoring. As noted in the 2013 consultation, in 2011, entrainment monitoring for the longfin smelt was conducted on the *Essayons*. One hundred percent of the total, 220-hydraulically dredged hopper loads were sampled. The *Essayons* dredged the Richmond Outer/South Hampton area, Pinole Shoal, and the Suisun Bay Channel. A total of 11 longfin smelt were observed from seven hopper loads from all locations. Delta smelt were observed in three hopper loads, with one observed in the hopper itself. Delta smelt were taken (killed) in the Port Chicago (hopper flush) and New York Slough reaches (hopper load) of the Suisun Bay Channel.

Redwood City Harbor

The Corps consulted on the maintenance dredging of the Redwood City Harbor Federal Channels in 2001 (Service file numbers: 1-1-01-I-3016 and 81420-2001-I-3106).

Larkspur Ferry Channel

In 2001, the Service issued a biological opinion to the Corps' San Francisco District Environmental Section appending the Larkspur Ferry Channel Maintenance Dredging Project to the 1999 Programmatic Biological Opinion for effects to the California clapper rail, salt marsh harvest mouse, and Sacramento splittail (Service file number: 1-1-01-F-156. The consultation has not been reinitiated to include the longfin smelt DPS and is now included via this reinitiation.

*Non-Federal Dredging Projects***Table 2. San Francisco Bay Region Non-Corps Dredge Project Sites**

Name	Latitude	Longitude	PBO Status*	Non-LTMS BOs**
Aeolian Yacht Club	37° 45.003' N	122° 14.079' W	PBO	
Alameda Point Channel	37° 46.441' N	122° 18.907' W	PBO	
Arques Shipyard and Marina	37° 52.064' N	122° 29.769' W	PBO	
Ballena Isla Marina	37° 45.978' N	122° 17.109' W	PBO	
Ballena Isla Townhomes	37° 46.149' N	122° 17.240' W	PBO	
Bel Marin Keys Community Services District	38° 5.686' N	122° 29.445' W	I	Service file:08FBBDT00-2019-F-0190
Bellevue Channel (Belvedere Cove)	37° 52.337' N	122° 27.575' W	PBO	
Belvedere Land Company	37° 52.363' N	122° 27.584' W	PBO	
Benicia Marina	38° 2.597' N	122° 9.444' W	I-Appended to non-LTMS PBO	Service file: 81410-2010-F-0002-1
Benicia Port Terminal (AMPORTS)	38° 2.488' N	122° 8.087' W	I	Service file: 2023-0067345-S7-001
Berkeley Marina	37° 52.122' N	122° 18.972' W	PBO/I	2023-0110365-S7-001
Black Point Boat Launch Ramp	38° 6.880' N	122° 30.356' W	PBO	
Blu Harbor (pvsly Pete's Harbor)	37° 30.017' N	122° 13.348' W	NA	
Brickyard Cove Homeowners Association	37° 54.497' N	122° 22.799' W	PBO	
Brisbane Marina at Sierra Point	37° 40.462' N	122° 22.797' W	PBO	
C&H Sugar Company	38° 3.494' N	122° 13.083' W	PBO	
CA Maritime Academy	38° 3.976' N	122° 13.835' W	I-Appended to non-LTMS PBO	Service files: 2024-0040437-S7-001 and

				81420-2009-F-1240
Castrol North American Consumer's Berth	37° 55.342' N	122° 22.367' W	PBO	
Chevron Rod and Gun	37° 57.617' N	122° 24.658' W	PBO	
Chevron, Richmond Long Wharf	37° 55.492' N	122° 24.766' W	PBO	
City of Emeryville Marina	37° 50.430' N	122° 18.750' W	PBO	
City of Napa, JFK Boat Ramp	38° 15.929' N	122° 17.04' W	PBO	
City of Suisun Pierce Island Boat Ramp	38° 13.980' N	122° 2.249' W	PBO	
City of Sunnyvale Boat Ramp	37° 26.131' N	122° 1.622' W	PBO/I?	Service file: 81420-2009-I-0932-1
Clipper Yacht Harbor	37° 51.858' N	122° 29.543' W	PBO	
Conoco Philips, Richmond	37° 54.754' N	122° 21.875' W	PBO	
Conoco Philips, Rodeo Terminal	38° 3.421' N	122° 15.711' W	PBO	
Corinthian Yacht Club	37° 52.359' N	122° 27.406' W	PBO	
Corona Del Mar Homeowners Association	37° 45.832' N	122° 13.513' W	PBO	
Coyote Point Marina	37° 35.339' N	122° 19.012' W	PBO	
Emery Access Chanel	37° 50.563' N	122° 18.867' W	PBO	
Emery Cove Marina	37° 50.312' N	122° 18.628' W	PBO	
Exploratorium	37° 48.160' N	122° 23.902' W	PBO	
Foster City Lagoon	37° 32.647' N	122° 15.829' W	PBO/I?	Service file: 08FBDT00-2016-I-0146
Galilee Harbor	37° 51.759' N	122° 29.329' W	PBO	
Gallinas Creek	38° 1.023' N	122° 30.472' W	PBO	
Glen Cove Marina	38° 4.023' N	122° 12.790' W	I-Appended to non-LTMS PBO	Service files: 81420-2009-F-0995 and 08FBDT00-2020-F-0113
Greenbrae Marina Neighborhood	37° 56.540' N	122° 30.627' W	PBO	
Hanson Aggregates	37° 45.799' N	122° 13.439' W	PBO	
Harbor Bay Ferry Channel	37° 44.143' N	122° 15.479' W	PBO	
High Tide Boat Sales	37° 58.080' N	122° 30.718' W	PBO	
Jackson Property	37° 45.862' N	122° 13.526' W	PBO	
Johnson Property	37° 52.405' N	122° 27.644' W	PBO	
Kappas Marina – Richardson Bay Marina	37° 52.580' N	122° 30.262' W	PBO	
Kiewit Pacific Company	38° 5.477' N	122° 15.294' W	PBO/I?	Service file: 08FBDT00-2015-I-0018
Kinder Morgan, Richmond Terminal	37° 54.439' N	122° 21.817' W	PBO	
Larkspur Landing Ferry Terminal	37° 56.744' N	122° 30.551' W	PBO	Service file: 08FBDT00-2019-F-0184
Larkspur Marina	37° 56.417' N	122° 31.391' W	PBO	
Larkspur Sea Scout Base	37° 56.587' N	122° 30.699' W	PBO	
Levin-Richmond Terminal Corporation	37° 55.269' N	122° 22.017' W	PBO	
Loch Lomond Marina – Marina Village	37° 58.343' N	122° 28.867' W	PBO	
Lowrie Yacht Harbor	37° 58.037' N	122° 30.469' W	PBO	
Mare Island Shipyard	38° 5.796' N	122° 15.869' W	I***	Service files: 81420-2010-F-0607, 81420-2016-

				F-0608, 2022-0007216-S7-001, 2022-0007216-S7-001-R001, 2022-0004215-S7-001, and 2022-0004215-S7-001-R001
Marin Rowing Association	37° 56.557' N	122° 31.026' W	PBO	
Marin Yacht Club	37° 58.315' N	122° 29.922' W	PBO	
Marina Bay Yacht Harbor	37° 54.804' N	122° 20.960' W	PBO	
Marina Plaza Harbor	37° 52.008' N	122° 29.706' W	PBO	
Marina Vista Canal and Homeowners Assoc.	37° 58.385' N	122° 29.754' W	PBO	
Martinez Marina	38° 1.629' N	122° 8.230' W	I- Appended to non-LTMS PBO	Service files: 81410-2012-F-0026-R001, 81410-2012-F-0026-R002, and 2022-0078674-S7-001
Martinez Shore Terminal	38° 2.748' N	122° 6.082' W	PBO	
Montezuma Harbor	38° 11.229' N	121° 58.230' W	I- Appended to non-LTMS PBO	Service files: 1-1-05-F-0199, 08FBDT00-2013-F-0030-R001, and 2022-0078657-S7-001
Napa Valley Marina	38° 13.245' N	122° 18.783' W	PBO	
Oakland Yacht Club	37° 47.021' N	122° 15.818' W	I	
Oyster Cove Marina	37° 39.821' N	122° 22.709' W	PBO	
Oyster Point Marina	37° 39.820' N	122° 22.682' W	PBO	
Paradise Cay Homeowners Assoc.	37° 54.825' N	122° 28.659' W	PBO	
Paradise Cay Yacht Club	37° 54.930' N	122° 28.590' W	PBO	
Petaluma Marina	38° 13.797' N	122° 36.811' W	PBO	
Pittsburg Marina	38° 2.143' N	121° 52.950' W	I- Appended to non-LTMS PBO	Service file: 08FBDT00-2019-F-0259
Plains Marketing (Martinez Shore Terminal)	38° 2.612' N	122° 6.142' W	PBO	
Point San Pablo Yacht Club	37° 57.818' N	122° 25.103' W	PBO	
Port of Oakland	37° 48.646' N	122° 19.715' W	PBO	
Port of Redwood City	37° 30.808' N	122° 12.576' W	PBO	
Port of Richmond	37° 54.729' N	122° 21.876' W	PBO	
Port of San Francisco	37° 48.022' N	122° 23.770' W	PBO	
Port Sonoma Marina	38° 7.060' N	122° 29.949' W	PBO	
Redwood City Harbor	37° 30.292' N	122° 12.420' W	PBO	

