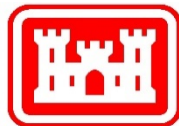


**Draft Environmental Assessment
and
404 (b)(1) Analysis**

for

**Moss Landing Harbor Maintenance Dredging
Moss Landing, Monterey County, California**



**U.S. Army Corps of Engineers
San Francisco District**

May 2020

TABLE OF CONTENTS

1.0 Proposed Project	1
1.1 Introduction	1
1.2 Description and Location	1
1.3 Purpose and Need for Proposed Action	5
1.4 Study Authority	5
2.0 Scope of Analysis	6
3.0 Proposed Action and Alternatives	7
3.1 Proposed Action	7
3.1.1 Proposed Action Sub-Alternative 1: Hydraulic Dredging and Disposal at SF-12....	7
3.1.2 Proposed Action Sub-Alternative 2 - Clamshell Dredging and Disposal at SF-14 ..	8
3.2 No Action Alternative	9
3.3 Alternatives Considered but Eliminated from Further Study.....	9
4.0 Affected Environment and Consequences	11
4.1 Resources Not Described In Detail	11
4.1.1 Hazardous and Toxic Materials	11
4.1.2 Land Use, Socioeconomics, Public Facilities, and Utilities	11
4.1.3 Public Health and Safety.....	11
4.1.4 Transportation and Traffic	11
4.1.5 Air Quality	12
4.1.6 Noise	12
4.2 Water Quality	12
4.2.1 Affected Environment/Baseline Condition.....	12
4.2.2 Environmental Effects	13
4.3 Biological Resources.....	18
4.3.1 Affected Environment/Baseline Condition.....	18
4.3.2 Environmental Effects	19
4.4 Recreation.....	21
4.4.1 Affected Environment/Baseline Condition.....	21
4.4.2 Environmental Effects	22
4.5 Navigation	22
4.5.1 Affected Environment/Baseline Condition.....	22
4.5.2 Environmental Effects	23
4.6 Aesthetics	24

4.6.1 Affected Environment/Baseline Condition..... 24

4.6.2 Environmental Effects 24

4.7 Cultural and Historical Resources..... 25

4.7.1 Affected Environment/Baseline Condition..... 25

4.7.2 Environmental Effects 26

4.8 Cumulative Effects..... 28

4.8.1 Past, Present, and Reasonably Foreseeable Future Actions..... 28

4.8.2 Summary of Cumulative Effects..... 29

5.0 Environmental Compliance 31

6.0 Agencies Consulted and Public Notification 34

7.0 Determinations and Statement of Findings..... 35

8.0 References..... 36

TABLES AND FIGURES

Table 1. Estimated Dredge Quantities. 1

Figure 1. Location of Moss Landing Harbor and Other Monterey Bay Cities. 2

Figure 2. Moss Landing Harbor Federal Navigation Channels. 3

Figure 3. Monterey Bay National Marine Sanctuary Boundary and Moss Landing Harbor Exclusion Zone. Source: NOAA, 2019..... 4

Figure 4. Moss Landing Harbor Dredged Material Disposal Sites..... 5

APPENDICIES

Appendix A – Environmental Compliance

- 1.0 Draft Finding of No Significant Impact
- 2.0 Sampling Point Map
- 3.0 Endangered Species Act (ESA) and Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA)
- 4.0 Clean Water Act (CWA) Section 401 and 404
- 5.0 Coastal Zone Management Act (CZMA)

Appendix B – Agency and Public Participation

- 1.0 Agency Comments/Responses *(To be added after comment period)*
- 2.0 Public Comments/Responses *(To be added after comment period)*

Appendix C – Preparers

ACRONYMS AND ABBREVIATIONS

APE	area of potential effects
BMPs	best management practices
CAA	Clean Air Act
CCC	California Coastal Commission
CCMP	California Coastal Management Program
CEQ	Council on Environmental Quality
CFR	Code of Federal Register
CH	critical habitat
COPECS	contaminant of potential ecological concern
CWA	Clean Water Act
CY	cubic yards
CZMA	Coastal Zone Management Act
DDE	Dichlorodiphenyldichloroethylene
DDT	Dichlorodiphenyltrichloroethane
DO	dissolved oxygen
DPS	distinct population segment
EA	Environmental Assessment
ER	Engineer Regulation
ER-L	Effect Range - Low reference values
FE	Federally endangered
ft	feet
FT	Federally threatened
HCP	habitat conservation plan
HHW	higher high water
HLW	higher low water
LHW	lower high water
LLW	lower low water
MBARI	Monterey Bay Aquarium Research Institute
MBNMS	Monterey Bay National Marine Sanctuary
mg/L	Milligrams per Liter
MLHD	Moss Landing Harbor District
MLLW	mean lower low water level
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NMSA	National Marine Sanctuary Act
NOAA	National Oceanic and Atmospheric Administration
PCBs	polychlorinated biphenyls
PCH	proposed critical habitat
RWQCB	Regional Water Quality Control Board
SAR	Sampling and Analysis Report
SHPO	State Historic Preservation Officer

State Parks	California Department of Parks and Recreation
TSS	total suspended solids
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WDR	Waste Discharge Requirements

1.0 Proposed Project

1.1 Introduction

This environmental assessment (EA) is written in compliance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. § 4321 *et seq*), as amended, the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of the NEPA (40 C.F.R. §§1500-1508), and U.S. Army Corps of Engineers (USACE) Engineering Regulation (ER) 200-2-2, Procedures for Implementing NEPA. It presents an evaluation of the potential impacts associated with the proposed maintenance dredging of the Moss Landing Harbor Federal Channel.