Redwood Shores Lagoon	37° 32.315' N	122° 14.691' W	I?	Service files: 1-1-94-F- 0062, 81420- 2008-F-0949, and 81420- 2008-F-0949- 2
Richmond Yacht Club	37° 54.510' N	122° 23.015' W	PBO	
RMC Lonestar Cement Marina Terminal	37° 30.850' N	122° 12.522' W	PBO/I?	Service files: 1-1-00-I-762 and 1-1-00-I- 1435
Ron Valantine Boat Dock	37° 46.160' N	122° 17.255' W	PBO	
Ryer Island Boat Harbor (Veneco)	38° 4.467' N	122° 0.713' W	PBO	
San Francisco Dry Dock	37° 45.801' N	122° 22.984' W	PBO	
San Francisco Marina (Golden Gate & St. Francis Yacht Clubs)	37° 48.410' N	122° 26.661' W	PBO	
San Francisco Yacht Club	37° 52.308' N	122° 27.735' W	PBO	
San Leandro Marina	37° 41.820' N	122° 11.485' W	PBO	
San Rafael Creek, Residential Berths (Canal)	37° 58.068' N	122° 30.680' W	PBO	
San Rafael Rock Quarry	37° 59.302' N	122° 26.838' W	PBO	
San Rafael Yacht Harbor	37° 58.134' N	122° 31.062' W	PBO	
Sausalito Marina Properties	37° 51.603' N	122° 29.044' W	PBO	
Sausalito Yacht Club/Harbor	37° 51.581' N	122° 28.877' W	PBO	
Schnitzer Steel	37° 47.628' N	122° 17.538' W	PBO	
Schoonmaker Point Marina	37° 51.859' N	122° 29.479' W	PBO	
Shamrock Materials	38° 13.515' N	122° 36.478' W	PBO	
Shell Terminal	38° 2.002' N	122° 7.380' W	PBO	
South Beach Yacht club	37° 46.804' N	122° 23.158' W	PBO	
Strawberry Recreation District	37° 53.311' N	122° 30.001' W	PBO	
Suisun City Marina	38° 14.056' N	122° 2.247' W	I	Service files: 08FBDT00- 2018-I-0004 and 81420- 2009-I-0110
Time Oil Terminal	37° 55.079' N	122° 21.856' W	PBO	
Timmers Landing	37° 54.554' N	122° 28.481' W	PBO	
Tosco Refinery	37° 54.926' N	122° 21.900' W	PBO	
US Army Reserve Center, Mare Island	38° 5.277' N	122° 15.468' W	PBO	
USCG Cutter Aspen Mooring and Approach	37° 48.612' N	122° 21.637' W	NA	
USCG Integrated Support Command, Alameda	37° 46.753' N	122° 14.943' W	PBO	
USCG Station Golden Gate	37° 49.996' N	122° 28.581' W	PBO	
USCG Station Vallejo/Mare Island	38° 6.751' N	122° 16.265' W	I	Service file: 08FBDT00- 2021-I-0036
USCG Station Yerba Buena Island	37° 48.568' N	122° 21.677' W	PBO	
USS Posco	38° 1.915' N	121° 52.250' W	I	
Valero Refinery Co. - Benicia Crude Dock	38° 2.676' N	122° 7.741' W	I	Service files: 1-1-03-I-1972, 08FBDT00- 2013-I-0017, and 2023-

				0129750-S7-001
Vallejo Marina	38° 6.424' N	122° 16.096' W	Appended to non-LTMS PBO	Service file number: 08FBDT00-2012-F-0037
Vallejo Yacht Club	38° 6.283' N	122° 16.063' W	Appended to non-LTMS PBO	Service file: 81420-2009-F-0122-1 and 08FBDT00-2013-F-0045
Vulcan Materials	38° 13.442' N	122° 36.381' W	APBO	Service file: 2024-0047331-S7-001
WesPac Energy Pittsburg Terminal	38° 2.542' N	121° 53.565' W	APBO	
WETA Central Bay Ferry Maintenance Facility	37° 46.275' N	122° 17.955' W	I?	
WETA Harbor Bay Terminal	37° 44.182' N	122° 15.423' W	NA	
WETA Vallejo Baylink Ferry Terminal	38° 6.001' N	122° 15.789' W		No consultation

Notes:

*PBO = included by DMMO in LTMS Programmatic Biological Opinion; APBO = Appended to PBO; I = Individual consultation; NA = project is not included in PBO and has no FWS consultation on file (No Effect). PBO=Programmatic Biological Opinion

**These project sites may also have other permits for activities not covered under the LTMS, such as dock repair. DMMO is working on gathering the information for separate permitting actions at each site that may also have a section 7 consultation on file.

***Permit or Permit modification ongoing or section 7 consultation ongoing as part of the permit process.

Please note, this table was copied from the BA with the Service’s additions to the notes the PBO Status* and Non-LTMS BOs columns. Some projects in Table 2 were listed as PBO but individual consultations and some have separate consultations for other activities which may also have a dredging component and have been included in the Non-LTMS column and the discussion below. For example, the Berkeley Marina Docks D & E Replacement Project (Service file number: 2023-0110365-S7-001) had a maintenance dredging component pursuant to the replacement activity that was analyzed in that specific consultation.

Ballena Isle Marina

The Service has two file numbers (81420-2000-I-1830 and 81420-2001-I-3493 [not original numbers]) for this marina dredging but could not find an electronic copy of either consultation.

Bel Marin Keys Community Services District

On February 3, 2020, the Service issued an individual concurrence and biological opinion to the Corps’ San Francisco District Regulatory Division for the Bel Marin Keys Community Services District's Bel Marin Keys Lagoon and Novato Creek Maintenance Dredging (Service file number: 08FBDT00-2019-F-0190) for effects to California clapper rail and salt marsh harvest mouse. Consultation has not been reinitiated to include the longfin smelt DPS.

Benicia Marina

On April 27, 2010, the Service issued a letter (Service file number: 81410-2010-F-0002-1) to the Corps' San Francisco District Regulatory Division appending the dredging project to the December 1, 2004, Formal Programmatic Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat (Service File Number: 1-1-04-F-0345). In 2001, the Service issued a concurrence letter for the Benicia Marina Maintenance Dredging Project (Service file number: 81420-2001-I-2597 [not original file number]), although an electronic copy is not available. Consultation has not been reinitiated to include the longfin smelt DPS.

Benicia Port Terminal (AMPORTS)

On February 15, 2024, the Service issued an individual biological and conference opinion on the AMPORTS Benicia Port Terminal Maintenance Dredging Project (Service file number: 2023-0067345-S7-001) for effects to the delta smelt and its critical habitat and the then proposed longfin smelt DPS as requested by the Corps' San Francisco DMMO Operations and Readiness Division on December 5, 2023. The Corps also requested emergency consultation and informal consultation in early 2023. To date, the Service has not received a request to confirm the 2024 conference opinion to a final biological opinion.

Berkeley Marina

On April 4, 2024, the Service issued a conference opinion to the Corps' San Francisco District Regulatory Division for the effects of the Berkeley Marina Docks D & E Replacement Project (Service file number: 2023-0110365-S7-001) on the then proposed longfin smelt DPS. The project had a maintenance dredging component pursuant to the replacement activity that was analyzed in that specific consultation.

Black Point Boat Launch Ramp

The Service has a historical database entry for consultation related to splittail (Service file number: 81420-2000-I-1348 [not original file number]) but could not find an electronic copy of the document.

CA Maritime Academy

On August 26, 2024, the Service issued a biological opinion to the U.S. Department of Transportation Maritime Administration for effects of the California State University Maritime Academy Waterfront Master Plan Phase 1 Project on the longfin smelt DPS (Service file number: 2024-0040437-S7-001). The project description included maintenance dredging not just dredging for the Phase 1 and as such was analyzed in the project-specific biological opinion.

On October 5, 2009, the Service issued a biological opinion (Service file number: 81420-2009-F-1240) to the Corps' San Francisco District Regulatory Division appending the California Maritime Academy Boat Basin Dredging Project to the December 1, 2004, Formal Programmatic Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small

Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat (Service File Number: 1-1-04-F-0345). Consultation has not been reinitiated to include the longfin smelt DPS.

City of Sunnyvale Boat Ramp

On July 17, 2009, the Service issued an informal concurrence letter (Service file number: 81420-2009-I-0932-1) to the Corps' San Francisco District Regulatory Division regarding effects from dredging the City of Sunnyvale's NASA-AMES boat ramp on California clapper rails and salt marsh harvest mice. Consultation has not been reinitiated to include the longfin smelt DPS.

Foster City Lagoon

On January 19, 2017, the Service issued an informal concurrence letter (Service file number: 08FBDT00-2016-I-0146) to the Corps' San Francisco District Regulatory Division regarding effects from the Foster City Lagoon Intake Dredging Intake Structure Dredging Project on the California clapper rail, salt marsh harvest mouse, western snowy plover, and California least tern. Consultation has not been reinitiated to include the longfin smelt DPS.

Glen Cove Marina

On October 5, 2009, the Service issued a biological opinion (Service file number: 81420-2009-F-0995) to the Corps' San Francisco District Regulatory Division appending the Glen Cove Marina Dredging Project (Corps File number: 2009-00120N) to the December 1, 2004, Formal Programmatic Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat (Service File Number: 1-1-04-F-0345).

On March 4, 2020, the Service issued a biological opinion (Service file number: 08FBDT00-2020-F-0113) to the Corps' San Francisco District DMMO Operations and Readiness Division appending the Glen Cove Marina Dredging Project (Corps File number: 2009-00120N) to the December 1, 2004, Formal Programmatic Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat (Service File Number: 1-1-04-F-0345). Consultation has not been reinitiated to include the longfin smelt DPS.

Kiewit Pacific Company

On May 20, 2015, the Service issued an informal concurrence letter (Service file number: 08FBDT00-2015-I-0018) to the Corps' San Francisco District Regulatory Division regarding effects from the Kiewit Infrastructure West Company Maintenance Dredging Project (Corps file number: 2014-00429S) on the delta smelt. Consultation has not been reinitiated to include the longfin smelt DPS.

Larkspur Landing Ferry Terminal

On June 14, 2019, the Service issued a biological opinion to the Corps' San Francisco District Regulatory Division for the Corte Madera Four-Acre Tidal Marsh Restoration Project (Service file number: 08FBTD00-2019-F-0184) regarding the effects to the California clapper rail and salt marsh harvest mouse. The project restored a former 4.3-acre dredge material fill site back to a tidal marsh to fulfill mitigation obligations to establish suitable tidal marsh habitat for California clapper rail in accordance with a 1988 Corps permit (the Service was not provided a copy) for dredging and a modification to ferry operations at the Larkspur Ferry Terminal.

Mare Island Shipyard

On May 14, 2010, Service issued a biological opinion to the Corps' San Francisco District Regulatory Division for the Mare Island Shipyard Dredging and Drydock Operations Project (Service file number: 81420-2010-F-0607) regarding the effects to the delta smelt. The Corps requested reinitiation on October 27, 2015, and on March 11, 2016, the Service issued an amended biological opinion (Service file number: 81420-2016-F-0608). Since then, the ownership changed and the consultation has been superseded by two separate consultations. On June 9, 2022, the Service issued a biological opinion to the Corps' San Francisco District DMMO Operations and Readiness Division for the Mare Island Dry Docks Maintenance Dredging Project (Service file number: 2022-0007216-S7-001 and Corps File Number: 2008-00311) and an amended biological opinion to include the longfin smelt DPS was issued on November 14, 2024 (Service file number: 2022-0007216-S7-001-R001). On June 28, 2022, the Service issued a biological opinion to the Corps' San Francisco District DMMO Operations and Readiness Division for the Lind Marine Maintenance Dredging Project (Service file number: 2022-0004215-S7-001 and Corps File Number: 2020-00238) and an amended biological opinion to include the longfin smelt DPS was issued on November 21, 2024 (Service file number: 2022-0004215-S7-001-R001).

Martinez Marina

On October 29, 2012, the Service issued a biological opinion (Service file number: 81410-2012-F-0026-R001) to the Corps' San Francisco District Regulatory Division appending the Martinez Marina Maintenance Dredging Project (Corps File number: 2012-00070S) to the December 1, 2004, Formal Programmatic Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat (Service File Number: I-I-04-F-0345) and for effects to the salt marsh harvest mouse. The Corps requested reinitiation on December 19, 2013, and the Service issued an amended consultation for the effects to the delta smelt and its critical habitat, salt marsh harvest mouse, California clapper rail, and soft bird's-beak (*Cordylanthus mollis* ssp. *mollis*). On September 20, 2022, the Service issued an informal concurrence (Service file number: 2022-0078674-S7-001) to the Corps' San Francisco District DMMO Operations and Readiness Division regarding effects of the dredging project on the delta smelt and its critical habitat. Consultation has not been reinitiated to include the longfin smelt DPS.

Montezuma Harbor

On August, 29, 2005, the Service issued a biological opinion (Service file number: 1-1-05-F-0199) to the Corps' San Francisco District Regulatory Division appending the Montezuma Harbor Maintenance Dredging Project (Corps file number: 29606S) to the December 1, 2004, Formal Programmatic Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat (Service File Number: 1-1-04-F-0345). On May 10, 2013, the Corps requested reinitiation for a time extension and the Service issued an amended consultation on June 11, 2013 (Service file number: 08FBDT00-2013-F-0030-R001). On August 19, 2022, the Corps' San Francisco DMMO Operations and Readiness Division requested formal consultation to append the project (Corps file number: SPN-2013-00141) to the December 1, 2004, Formal Programmatic Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat (Service File Number: 1-1-04-F-0345). The Service issued a biological opinion appending the project to the delta smelt programmatic biological opinion on September 9, 2022 (Service file number: 2022-0078657-S7-001). Consultation has not been reinitiated to include the longfin smelt DPS.

Oakland Yacht Club

Although Table 2 has the Oakland Yacht Club as having an independent consultation, the Service was not able to locate one in our files or tracking databases.

Pittsburg Marina

On July 31, 2019, the Service issued a biological opinion (Service file number: 08FBDT00-2019-F-0259) to the Corps' San Francisco District Regulatory Division appending the Pittsburg Marina Maintenance Dredging Project to the December 1, 2004, Formal Programmatic Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat (Service File Number: 1-1-04-F-0345). Consultation has not been reinitiated to include the longfin smelt DPS.

Redwood Shores Lagoon

In 1994, Service issued a biological opinion to the Corps for Redwood Shores Levee Rehabilitation Project/Redwood Shores Levee Upgrade Project (Service file number: 1-1-94-F-0062) which described various activities including excavation and sediment placement and their effects to the California clapper rail and salt marsh harvest mouse (the Service was not able to locate a signed digital copy). On July 3, 2008, the Service issued a biological opinion on the Proposed Preserve at Redwood Shores Residential Development and Conservation Area Project (Service file number: 81420-2008-F-0949) to the Corps' San Francisco District Regulatory Branch and an amendment on August 25, 2009, (Service file number: 81420-2008-F-0949-2) to include placing sediment hydraulically dredged from the Redwood Shores Lagoon System on a project restoration site. The Service is unaware of a consultation for maintenance dredging of the lagoon or consultation for the longfin smelt DPS.

RMC Lonestar Cement Marina Terminal

The Service's tracking database shows two file numbers (81420-2000-I-0762 and 81420-2000-I-1435; original file numbers: 1-1-00-I-762 and 1-1-00-I-1435) regarding informal consultation on the renovation of an existing cement processing facility and dredging of Redwood Creek adjacent to the facility for the California clapper rail, California least tern, and California brown pelican. The Service was not able to locate a signed digital copy of the informal concurrence letter to Corps' San Francisco District Regulatory Branch.

Suisun City Marina

On November 2, 2017, the Service issued an informal concurrence letter (Service file number: 08FBDT00-2018-I-0004) to the Corps' San Francisco District Regulatory Division regarding effects from the Suisun City Marina Maintenance Dredging Project on the delta smelt and its critical habitat. Previous informal consultation/correspondence (Service file number: 81420-2009-I-0110) occurred in late 2008 but the Service was unable to locate digital records. Consultation has not been reinitiated to include the longfin smelt DPS.