1.2 Description and Location

The proposed project is maintenance dredging of the Moss Landing Harbor Federal Channel to a depth of -15 feet Mean Lower Low Water (MLLW) with two feet of overdepth. The Moss Landing Harbor Federal Channel Project is located in Monterey Bay, California (Figure 1) and has two reaches: the Entrance Channel, which is 2,000 feet long and 200 feet wide, and the Lagoon Channel, which is 3,200 feet long and 100-200 feet wide. The Entrance Channel provides access from Monterey Bay to the Lagoon Channel. The Lagoon Channel, (Figure 2), is comprised of the Outer and Inner Lagoon channels and provides access to the North and South Harbor. Dredged material would likely be placed at SF-12, an unconfined aquatic disposal site located approximately 1,100 feet west northwest of the Moss Landing Marine Lab pier abutment. However, there is a possibility the material may be placed at SF-14, an unconfined aquatic disposal site located approximately 7,000 feet west of the harbor entrance. Both SF-14 and SF-12 are environmentally acceptable disposal locations.

Based on the most recent condition survey conducted in March 2019, removing shoaled sediment down to the historically maintained depth of -15 feet MLLW plus two feet of allowable overdepth will produce approximately 85,000 cubic yards (CY) of dredged material (Table 1). A copy of the condition survey is included in Appendix A: Sampling Point Map. The amount of shoaled sediment down to project depth is currently estimated to be approximately 52,000 CY. The first foot of overdepth contains approximately 16,000 CY of sediment. The second foot of overdepth contains approximately 17,000CY, increasing the total possible dredged volume to approximately 85,000 CY. The estimated dredge quantities from the March 2019 condition survey are listed in Table 1. Another condition survey will be conducted prior to the proposed dredging action, however, the estimated quantities are not expected to change significantly. This condition survey is expected in June 2020.

Table 1. Estimated Dredge Quantities.

Station Number	<u>Standard</u> <u>(-15')</u>	<u>1' Overdepth</u> <u>(-16')</u>	<u>2' Overdepth</u> <u>(-17')</u>	<u>Total CY</u>
Station 0+00 to 25+00	13,340	6,528	7,014	26,882
Station 25+00 to 42+00	16,069	6,186	6,352	28,607
Station 42+00 to 51+81	22,542	3,333	3,333	29,208
TOTAL	51,951	16,046	16,699	84,696

Moss Landing Harbor is located in the center of Monterey Bay, in Moss Landing, Monterey County, California (Figure 1). It is approximately 80 miles south of San Francisco and halfway between the cities of Santa Cruz and Monterey. The mouth of the Pajaro River is located 3 miles north of Moss Landing and the mouth of the Salinas River is 4 miles to the south. Moss Landing Harbor is located in the old Salinas River channel. Directly behind the sand spits is Elkhorn Slough, which extends 11 miles inland and has over 2,500 acres of open water-ways, mud flats, and salt marshes.



Figure 1. Location of Moss Landing Harbor and Other Monterey Bay Cities.

Two jetties and related shore protection revetments maintain a stabilized entrance channel through the sand spits, into Moss Landing Harbor (Figure 2). The entrance to the harbor is located at the head of the Monterey Submarine Canyon. Moss Landing Harbor consists of two harbors: the North Harbor, utilized by approximately 154 recreational boats; and the South Harbor, utilized by approximately 446 commercial fishing and recreational boats. The Moss Landing Harbor District (MLHD) maintains about 600 berths and docking facilities. Figure 2 provides a detailed schematic of Moss Landing Harbor. An access channel was constructed between the Inner Harbor Basin Channel and inner boat basin in 2000 (USACE 2006).

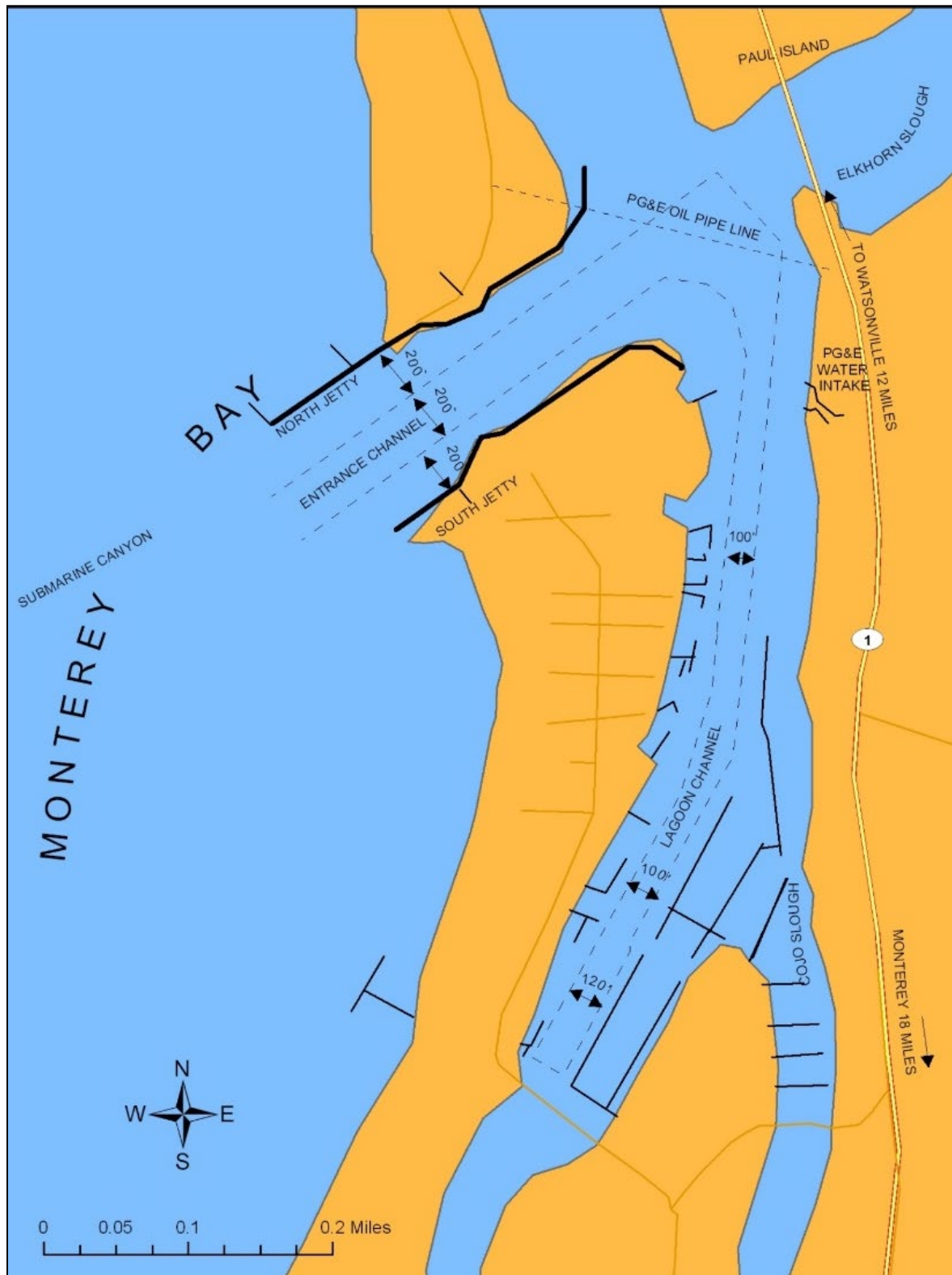


Figure 2. Moss Landing Harbor Federal Navigation Channels.

Moss Landing Harbor is situated within the boundaries of the Monterey Bay National Marine Sanctuary (MBNMS); however, Moss Landing Harbor itself is delineated as a harbor exclusion zone within the sanctuary boundaries. Moss Landing Harbor is bounded by the

Monterey Bay portion of the sanctuary to the west and the Elkhorn Slough portion of the sanctuary to the east (Figure 3). The proposed disposal site SF-12 is located within the boundaries of the marine sanctuary (Figure 4). The proposed disposal site SF-14 (Figure 4) is located 7,000 feet (approximately 1.3 nautical miles) west of the harbor entrance.