U.S. Coast Guard Station Vallejo/Mare Island

On April 15, 2008, the Service issued an informal concurrence letter (Service file number: 084120-2008-I-0521) to the U.S. Coast Guard regarding the effects of dredging at Coast Guard Station Vallejo on delta smelt. On December 7, 2020, the Service issued an informal concurrence letter (Service file number: 08FBDT00-2021-I-0036) to the Corps' San Francisco District DMMO Operations and Readiness Division regarding the effects from the U.S. Coast Guard Vallejo Station Maintenance Dredging Project (Corps file number: 2008-00049) on the delta smelt. Consultation has not been reinitiated to include the longfin smelt DPS.

USS Posco

Although Table 2 has the USS Posco as having an independent consultation, the Service was not able to locate one in our files or tracking databases specific to dredging.

Valero Refinery Co. - Benicia Crude Dock

The Service issued informal concurrence letters (Service file number: 1-1-03-I-1972 and 08FBDT00-2013-I-0017) on June 10, 2002, and June 19, 2013, respectively for the Valero Benicia Refinery Maintenance Dredging Project to the Corps' San Francisco District Regulatory Division. On February 2, 2024, the Service issued a biological opinion for delta smelt and its critical habitat and conference opinion on the then proposed longfin smelt DPS on the Valero Benicia Refinery Maintenance Dredging Project to the Corps' San Francisco District DMMO Operations and Readiness Division (Service file number: 2023-0129750-S7-001). To date, the Service has not received a request to confirm the conference opinion to a final biological opinion.

Vallejo Marina

On September 17, 2012, the Service issued a biological opinion (Service file number: 08FBDT00-2012-F-0037) to the Corps' San Francisco District Regulatory Division appending the dredging project to the December 1, 2004, Formal Programmatic Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat (Service File Number: 1-1-04-F-0345). Consultation has not been reinitiated to include the longfin smelt DPS.

Vallejo Yacht Club

The Service issued biological opinions (Service file numbers: 81420-2009-F-0122-1 and 08FBDT00-2013-F-0045) to the Corps' San Francisco District Regulatory Division appending the dredging project to the December 1, 2004, Formal Programmatic Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat (Service File Number: 1-1-04-F-0345). Consultation has not been reinitiated to include the longfin smelt DPS.

Vulcan Materials

On June 21, 2024, the Service issued an informal concurrence on the California Ridgway's rail and conference concurrence on the then proposed longfin smelt DPS to the Corps' San Francisco District DMMO Operations and Readiness Division to include/append the Vulcan Landing Way Pier Dredging Project under the informal consultation process in the LTMS Programmatic Biological Opinion/Amendment (Service file number: 2024-0047331-S7-001). To date, the Service has not received a request to confirm the conference concurrence to a final informal consultation concurrence.

WesPac Energy Pittsburg Terminal

Although Table 2 has the WesPac Energy Pittsburg Terminal as appended to the LTMS Programmatic Biological Opinion/Amendment, the Service was not able to locate the consultation our files or tracking databases.

WETA Central Bay Ferry Maintenance Facility

Although Table 2 has the WETA Central Bay Ferry Maintenance Facility as having an independent consultation, the Service was not able to locate one in our files or tracking databases.

WETA Vallejo Baylink Ferry Terminal

Although Table 2 has the WETA Vallejo Baylink Ferry Terminal as appended to the LTMS Programmatic Biological Opinion/Amendment, the Service was not able to locate the completed consultation in our files or tracking databases. The Corps determined no effect to delta smelt over numerous years after the 2015 consultation request to append, not to the LTMS Programmatic Biological Opinion, but to the December 1, 2004, Formal Programmatic

Consultation on the Issuance of Section 10 and 404 Permits for Projects with Relatively Small Effects on the Delta Smelt (*Hypomesus transpacificus*) and its Critical Habitat (Service File Number: 1-1-04-F-0345) and ultimately withdrew the consultation request. There is no consultation for either the delta smelt or the longfin smelt DPS for the WETA Vallejo Baylink Ferry Terminal.

Dredged Material Disposal Sites

Aquatic

In-Bay placement currently occurs at open water placement sites in Suisun Bay (SF-16), Carquinez Strait (SF-9), San Pablo Bay (SF-10), and near Alcatraz Island (SF-11). Ocean disposal occurs at the SF-DODS. Beneficial in-water placement occurs/will occur at the San Francisco Bar Channel (SF-8; Clean Water Act Section 404 disposal only), the Ocean Beach Demonstration Site (SF-17), and nearshore strategic placement sites (Whale's Tail and Emeryville Crescent Nearshore Sites). Placement of dredged materials at open water sites is accomplished by direct pipeline discharge, direct mechanical placement, or releasing from hopper dredges, scows, and barges through bottom doors.

The SF-8 disposal site is a 15,000- by 3,000-foot-wide rectangle 7,500 feet south of the San Francisco Bar Channel in the Pacific Ocean. Depths at SF-8 range from approximately 30 to 45 feet Mean Lower Low Water. Placement/disposal is limited to sandy material dredged by the Corps from the San Francisco Bar Channel. However, the easternmost portion of SF-8 is within the 3-mile limit, and sand from other San Francisco Bay Area dredging projects can be permitted there as beneficial use for beach nourishment. The trapezoidal portion of SF-8 that is within the 3-mile limit is approximately 3,000 feet long by 430 feet at its northern end. The southern-end portion is not considered as a beneficial reuse site.

The SF-9 disposal site is a 1,000-foot by 2,000-foot rectangle (approximately 46 acres), approximately 10 to 55 feet deep, 0.9 miles west of the entrance to Mare Island Strait in eastern San Pablo Bay in Solano County. Disposal is limited to 1 million cubic yards of dredged material per month and a maximum of 3 million cubic yards per year during wet or above-normal water flow years, and 2 million yards per year during all other years.

The SF-10 disposal site is a 1,500- by 3,000-foot rectangle (approximately 103 acres), approximately 30 to 45 feet deep, located 3.0 miles northeast of Point San Pedro in southern San Pablo Bay in Marin County. Site specific capacity is limited to 500,000 cubic yards of dredged material per year. SF-10 is a multi-user disposal site that is also used by two other Federal projects and other non-Federal projects.

The SF-11 disposal site is a 1,000-foot-radius circular area (approximately 72 acres), approximately 40 to 70 feet deep, located approximately 0.3 mile south of Alcatraz Island in the Central Bay. SF-11 is a multi-user site and is the most heavily used disposal site in the Bay.

The SF-16 disposal site located west of Roe Island and east of the Benicia Bridge is maintained for Corps use exclusively for material from dredging of the Suisun Bay and New York Slough

Federal channels. This site extends parallel to the channel for about 4,000 feet and is approximately 200 feet wide (approximately 18.4 acres). Disposal is limited to 200,000 cubic yards per year.

The future SF-17 site is located in waters of the Pacific Ocean adjacent to the south-of-Sloat-Boulevard stretch of Ocean Beach where waves can potentially feed sediment toward the southern reach of Ocean Beach, which may ultimately help mitigate ongoing shoreline erosion in the area that threatens significant municipal infrastructure, including segments of the Great Highway and major sewer lines running underneath and alongside it. The Corps and EPA have been conducting a beach nourishment beneficial reuse pilot demonstration study at the Ocean Beach Near Shore Demonstration Site, which is encompassed by the future SF-17 placement site.

The SF-DODS is the deepest ocean dredged material disposal site in the United States. It is located off the Continental Shelf in approximately 8,200 to 9,800 feet of water, approximately 55 nautical miles offshore of San Francisco. It is approximately 6.5 square nautical miles (5,509 acres) in size.

Terrestrial

Upland/wetland beneficial use includes a wide variety of options that utilize the dredged material for some productive purpose, including new construction, levee maintenance, landfill cover, and marsh restoration. Some upland sites will be established as rehandling facilities, to dry dredged material for subsequent off-site use, or for confined disposal. Upland/wetland beneficial use sites typically have separate permits and individual section 7 consultations for restoration activities, which are not covered by the LTMS program. Although the LTMS program includes the dredging, transportation, and offloading of dredged material at the permitted beneficial use sites, the 1999 Programmatic Biological Opinion and 2024 Amendment did not address the effects of offloading dredged material in upland/wetland area to listed species.