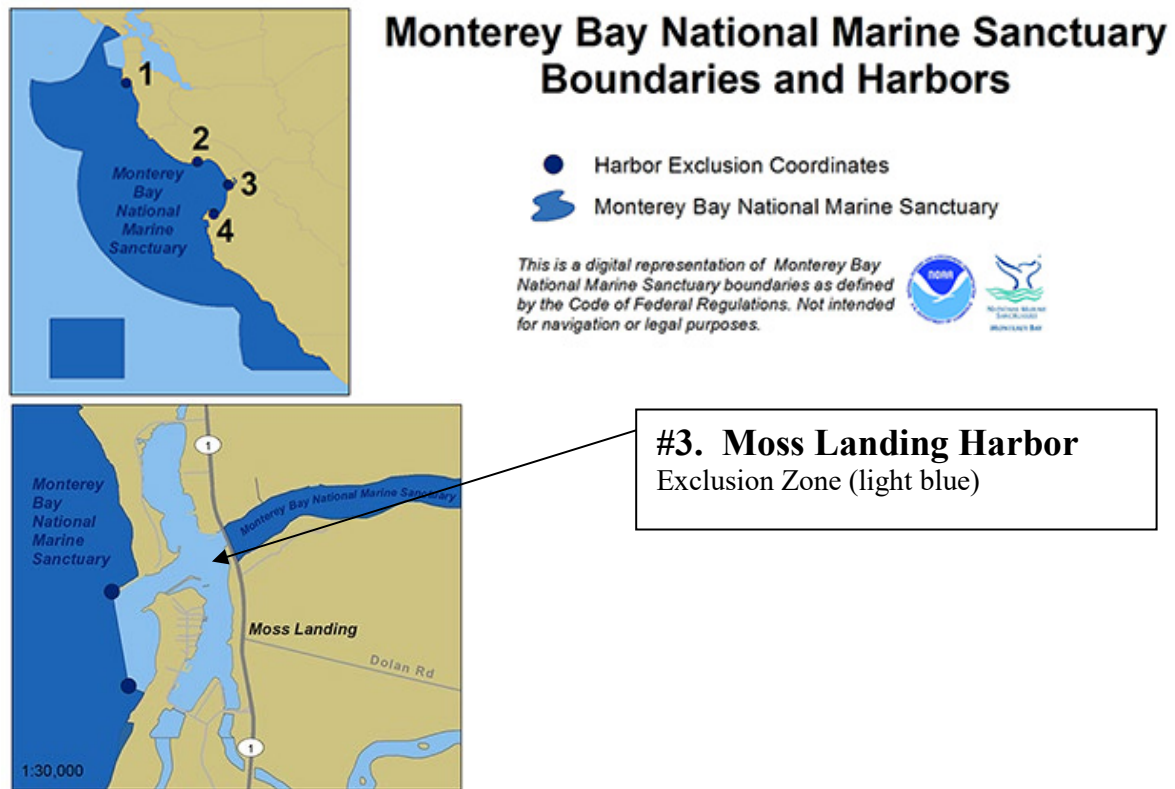


Figure 3. Monterey Bay National Marine Sanctuary Boundary and Moss Landing Harbor Exclusion Zone. Source: NOAA, 2019.

2.0 Scope of Analysis

This EA analyzes whether the proposed action will significantly affect the quality of the human environment. The scope of this project analysis is limited in time and space by the reasonably foreseeable direct, indirect, and cumulative impacts of the proposed action. Direct effects are caused by the action, and occur at the same time and place as the action (40 C.F.R. § 1508.8a) while indirect effects are caused by the action, but may occur later in time or further removed in distance (40 C.F.R. § 1508.8b). Cumulative effects “result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions” (40 C.F.R. § 1508.7).

The action area for this analysis includes the open water areas of Moss Landing Harbor, the entrance channel to Moss Landing Harbor, and the SF-12 and SF-14 unconfined in-water dredged material disposal sites. For certain potential impacts, such as construction-related noise, the scope of analysis also includes adjacent properties surrounding the project site. Additionally, the scope of analysis incorporates evaluation of potential cumulative impacts associated with past, present, and reasonably foreseeable future projects occur within the vicinity of the action area within the temporal scope of the action. In this analysis, the temporal scope of the action includes the dredging performance period and the associated period of indirect effects that could follow, estimated at approximately 2-6 months, as described in the resource sections below.

3.0 Proposed Action and Alternatives

3.1 Proposed Action

The Proposed Action is the maintenance dredging of the Moss Landing Federal Navigation Channel, and in-water disposal of dredged material at the SF-12 or SF-14 disposal site. The dredging action would involve the removal of up to approximately 85,000 CY of material from the the Entrance Channel and Lagoon Channel to the authorized depth of -15 ft MLLW with two feet of overdepth. As part of the Proposed Action, dredging would likely be conducted with a hydraulic (cutterhead) dredge with material placement at SF-12 via transport pipe. However, the Proposed Action may also be completed using a clamshell dredge with material placement via barge at the SF-14 unconfined in-water placement site. The in-water placement work window is June 15 through November 30, which coincides with the work window for steelhead (*Oncorhynchus mykiss*). The Proposed Action dredging duration would be approximately 2 months. Dredging is expected to be conducted within the steelhead work window, however, the work window may be extended to December 31st, if necessary to complete dredging and contingent on approval from the National Marine Fisheries Service.

As a USACE dredging project, the Proposed Action would be in compliance with the Federal standard, 33 C.F.R. Part 335, Section 335.7. The Federal standard means the dredged material disposal alternative or alternatives identified by the Corps [USACE] which represent the least costly alternatives consistent with sound engineering practices and meeting the environmental standards established by the 404(b)(1) evaluation process or ocean dumping criteria. As described below, and throughout this document, either of the Proposed Action sub-alternatives (i.e. hydraulic dredging and disposal at SF-12 or clamshell dredging and disposal at SF-14) are environmentally acceptable. Therefore, the specific disposal location and dredging method will likely be determined during the contracting process based on cost.

3.1.1 Proposed Action Sub-Alternative 1: Hydraulic Dredging and Disposal at SF-12

A hydraulic dredge is a barge-type vessel that consists of an onboard pump(s), spud piles (long pipes), and a toothed cutterhead attached to a pipeline. The cutterhead is mounted to a ladder that can be lowered, raised, and angled to target material for dredging. The transport pipeline exits at the back (stern) of the dredge.

Once the dredge is positioned, the ladder with cutterhead would be lowered to the bottom of the channel. The cutterhead would then slowly start to rotate and break up sediment along the seafloor, continuing from side to side in a sweeping arc. The hydraulic dredge would move along the channel self-propelled by walking with its spuds or controlled by tugboat, and a crew would maintain and operate the dredging equipment at all times. Skiffs and a tugboat would be used for crew transport, maintenance, and other operations associated with dredging activities.

The dredged material is expected to consist of 80% to 90% water and 10% to 20% solids by volume. This ratio is dependent upon several factors, such as physical characteristics of the

dredged material, thickness of dredge cuts (e.g., thin cuts result in more water and less sediment), and transport distance.

Dredged material would be transported to SF-12 via pipeline. The pipeline would be made of durable plastic (PVC) or steel and would likely float on pontoons or floats. Depending on which areas are being dredged, the length of the pipeline would range from 1,500 feet to 3,000 feet. For material dredged from the lagoon channel the pipeline may be connected to SF-12 using an existing transport pipe that extends under the southern sand spit, while material dredged from the entrance channel would be piped directly to SF-12. If navigational access over the pipeline is required, one or more sections of the pipeline system can be submerged and anchored to the bottom of the seafloor. Pipeline sections and anchors not in use would either be secured on a floating barge, capped and lashed together to float in the channel, or stored in designated staging areas. One booster pump may be needed to accommodate the maximum pumping distance. The contractor would determine the preferred route for the pipeline from the dredge site to the placement site, and buoys would be positioned to warn boaters of the pipeline's presence.

SF-12 is an unconfined dredged-material placement site located in the head of the Monterey Submarine Canyon that is regulated by the U.S Environmental Protection Agency (USEPA). SF-12 has been used since 1947. The USEPA adjusted the location of the SF-12 by approximately 700 feet west-northwest of the original location in April 2007 to minimize adverse effects to water quality. The site is about 1,100 feet west-northwest of the Moss Landing Marine Lab pier abutment (Figure 4). The site is an irregular quadrangle with an area of approximately 7,700 square feet and a centroid at 36°48'07.0890" latitude and 121°47'33.5056" longitude. Depths range from 100–150 feet because the sea floor within SF-12 slopes at approximately 30°. The sediment at SF-12 is primarily fine sand because currents consistently flush fine sediments down the canyon to the abyss. Fauna is dominated by crustaceans: predominately small, mobile amphipods and ostracods.

3.1.2 Proposed Action Sub-Alternative 2 - Clamshell Dredging and Disposal at SF-14

A typical mechanical dredge consists of a crane mounted on a floating flat deck barge, with a dredging bucket (e.g. clamshell or environmental closed) on the end of the crane boom. The barge would have two to four spud piles to anchor the dredge, likely located at the corners. The mechanical dredge would move along the channel self-propelled by walking with its spuds or controlled by tugboat, and a crew would maintain and operate the dredging equipment at all times. Once the dredge is positioned, the spud piles would be anchored vertically into the seafloor. The mechanical dredge, typically powered by a diesel generator, would then lower and raise the dredge bucket through the water column using a series of cables and winches. The weight of the dredge bucket allows it to sink into the sediment, with the cables restricting the clamshell from falling too deep or beyond the maximum allowable overdepth. The dredge bucket is then closed, raised up through the water column, and swung over to place material into a bottom dump or split hull barge. Unlike hydraulic cutterhead dredging, little additional water is entrained by mechanical dredging equipment.

When all the material within the swing reach of the mechanical dredge is removed, the spud piles would be raised and the tug would relocate the dredge equipment. The process would repeat until all required dredging is completed. Once a haul barge is full, it would be transported by tug to the SF-14 disposal site.

SF-14 is a circular aquatic placement site that is regulated by the USEPA and is located approximately 1.3 nautical miles from shore centered at 36°47'52.8" north latitude and 121°49'7.8" west longitude with a depth of approximately 600 feet =. The circle, which has a 1,500-foot radius, includes part of the Monterey Submarine Canyon. SF-14 has been periodically used since 1947 for dredged material placement. SF-14 is authorized to receive clean material that cannot be placed on a beach because of grain size. On January 1, 1993, the area in which the site is located was designated as the Monterey Bay National Marine Sanctuary; however, the use of SF-14 as a placement site was grandfathered in and the location of the placement site was later changed. At the disposal site, the doors along the bottom of the barge would be opened, and the dredged sediment would be discharged into the site. Because of SF-14's location at the head of the Monterey Submarine Canyon, sediment placed there settles into the abyss rather than mounding.