The Montezuma Wetlands Restoration Project Site is a privately-owned restoration project located on the eastern edge of Suisun Marsh, north of the confluence of the Sacramento and San Joaquin Rivers near the town of Collinsville, in Solano County. A detailed description of the restoration activities and associated impacts to special status species and critical habitat are fully described in the Montezuma Wetland Restoration Project's biological opinions (Service file numbers: 1-1-99-F-12, 1-1-02-F-0175, 1-1-04-F-270, 81420-2008-F-1861 and 2022-0074267-S7-001). The consultation does not currently include the longfin smelt. Approximately 17.5 million cubic yards of dredged material are needed to raise site elevations. As of 2019, approximately 8 million cubic yards of dredged material have been placed at Montezuma Wetlands (https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/dredging.html).

The Cullinan Ranch Restoration Project Site is located along the northern shoreline of San Pablo Bay near the city of Vallejo in Solano and Napa Counties. A detailed description of the restoration activities and associated impacts to special status species and critical habitat are fully

described in the May 7, 2010 intra-Service biological opinion (Service file numbers: SFB-2010-01 and 81420-2010-F-0182). The consultation does not currently include the longfin smelt.

Longfin Smelt DPS

The Action Area covers a large portion of the range of the longfin smelt DPS, excluding the eastern Delta and the majority of the DPS mapped area outside of the Golden Gate. Longfin smelt occur in the Action Area year-round and occur within the Federal dredging areas as well as the non-Federal dredging areas, although entrainment data is limited to the Federal dredging areas.










Adult longfin smelt spawn in low-salinity to freshwater habitats as early as November and historically spawning lasted until as late as June, although spawning more typically occurs from January to April in shoals of the Delta, Suisun Marsh and Suisun Bay and in tidal wetlands of South San Francisco Bay and San Pablo Bay when hydrological conditions favor spawning in more seaward regions. Longfin smelt larvae are at peak abundance in the San Francisco Estuary most commonly in January through April.

Juvenile and non-spawning adult longfin smelt are present throughout the San Francisco Estuary at all times of year, and the majority of the population is concentrated in Suisun, San Pablo, and Central San Francisco bays, as well as nearshore ocean waters during the summer months. The periods of occurrence and peak abundance of longfin smelt by life stage in San Francisco Estuary is presented in Table 3 (Table 5-1 in BA).

Table 3. Periods of Occurrence and Peak Abundance of Longfin Smelt in San Francisco Estuary

Life Stage	Month												
	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
Egg	Potentially occur in shallows of Suisun and San Pablo bays												
Larvae		Potentially occur in shallows of Suisun and San Pablo bays											
Juvenile	Potentially occur throughout San Francisco Estuary												
Adult	Potentially occur throughout San Francisco Estuary												

Notes:

-  = Unlikely to occur
-  = Period of potential occurrence for eggs
-  = Period of potential occurrence for larvae
-  = Period of potential occurrence for juveniles
-  = Period of potential occurrence for adults
-  = Period of peak abundance for eggs
-  = Period of peak abundance for larvae
-  = Period of peak abundance for juveniles
-  = Period of peak abundance for adults

Longfin smelt have been entrained in hydraulic hopper dredging as shown in entrainment monitoring on the *Essayons* as shown in Table 4 (Table 5-2 in BA). Samples are collected using an onboard sampling apparatus that diverts some of the dredge material slurry from both drag heads into a sampling “basket” where the material is then examined to search for any fish or

invertebrates (Novotny *et al.* 2024 as cited in the BA). Not in this table is the result of the 2024 monitoring that resulted in one longfin smelt detection during the June 14 through July 1 Richmond Outer Harbor dredging event (Corps and SFBRWQCB 2024). Entrainment monitoring does not provide an estimate of total longfin smelt entrained by hydraulic dredging because, as stated in the BA, there is no way of determining sampling effort or the proportion of dredge material sampled in addition to rarity of the species and survey-based population estimates.

Table 4. Longfin Smelt Collected during Entrainment Monitoring Aboard Corps Hopper Dredge (*Essayons*) in Suisun Bay, Pinole Shoal in San Pablo Bay, and Richmond Outer Harbor

Year	Location	Monitoring Dates	Longfin Smelt Collected	Hopper Loads Monitored/Total Hopper Loads	Water Year Type*
2010	Pinole Shoal	06/15-06/21	0	32/62	Above Normal
2011	Pinole Shoal	07/16-07/19	3	32/32	Wet
	Richmond Outer Harbor	07/19-07/31	12	126/126	
		8/11			
Suisun Bay	08/01-08/10	3	72/72		
2016	Pinole Shoal	9/26-10/03	0	41/41	Dry
		10/08			
	Richmond Outer Harbor	06/01-06/15	12	128/129	
	Richmond Outer Harbor	10/03-10/07	0	64/64	
10/09-10/11					
2017	Pinole Shoal	06/11-06/21	49 + 7**	74/74	Wet
	Pinole Shoal	November***	3	NA	
2018	Richmond Outer Harbor	06/06-06/17	0	100/100	Below Normal
	Richmond Outer Harbor	10/01-10/19	30	184/184	
2019	Pinole Shoal	07/31 – 08/7	1	46/48	Wet
2023	Pinole Shoal	07/22 – 07/31	41	38/39	Wet
<p>Notes: Source for Water Year Types: https://cdec.water.ca.gov/reportapp/javareports?name=WSIHIST *No Critically Dry or Normal water year types occurred for the years shown. **49 longfin smelt were captured with the sampling apparatus; an additional 7 longfin smelt were netted directly from the hopper through an access port. ***Specific dates that dredging occurred are not available. No entrainment monitoring occurred during the years 2020-2022 due to COVID-19 pandemic restrictions. References: McGowan 2010; Gold <i>et al.</i> 2011, 2017a, b; Applied Marine Sciences. 2018; Novotny <i>et al.</i> 2018, 2019, 2024 as cited in BA</p>					

California Ridgway’s Rail

Similar to the *Status of the Species* section, the *Environmental Baseline* has changed since the issuance of the 1999 Programmatic Biological Opinion and 2004 Amendment. Because the Action Area encompasses almost all of the range of the California Ridgway’s rail, please refer to the 2013 Recovery Plan (https://ecos.fws.gov/docs/recovery_plan/TMRP/20130923_TMRP_Books_Signed_FINAL.pdf) and the 2020 5-year review (https://ecos.fws.gov/docs/five_year_review/doc6592.pdf).

Salt Marsh Harvest Mouse

Similar to the *Status of the Species* section, the *Environmental Baseline* has changed since the issuance of the 1999 Programmatic Biological Opinion and 2004 Amendment. Because the Action Area encompasses almost all of the range of the salt marsh harvest mouse, please refer to the 2013 Recovery Plan (https://ecos.fws.gov/docs/recovery_plan/TMRP/20130923_TMRP_Books_Signed_FINAL.pdf) and the 2021 5-year review (https://ecos.fws.gov/docs/tess/species_nonpublish/3643.pdf).

California Least Tern

Similar to the *Status of the Species* section, the *Environmental Baseline* has changed since the issuance of the 1999 Programmatic Biological Opinion and 2004 Amendment. California least terns have several nesting sites within the Action Area including but not limited to Alameda Point, Montezuma Wetlands, and Eden Landing and forage in open waters near these sites. In the most recent 5-year review it was estimated that in 2016 the San Francisco Bay Area accounted for 13% of the total nesting population. Please refer to the 2020 5-year review for a comprehensive discussion of the status of California least terns in the San Francisco Bay Area (https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/3520.pdf).

Western Snowy Plover

Similar to the *Status of the Species* section, the *Environmental Baseline* has changed since the issuance of the 1999 Programmatic Biological Opinion and 2004 Amendment. Western snowy plovers have several nesting sites within the Action Area including most recently within Montezuma Wetlands. As noted in the 2024 5-year review, habitat for the western snowy plover in the San Francisco Bay Area (Recovery Unit 3 [RU3]) has decreased as salt ponds are restored to tidal marsh habitat but observed a record high of 368 breeding adults in 2023. This number, while showing an increase, is still below the 500 articulated in the 2007 Recovery Plan. Please refer to the 2024 5-year review for a comprehensive discussion of the status of western snowy plovers in the San Francisco Bay Area (https://ecosphere-documents-production-public.s3.amazonaws.com/sams/public_docs/species_nonpublish/19614.pdf).

Delta Smelt and Delta Smelt Critical Habitat

Similar to the *Status of the Species* section, the *Environmental Baseline* has changed since the issuance of the 1999 Programmatic Biological Opinion and 2004 Amendment. The Action Area includes the western extent of the species range from Suisun Bay/Marsh to San Pablo Bay. Critical habitat occurs within Suisun Bay/Marsh to the Carquinez Bridge but does not extend further west and contains all of the Primary Constituent Elements described in the critical habitat designation but quality and amount vary depending on conditions as discussed in the *Status of the Critical Habitat* section.