3.2 No Action Alternative

Under the No Action Alternative it is assumed that no Federal maintenance dredging would take place, and shoaling would continue in the federally maintained channel. If no action were taken by the Federal Government to dredge the Entrance and Lagoon Channels, then sediment would continue to accrete resulting in navigational hazards and access limitations to Moss Landing Harbor. Commercial fishing boats, recreational boats, and the Monterey Bay Aquarium Research Institute's (MBARI) ocean-going research vessel would experience tidal delays in entering and exiting Moss Landing Harbor, and potentially could eventually lose access to some portions of the Harbor in the long-term future.

3.3 Alternatives Considered but Eliminated from Further Study

The proposed action is to conduct maintenance dredging of the Moss Landing Harbor navigational channel. The Proposed Action in this EA covers both hydraulic cutterhead and clamshell dredging methods. Hydraulic dredging using a hopper dredge was considered but eliminated from further study as an alternative dredging method because Government hopper dredge equipment is limited and scheduled two years in advance, therefore a hopper dredge was unlikely to be available for the project. No other dredging methods would address the project purpose..

Moreover, In addition to the proposed aquatic disposal sites discussed as part of the proposed action, two additional disposal site alternatives were considered, but were eliminated from further study. These alternatives included upland disposal of dredged material and reuse of dredged material for beach nourishment.

The USACE has historically used the North Harbor Interim Rehandling Site for upland placement and processing of dredge material that is unsuitable for aquatic placement. This site

was closed because it historically supported the federally threatened plant species Monterey spineflower (*Chorizanthe pungens var. pungens*), and has been replanted with spineflower per agreement with USFWS. The site was last used in 1999; since then no alternate upland rehandling facility has been identified.

Dredged material that is characterized as greater than 80 percent sand can be beneficially used to nourish local beaches and USACE initially identified and evaluated three beneficial-use beach nourishment sites within the MBNMS.

- Site 1 is located between the jetty-road tide gate and Zmudowski State Beach.
- Site 2, known as the South Spit Beach nourishment site, is located between the former Sandholdt Pier and south entrance jetty. This beach is primarily composed of medium-grained sand. The land use shoreward of this site is primarily light industrial. The South Spit Beach site was used for placement of material dredged from the federal channels in fiscal years 1984, 1987, 1990, 1993, 1996, 1998, 2002, and 2007.
- Site 3 is located immediately north of the Entrance Channel jetty.

Clean sand dredged from the harbor's channels could be placed directly on these sites using a hydraulic cutterhead dredge pipeline. The sand would be moved from the discharge area by dozers to selected beach nourishment locations.

The beaches in the vicinity of the Moss Landing Harbor provide nesting habitat for the Western snowy plover. The USFWS typically requires a beach dredged-material placement work window from October 1st through February 28th to protect nesting snowy plovers. However, for the Moss Landing Federal Channel, the USFWS has requested that USACE avoid any impacts to beaches due to potential effects to the snowy plover. As a result, USACE has removed beach nourishment beneficial reuse as a potential disposal alternative for this Proposed Action.

4.0 Affected Environment and Consequences

4.1 Resources Not Described In Detail

4.1.1 Hazardous and Toxic Materials

Since the Proposed Action involves the movement of dredged material from the Moss Landing federal channel to the SF-12 or SF-14 disposal sites, all aquatic locations, hazardous and toxic materials are discussed in the “Water Quality” section.

4.1.2 Land Use, Socioeconomics, Public Facilities, and Utilities

The Moss Landing Harbor facilities in and adjacent to the project area can be classified as marina/recreation land uses. In addition to the Harbor, public facilities in the vicinity of the project action area include the small boat launch and adjacent public access beaches. Utilities and services common in the region include electrical lines, water and sewer, and waste management services. Neither the proposed action nor the no-action alternatives would change the existing land use classification. Neither the Proposed Action nor the No Action Alternative would affect any public facilities, utilities or services. There would be no effect to the socioeconomic conditions in the surrounding area.

4.1.3 Public Health and Safety

The proposed action would involve use of marine vessels as well as heavy construction equipment. Vessels used for dredging would follow the appropriate navigational safety measures to ensure public safety during dredging operations. As discussed in the “water quality” section, a spill-prevention plan would be developed prior to project implementation and spill-response equipment would be onsite for immediate implementation. These practices would minimize the possibility of any accidental spills affecting public health and safety. Given these measures, no significant adverse effects to public health and safety are expected from the Proposed Action. The No Action Alternative would not alter the existing public health and safety conditions in the region of the project.

4.1.4 Transportation and Traffic

State Highway 1, which runs along the coast adjacent to the project site, is a vital traffic artery. However, dredging activities associated with the proposed action are not expected to affect ground transportation or traffic volumes, because as the dredging vessels will access the project site from the ocean. A minimal number of worker vehicle trips along Highway 1 may occur in association with the Proposed Action and would be an insignificant addition to existing traffic levels on the highway. The No Action Alternative would not alter the existing transportation and traffic conditions in the area.

4.1.5 Air Quality

The Moss Landing Harbor project area lies within the Monterey Bay Air Resources District (MBARD). The MBARD consists of all of Monterey, San Benito, and Santa Cruz counties. Presently Monterey County is in attainment status or unclassified by the USEPA for all National Ambient Air Quality Standards (NAAQS). Although the project area lies within an attainment area, the Clean Air Act (CAA) Amendments of 1990 require that any Federally funded project must comply (i.e. complete an analysis) with the air quality standards and regulations that have been established by Federal, state, and local regulatory agencies, unless an exemption is applicable to that proposed action. This project is exempt because it is a maintenance dredging activity (40 C.F.R. § 93.153(c)(2)(ix)).

4.1.6 Noise

Dominant noise sources include residential and commercial noise from the surrounding upland area, beach recreation activities, vehicle noise on adjacent roads, recreation and commercial vessels navigating in the harbor and bay, and wave-generate sounds. The sound of wave action will vary with factors including wave height, period, frequency, angle of attack, season, and wind conditions. Given the general background noise levels, including those from existing boat and vehicular traffic, project noise impacts are not expected to be discernible from background noise levels.

4.2 Water Quality

4.2.1 Affected Environment/Baseline Condition

Baseline water quality in the area of the Entrance Channel, SF-12, and SF-14 is generally good. However, water quality in the inner harbor (lagoon channel) has been degraded by development within the region. Sources of contaminants are agricultural runoff, power plant discharges, septic tank leachate, marine bottom paints and illegal discharges of vessel sewage. Contaminants identified in the harbor include: oil, grease, zinc, copper, lead, cadmium, mercury, arsenic, chromium, polychlorinated biphenyls (PCBs), dichlorodiphenyltrichloroethane (DDT), dichlorodiphenyldichloroethylene (DDE), toxaphene and endosulfan.

Circulation patterns in the area are a function of waves, winds, and tides. Tidal variations are caused by the passage of two harmonic tidal waves, one with a period of about 12.5 hours and one with a period of about 25 hours. This causes a difference in height between successive high and low waters. The result is two high waters and two low waters each day, consisting of a higher high water (HHW) and a lower high water (LHW), and a higher low water (HLW) and a lower low water (LLW). The mean tidal range for the project site is 3.5 feet (NOAA 2006). The entrance channel provides direct access to the Pacific Ocean and is subject to direct forces from the tides and currents, and the open water environment is hydrologically high energy. The lagoon channel is located on the landward side of the spit and within an enclosed area of the

harbor; therefore, the open water environment of the lagoon channel is buffered from currents and tidal forces.

Turbidity is related to water clarity and based on factors such as suspended sediment concentration, shape, size, refractive index, color, and absorption spectra. Increased turbidity levels can affect flora and fauna by preventing light transmission, injuring fish gills, and interfering with prey or predator recognition or egg and larvae development. Furthermore, sediment suspension can mobilize sediment-bound contaminants into the water column. There is general consensus that the potential for impacts increases as project size and exposure concentration (a function of sediment characteristics) increase (SAIC, 2007). Additionally, the equipment employed for dredging and placement, including how that equipment is operated, affects the nature of these potential impacts.

Pursuant to the Section 401 of the Clean Water Act, sediments to be dredged from waters of the United States require testing to determine potential environmental impacts and suitable disposal options. Such testing is generally a requirement to obtain Section 401 water quality certification and to evaluate the suitability of the shoaled material in the entrance channel and the lagoon channel for disposal at the unconfined aquatic disposal sites (SF-12 and SF-14). The Moss Landing federal channel was sampled in March 2020 in accordance with the Guidelines for Implementing the Inland Testing Manual in the San Francisco Bay Region, (DMMO, 2001) and with the procedures outlined in the 2014 Master Sampling and Analysis Plan, USACE SF-District O&M Dredging (Master SAP). The sampling plan was approved by the EPA, Water Board, Monterey Bay National Sanctuary and the California Coastal Commission in January 2020. A contract was awarded for sampling and analysis and sampling was performed in March 2020. The Entrance Channel was found to be 92.4 percent (%) sand (7.6% fines), while the Lagoon Channel area was found to be 58% silt (99.9% fines). Additional details of the sampling results are discussed below.

Pursuant to Section 404 of the Clean Water Act, USACE has completed a 404(b)(1) Evaluation (Appendix A) and determined that the Proposed Action represent the least environmentally damaging practicable alternative.