Delta smelt can occur in the Suisun Bay year-round. The Suisun Bay and the Confluence of the Sacramento and San Joaquin Rivers are considered critical areas within delta smelt habitat and

the San Francisco Bay Estuary for the survival of this species. Delta smelt were often observed in the highest densities in these areas (Merz *et al.* 2011). Delta smelt are also known to spawn in the Napa River in high outflow years. Since the 1999 and 2004 consultations, delta smelt have been recorded in surveys and in hydraulic dredging sampling at depths within the range of LTMS depths and delta smelt have been entrained in hydraulic dredging in Suisun Bay. As noted above, the delta smelt is now considered a conservation-reliant species dependent on brood stock releases.

Effects of the Action

Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action but that are not part of the action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action.

The LTMS Program will result in adverse effects to longfin smelt within the dredging footprint by interfering with feeding, movement, and/or other essential behaviors when dredging equipment is operating. Fish may be stressed, exhibiting alarm reactions and increased swimming speed due to dredging activities and the physical presence of dredge equipment. Their physiological and biological processes might be compromised due to dredging equipment noise and vibrations. Noise and sound wave pressure generated from the hopper dredge, propellers, pumps and engines, and equipment strikes, may cause barotrauma and hinder longfin smelt from their feeding and/or sheltering activities. It is likely that longfin smelt will be killed or severely injured by entrainment when dredge materials (sediment, slurry and water) are extracted during the dredging activity. Individual longfin smelt that are not killed are likely to suffer injuries that might reduce their survival and become more susceptible to predation. Dredging, material disposal and suspended sediment plumes may negatively affect benthic species, some of which are longfin smelt prey, resulting in decreased longfin smelt feeding ability. Dredging and disposal within the LTMS established work windows minimize effects to longfin smelt eggs and larvae. Beneficial reuse of appropriate dredged materials on tidal restoration sites in the Action Area, may have beneficial effects to longfin smelt and prey over the long term but were not specifically analyzed in the BA and do not directly minimize or compensate for entrainment. Additionally, dredging outside of the work windows is also permitted with added conditions like beneficial reuse that do not directly minimize or compensate for the potential increase in entrainment. Tidal restoration projects that have effects to listed species and receive beneficial reuse dredged materials should have undergone section 7 consultation with the appropriate Federal Action Agency prior to implementation.

Hydraulic Dredging

There are five federally maintained channels that could potentially be dredged by a hopper dredge: San Francisco Main Ship Channel, Richmond Harbor, Pinole Shoal, and San Bruno Channel. As shown in Table 4, LTMS Program hopper dredging entrains longfin smelt. In the BA, the Corps estimated annual impacts to the population based on variabilities in water year

type, dredging duration, seasonal abundance and habitat variation among other factors shown in Table 5 (Table 5-3 in the BA).

Table 5. Estimated Percent (%) Impact to Annual Longfin Smelt Population based on Preferred Habitat and Duration of Hopper Dredging Operations by Region

Region	Total Area with Water Depth ≥ 23 ft at MSL (mean sea level)	Navigational Channels	Total Area of Navigational Channel (acres)	Duration of Dredging Operations (weeks)	Estimated Percent (%) Impact to Longfin Smelt Population based on Preferred Habitat and Duration of Hopper Dredging
A - San Francisco Harbor Region	57,822 acres	San Francisco Harbor Main Ship Channel	1,204	2	0.08
B – Richmond Harbor Region	17,304 acres	Richmond Harbor (Inner & Outer)	944	3	0.31
D – Pinole Shoal Region	10,732 acres	Pinole Shoal Channel	879	2	0.32
E – Redwood City Harbor Region	25,149 acres	Redwood City (San Bruno Channel Only)	344	2	0.05

The BA did not provide cutterhead dredging entrainment monitoring data for the LTMS program but used the Stockton and Sacramento Deepwater Ship Channel Maintenance Dredging Project entrainment and fish community monitoring as a proxy. No longfin smelt were detected in entrainment monitoring when detected in the adjacent fish community monitoring. It is difficult to draw any conclusions from this data as the amount of dredged material sampled ranged from 0.37 to 28 percent of the total volume dredged. As the cutterhead dredges have rotating blades or teeth to break up or loosen the bottom material so that it can be suctioned through the dredge, these activities will create water disturbance that is likely to cause fish to exhibit avoidance behavior and seek less disturbed areas. However, entrained fish likely would suffer physical injury and mortality.

Mechanical Dredging

Mechanical or clamshell dredging will result in adverse effects to longfin smelt within the dredging footprint by interfering with feeding, movement, and/or other essential behaviors when dredging equipment is operating. Fish may be stressed, exhibiting alarm reactions and increased swimming speed due to dredging activities and the physical presence of dredge equipment. Their physiological and biological processes might be compromised due to dredging equipment noise and vibrations. Longfin smelt are significantly more likely to be able to avoid a mechanical clamshell bucket and avoid entrainment than they would be if they were near the suction prism of a hopper dredge or hydraulic cutterhead. Longfin smelt are not strong swimmers compared to larger fish and would not be able to escape the suction power from a hydraulic dredging if they

were within the suction prism. There is no suction effect from mechanical clamshell dredging and in the unlikely event that a longfin smelt were captured in the clamshell bucket as it was being lowered into the water column, they would be afforded the opportunity to escape through the water vents incorporated in the top of the clamshell bucket. There is no escape mechanism from hydraulic dredging equipment. Additionally, mechanical dredging generally is expected to entrain far fewer fish than hydraulic dredging because little water is removed along with the sediment and clamshell bucket scoops occur intermittently which may allow disturbed fish to leave the immediate area in the interim.

Disturbance of Benthic Habitat

As stated in the BA, dredging would directly impact benthic communities through physical disruption and direct removal of benthic organisms, resulting in the potential loss of most, if not all, organisms in the dredged area. Organisms immediately adjacent to the dredged channels may be lost because of smothering or burial from sediments resuspended in the water column during the dredging. Similarly, organisms in or immediately adjacent to the placement sites also may be lost because of smothering or burial from sediments during dredged material placement.

Additionally, during in-water placement in the San Francisco Bay, benthic organisms would suffer burial followed by prolonged exposure to anaerobic conditions after the dumping has ceased. This would result in mortality of most of the organisms in the burial footprint; however, this would be a short-term effect because benthic habitat is quickly recolonized. The existing benthic communities at the in-Bay placement sites have, over the years, reached an equilibrium that adjusts to the periodic placement of dredged material. Similarly, placement of dredged material (i.e., sand) at SF-17, SF-8, and along beach and intertidal habitat of Ocean Beach would cause temporary disturbance to benthic organisms; however, both the nearshore and the shore environment along the coast of Ocean Beach are dynamic and high-energy environments that experience rapid sediment flux. Organisms that inhabit sandy intertidal and subtidal habitat have adaptations for surviving in areas of high sediment flux. Although placement operations would cause burial of the less mobile benthic community, the impact of those operations will be episodic and short term. Studies on impacts of beach nourishment activities on the invertebrate community have shown that recovery of the benthic community at the beach and intertidal habitat generally takes place in on the order of a few weeks to months (Corps 2013 as cited in the BA).

Although longfin smelt are not benthic feeders, depending on location and timing, disturbance and loss of habitat and food web is likely to occur from dredging and in-water disposal.

Suspended Sediment

The proposed project could produce increased suspended sediments, otherwise known as turbidity, in the Action Area from clamshell dredging operations and placement of spoils at the disposal sites. A sediment plume results from excess sediment and other material entrained (e.g. air bubbles) being discharged back into the water during operations. Plumes typically have an increased suspended sediment concentration, thus elevated turbidity. The degree of sediment resuspension depends on the material, size and composition of the sediment being resuspended.

Plume size, concentration, and duration of the plume depend on environmental and operational specific factors.

Suspended sediment may adversely affect fish species through smothering of eggs, clogging and erosion of gill membranes, and reduced feeding efficiency (Rowe *et al.* 2003). Because smelt species are mobile, they can avoid the localized areas of increased sedimentation/turbidity. Given the levels of short-term suspended sediment increases around maintenance dredging and dredged material placement activities, effects are expected to be minimal (LaSalle *et al.* 1991).

Exposure of fish to elevated suspended sediment concentrations could result in behavioral avoidance and exclusion from otherwise suitable habitat; disrupt movement and migration patterns; reduce feeding rates and growth; result in sublethal and lethal physiological stress, habitat degradation, or delayed hatching; and, under severe circumstances, could result in mortality (Newcombe and Jensen 1996; Clarke and Wilber 2000). The response of fish to suspended sediments varies among species and lifestages as a function of suspended particle size, particle shape, water velocities, suspended sediment concentrations, water temperature, depressed dissolved oxygen concentrations, contaminants, and exposure duration (O'Connor 1991; Sherk 1971; Newcombe and Jensen 1996). While longfin smelt already live in an environment with high background levels of turbidity it is possible that excessive sedimentation may exceed turbidity levels ideal for the longfin smelt DPS.

Sediments can either serve as a sink or as a source of contamination depending on hydrological conditions and the habitat type in which the sediment occurs (National Marine Fisheries Service [NMFS] 2003). Sediment can be habitat for many aquatic organisms and can contain various chemicals that are present in surface waters. Exposure to contaminated sediments may cause adverse effects to longfin smelt DPS. For example, an individual may swim through a plume of resuspended sediments or make contact with a contaminated substrate and thus absorb toxic substances via ingestion, gills, or the dermis (NMFS 2003). Sediment contaminant levels may be higher than those of the water column above, because of the tendency for contaminant levels to increase where discharge or sediment deposition occurs (EPA 1994). In addition to the PAHs, sediments in the Action Area may contain the following elements and compounds:

- Mercury is a dense silver-white metal that is liquid at room temperature. The environmental effects of mercury vary with its form, dose, pathway of exposure, and life stage of the affected organism. Neurotoxicity of mercury is well known and affects fish performance and survivability. Methyl mercury has the potential to biomagnify through the food chain in both freshwater and marine environments. Fish studies have revealed that accumulation of mercury in the brain was significant at 5 and 10 mg/kg dry food for methyl mercury (Corps 2004 as cited in Corps 2023 *Programmatic Biological Assessment for the Stockton Deep Water Ship Channel Maintenance Dredging and Bank Protection Project, Contra Costa, Sacramento, and San Joaquin Counties, California*).
- Pure nickel is a hard, silvery white metal and is very abundant in the environment. Nickel combined with other elements occurs naturally in the earth's crust, primarily combined with oxygen (oxides) or sulfur (sulfides) and is found in all soils. Nickel is considered to be an essential micronutrient with both deficiency and excess shown to reduce survival.

Toxic effects in aquatic systems include tissue damage, genotoxicity, and growth reduction (Corps 2004 as cited in Corps 2023 *Programmatic Biological Assessment for the Stockton Deep Water Ship Channel Maintenance Dredging and Bank Protection Project, Contra Costa, Sacramento, and San Joaquin Counties, California*).

- Ammonia is a compound that is essential to living organisms and often occurs at elevated concentrations in lake, river, and wetland sediments. Ammonia is rapidly converted to ammonium, the non-toxic form, under aerobic conditions. The potential detrimental effects of any ammonia concentrations are minimized during winter conditions (Eddy 2005).

It is unclear what the magnitude and extent of the contaminant exposure from resuspended sediments will have on longfin smelt DPS individuals and their prey occurring in the Action Area. It is possible that fish swimming in highly sedimented water will ingest metal-bound sediments and may experience adverse effects to their gills and internal organs, harming their physiological processes, particularly the more developmentally sensitive longfin smelt DPS larvae and juveniles. Should liver, gill, kidney, and muscle function be reduced, longfin smelt DPS individuals in the Action Area may experience compromised immunity, poor fitness, and be susceptible to predation. Additionally, suspended sediment plumes may negatively affect benthic species, some of which are longfin smelt DPS prey, resulting in reduced feeding ability.

Hydroacoustics

Underwater sound pressure waves can harass and harm fish species (Hastings and Popper 2005; California Department of Transportation 2001). As the pressure wave passes through a fish, the swim bladder is rapidly squeezed due to the high pressure, and then rapidly expanded as the under-pressure component of the wave passes through the fish. This can cause adverse effects including rupture of the swim bladder, rupture of capillaries, internal hemorrhage, neurological stress, and auditory damage. Extreme sound waves can cause instantaneous death, latent death within minutes after exposure, or can occur several days later.

Elevated noise levels can cause sub-lethal injuries affecting survival and fitness. Similarly, if injury does not occur, noise may modify fish behavior that may make them more susceptible to predation. Fish suffering damage to hearing organs may suffer equilibrium problems and may have a reduced ability to detect predators and prey. Other types of sub-lethal injuries can place the fish at increased risk of predation and disease. Adverse effects on survival and fitness can occur even in the absence of overt injury. Exposure to elevated noise levels can cause a temporary shift in hearing sensitivity (referred to as a temporary threshold shift or TTS), decreasing sensory capability for periods lasting from hours to days (Hastings and Popper 2005; Popper and Hastings 2009; Hastings *et al.* 1996).

Per the BA, the scientific knowledge of the effects of dredge-generated noise and sound waves on fishes is limited and varies depending on the species. Hydroacoustic Effects from pile driving have been studied and can be used for comparison. To quantify the level of sound expected to cause harm, the Fisheries Hydroacoustic Working Group, an interagency working group that includes the Service, established interim criteria for evaluating underwater noise impacts from

pile driving on fish. These criteria are defined in the document entitled “Agreement in Principle for Interim Criteria for Injury to Fish from Pile Driving Activities”, dated June 12, 2008 (Fisheries Hydroacoustic Working Group 2008). This agreement identifies a peak sound pressure level (SPLs) of 206 decibels (dB) and an accumulated sound exposure level of 187 dB as thresholds for injury to fish \geq to 2 grams (g). For fish less than 2 g, the accumulated sound exposure level threshold is reduced to 183 dB. Although there has been no formal agreement on a “behavioral” threshold, NMFS uses 150 dB-root mean square (RMS) as the threshold for adverse behavioral effects (NMFS 2017). Even though the above criteria were developed for pile driving, and the proposed action is dredging and disposal, it provides a reasonable means to analyze the expected increase in underwater sound pressures waves to the species.

Mechanical and hydraulic dredges produce a complex combination of repetitive sounds that may be intense enough to cause adverse effects on aquatic organisms, though the intensity, periodicity, and spectra of emitted sounds differ among the dredge types and the substrate being dredged. Clamshell dredges have a repetitive sequence of sounds generated by the winches, bucket impact with the substrate, closing and opening the bucket, and sounds associated with dumping the dredged material into the barge. The most intense sound impacts are produced during the bucket’s impact with the substrate, with peak SPL of 124 dB measured 150 meters from the bucket strike location (Reine *et al.* 2002; Dickerson *et al.* 2001 as cited in the BA). Underwater noise is also generated by hydraulic dredging equipment, including rotating cutter heads, pumps, propellers, suction pipes, and the drag head contacting the channel bottom. Noise produced by hopper dredges fluctuates; the most intense sounds are produced during loading or unloading. While underway, continuous noise from hopper dredges operating in a variety of environments has been measured to range from 125 to 150 dB (Reine *et al.* 2012 as cited in the BA). A hydraulic cutterhead dredge can produce continuous noise in the range of 150 to 170 dB when measured 10 meters from the cutterhead (California Department of Water Resources 2013 as cited in the BA), with noise levels varying with dredge size and sediment type. This is comparable to underwater noise levels of 160 to 180 dB RMS produced by small boats and ships (MALSF 2009 as cited in the BA).

Effects may include behavioral changes, neurological stress, and temporary shifts in hearing thresholds. Injury to fish from peak noise (e.g., rupture of swim bladder) is not expected to occur, but behavioral effects (e.g., changes in feeding behavior, fleeing, startle responses) could occur. In comparison, commercial shipping vessels can produce continuous noise in the range of 180 to 189 dB (Reine and Dickerson 2014). Although dredging could produce underwater noise, it is comparable to that produced by commercial shipping vessels, which are common in the Federal channels but not necessarily for the non-Federal LTMS Program dredge areas.

Beneficial Dredged Material/Sediment Reuse

Dredged material that meets DMMO and project specific contaminant requirements has been and continues to be placed on restoration projects like the Montezuma Wetlands Restoration Project and Cullinan Ranch Restoration Project. While restoration projects like those above that may affect listed species have their own respective consultations, in general, the placement of appropriate dredged material on restoration projects has ecological benefits from increasing habitat and food web production to reducing effects of sea level rise. The placement of dredged

material on restoration sites also reduces the time to complete fully functional restoration projects vs. natural sediment accretion but it may be years before habitat benefits are realized for longfin smelt. These general benefits are defined broadly and have not been analyzed at a local or temporal scale where they can be considered an offset for the direct impacts of entraining longfin smelt or their prey due to dredging activities.

Similarly, the proposed compensation measure to offset take has not been fully evaluated by the Corps and EPA specific to this project regarding feasibility, effects, implementation, tracking, reporting, and compliance.

Cumulative Effects

Cumulative Effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the Action Area considered in this biological opinion. Future Federal actions unrelated to the proposed project are not considered in this section, because they require separate consultation pursuant to section 7 of the Act.

Adverse effects to the longfin smelt DPS may result from point and non-point source chemical contaminant discharges within the Action Area. These contaminants include, but are not limited to, ammonia and free ammonium ion, numerous pesticides and herbicides from urban sources, and oil and gasoline product discharges. Oil and gasoline product discharges and aquatic invasive species may be introduced into waterways from shipping and boating activities and from urban activities and runoff. Implicated as potential stressors of longfin smelt DPS, these may adversely affect fish reproductive success and survival rates.

Conclusion

After reviewing the current *Status of the Species* for the longfin smelt DPS, the *Environmental Baseline* for the Action Area, the *Effects of the Action*, and the *Cumulative Effects*, it is the Service's biological opinion that the Reinitiation of the Programmatic Formal Endangered Species Consultation on the Proposed Long-Term Management Strategy for Placement of Dredged Material in San Francisco Bay, California is not likely to jeopardize the continued existence of the longfin smelt DPS. This conclusion is based primarily on: (1) the baseline condition that dredging and aquatic disposal events under the LTMS program have been ongoing activities; (2) dredging within the LTMS Program work windows will minimize effects to eggs and larval longfin smelt; (3) while both methods are used, mechanical dredging is less likely to entrain longfin smelt; and (4) reuse of appropriate dredged material for use on San Francisco Estuary restoration sites, in general, is anticipated to improve habitat for the longfin smelt DPS over the long term.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm in the definition of "take" in the Act means an act which actually kills or injures wildlife. Such [an] act may include significant habitat modification or

degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 CFR 17.3) Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not the purpose of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the proposed protective measures and the terms and conditions of an incidental take statement and occurs as a result of the action as proposed.

The measures described below are non-discretionary, and must be undertaken by the Corps and EPA so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. The Corps and EPA have a continuing duty to regulate the activity covered by this incidental take statement. If the Corps and EPA (1) fail to assume and implement the terms and conditions, or (2) fail to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Corps and EPA must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [50 CFR § 402.14(i)(4)].

Amount or Extent of Take

The Service expects that incidental take of longfin smelt DPS will be difficult to detect or quantify for the following reasons: (1) the small size of fish at all life stages; (2) their turbid aquatic habitat makes them difficult to detect; and (3) the low likelihood of finding dead or impaired specimens. Because the species are wide-ranging and their distribution varies from one year to the next, take may vary from year to year. Additionally, losses of the species may be masked by seasonal fluctuations in numbers. Due to the difficulty in quantifying the number of longfin smelt DPS that will be taken as a result of numerous projects under the proposed action, we estimate up to 2 percent of the annual population may be subject to incidental take in the form of harm, capture, injury, and mortality as described in this biological opinion. Upon implementation of the Reasonable and Prudent Measure, incidental take associated with the project will become exempt from the prohibitions described under section 9 of the Act.

Effect of the Take

In the accompanying biological opinion, the Service determined that the level of anticipated take is not likely to jeopardize the continued existence of the longfin smelt DPS.

Reasonable and Prudent Measure

The Service has determined that the following Reasonable and Prudent Measure is necessary and appropriate to minimize the effects of the proposed project on the species:

1. Adverse effects to longfin smelt DPS shall be minimized to the full extent possible.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the Corps and EPA shall ensure compliance with the following term and condition, which implements the reasonable and prudent measure described above. This Term and Condition is non-discretionary.

1. The following Terms and Condition implement Reasonable and Prudent Measure Number One (1)
 - a. The Corps, EPA, and/or applicant shall minimize the potential for harm or mortality of longfin smelt DPS resulting from project related activities by implementing the proposed project as described in the 1999 Programmatic Biological Opinion, 2004 Amended Programmatic Biological Opinion, BA, and summarized in the *Description of the Proposed Action* in this biological opinion.
 - b. The Corps, EPA and/or applicant shall ensure that their contractors or operators comply with this biological opinion.
 - c. The Corps and EPA shall provide the Service with an annual report including but not limited to information regarding dredge volumes, dredging schedules and schedule changes, bathymetry surveys, dredge logs, associated disposal information, and compensation implementation.
 - d. The Corps and EPA shall provide the Service with an annual report of entrainment monitoring and an estimate of the proportion of the yearly population entrained.

Reporting Requirements

In order to monitor whether the amount or extent of incidental take anticipated from implementation of the project is approached or exceeded, the Corps shall adhere to the following reporting requirements. Should this anticipated amount or extent of incidental take be exceeded, the Corps must reinitiate formal consultation as per 50 CFR § 402.16.

1. The Service must be notified within 24 hours of the finding of any injured or dead listed species or any unanticipated damage to its habitat associated with the proposed project. When an injured or dead individual of the listed species is found, the Corps and EPA shall follow the steps outlined in the Salvage and Disposition of Individuals Taken section below.
2. Sightings of any listed or sensitive animal species shall be reported to the Service and the CNDDDB (<https://www.wildlife.ca.gov/Data/CNDDDB/Submitting-Data>).

Salvage and Disposition of Individuals

Dead individuals must be sealed in a resealable plastic bag containing a paper with the date and time when the animal was found, the location where it was found, and the name of the person

who found it, and the bag containing the specimen frozen in a freezer located in a secure site, until instructions are received from the Service regarding the disposition of the dead specimen. The Service contact person is the Assistant Field Supervisor of the Endangered Species Division at (916) 930-2664.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species and the ecosystems upon which they depend. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and databases.

1. Maintain up-to-date knowledge and understanding of San Francisco Bay Estuary species biology, ecology, and status (best available science) to inform project design and species specific *Conservation Measures* to effectively minimize effects to listed species.
2. Utilize available training to maintain up-to-date understanding of the Act and its implementing regulations to ensure correct interpretation and implementation of section 7 consultation and the subsequent biological opinions and concurrence letters issued to the Corps.
3. Develop and implement noise studies that measure sound pressure waves generated from varying types of dredge equipment in the San Francisco Bay Estuary and their potential effects to federally listed fish and tidal marsh species.
4. Develop a database to track implementation and compliance of projects under the LTMS Programmatic Biological Opinion and LTMS projects with individual consultations.
5. Participate in recovery planning and implementation of conservation actions consistent with recovery planning documents.
6. Coordinate with the Service and other resource agencies during project planning in order to minimize effects to listed species and improve agency relationships.
7. Encourage or require the use of appropriate California native species in restoration efforts.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the San Francisco Bay-Delta Fish and Wildlife Office requests notification of the implementation of any conservation recommendations.

REINITIATION – CLOSING STATEMENT

This concludes reinitiation on the Reinitiation of the Programmatic Formal Endangered Species Consultation on the Proposed Long-Term Management Strategy for Placement of Dredged Material in San Francisco Bay, California. All other information from the 1999 biological opinion and 2004 amendment remain the same. As provided in 50 CFR § 402.16,

(a) Reinitiation of consultation is required and shall be requested by the Federal agency, where discretionary Federal involvement or control over the action has been retained or is authorized by law and:

- (1) If the amount or extent of taking specified in the incidental take statement is exceeded;
- (2) If new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
- (3) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion or written concurrence; or
- (4) If a new species is listed or critical habitat designated that may be affected by the identified action.

(b) An agency shall not be required to reinitiate consultation after the approval of a land management plan prepared pursuant to 43 U.S.C. 1712 or 16 U.S.C. 1604 upon listing of a new species or designation of new critical habitat if the land management plan has been adopted by the agency as of the date of listing or designation, provided that any authorized actions that may affect the newly listed species or designated critical habitat will be addressed through a separate action-specific consultation. This exception to reinitiation of consultation shall not apply to those land management plans prepared pursuant to 16 U.S.C. 1604 if:

- (1) Fifteen years have passed since the date the agency adopted the land management plan prepared pursuant to 16 U.S.C. 1604; and
- (2) Five years have passed since the enactment of Public Law 115-141 [March 23, 2018] or the date of the listing of a species or the designation of critical habitat, whichever is later.

Please address any questions or concerns regarding this biological opinion to Kim Squires, Section 7 Division Manager, at Kim_Squires@fws.gov. Please refer to Service file number 2024-0130642-S7-001 in any future correspondence regarding this project.

Sincerely,

Donald Ratcliff
Field Supervisor

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