4.2.2 Environmental Effects

Significance Criteria

For water quality, a potential effect would be considered significant if:

- The project results in impairment of water quality of Moss Landing Harbor or Monterey Bay.
- The project results in an elevated, long term increase in turbidity of Moss Landing Harbor or Monterey Bay above ambient conditions.
- The project results in a permanent change in substrate composition or character.
- The project results in permanent alternation to currents, circulation or drainage patterns within the dredge footprint or disposal site.

- The project results in exposing concentrations of constituents of concern in underlain sediment above ambient sediment quality conditions in the proposed dredging footprint.
- The project results in the placement of sediment with concentrations of constituents of concern above ambient concentrations at the aquatic disposal sites.

Effects of the Proposed Action

Dredging and disposal of dredged material at an unconfined aquatic disposal site has the potential to affect water quality, primarily through sediment suspension and re-suspension (SAIC, 2007). The water within Moss Landing Harbor is of similar salinity to the water within the aquatic disposal sites; therefore, the proposed project would have no effect on salinity. Studies have shown placement of dredged material from hydraulic dredges into the water column does not cause significant short- or long-term changes in temperature, or pH (USACE 1976a; USACE 1976b); therefore while the proposed aquatic disposal could have a minor, temporary effect to temperature or pH, the proposed activities are not expected to result in changes to ambient temperature, salinity, or pH levels in the action area. Additionally, the proposed action would not contribute to increased bacterial loads.

While dredging projects that significantly increase water depths have the potential to result in decreased dissolved oxygen (DO) concentrations in the vicinity of the dredging action, significant reduction of DO is not expected from the Proposed Action. DO concentrations naturally decrease with depth because of losses from biological respiration and decomposition (SAIC, 2007). Increased water depth can similarly result in a decrease in biological production of oxygen from photosynthesis when the depth is beyond light compensation ranges of submerged aquatic vegetation (SAIC, 2007). Very deep dredging holes have been found to create these conditions and result in long-term reduction of DO (NRC, 1995 as cited in SAIC, 2007). The maximum increase in depth associated with dredging under the Proposed Action would be 17 feet, which would restore the depth of the water column within the Entrance Channel and Lagoon Channel to approximately match the surrounding bathymetry. DO levels may experience minor and temporary reductions (1-2 parts per million) because of sediment suspension, however, studies have shown ambient conditions are shortly regained following settlement of suspended sediment (USACE 1976a). Given the relatively shallow proposed dredging depth, the existing depth of the surrounding harbor, and the fact that any reductions in DO from sediment suspension would be minor and temporary, the Proposed Action is not expected to significantly alter DO concentrations.

Dredging and placement activities associated with the Proposed Action are not expected to significantly alter currents, circulation, or drainage patterns within the action area. As discussed above, the maximum increase in depth associated with the proposed action would be 17 feet, which would restore the depth of the Entrance Channel and Lagoon Channel to approximately match the surrounding bathymetry. As a result, this increase in channel depth would not be expected to change currents or circulation, especially within the lagoon channel given the enclosed nature of the harbor and resulting weak current speed and direction.

Moss Landing Harbor is at the terminus of a large agricultural watershed where DDT and other pesticides were widely used; therefore DDT is a contaminant of potential ecological

concern (COPECS) within Moss Landing Harbor. Polychlorinated biphenyls (PCBs) and organotins are also COPECS within Moss Landing Harbor due to historic industrial and commercial activities in the Harbor. Both the USACE and MLHD have conducted chemical and biological evaluations of Moss Landing Harbor sediments as part of their maintenance dredging programs. The USACE conducted sediment evaluation of Federal Channel material in 1999, 2002, 2006, and 2020. The MLHD conducted sediment evaluations of the non-Federal Channel material in 1998, 2002, 2006, 2011, and 2018.

The results of this historic sediment testing show that material deposited within or in proximity to the Entrance Channel is coarse-grained sandy material, and material deposited within the Lagoon Channel is mostly fine grained, silty material. This is due to differences in hydrodynamic forces at the harbor entrance and within the inner harbor channels. In general, coarse-grained sandy material from the Entrance Channel or in proximity to the entrance channel is consistent with reference sediment concentrations at the aquatic disposal sites and/or lower than NOAA's effect range – low (ER-L) reference values. USACE performed a review of the analytical chemistry results reported for previous USACE and MLHD pre-dredge sediment quality evaluations from 1998-2011 measured against reference sediments collected from the SF-12 aquatic disposal site during each evaluation along with the ER-L and Effects Range-Median (ER-M) toxicity reference values. The ER-L and ER-M values were derived from an extensive review and statistical analysis of published sediment toxicity studies (Long et al, 1995). The ER-L is considered a concentration below which, toxic effects in the benthic environment are not likely, and the ER-M is considered a concentration above which benthic toxicity is likely.

Sediment testing of the Lagoon Channel in 1998 showed DDT concentrations greater than a level of significant concern (150 ug/kg). Sediment testing of the Lagoon Channel in 2006 showed DDT at concentrations of concern in areas adjacent to the A-Dock, B-Dock, Monterey Bay Aquarium Research Institute (MBARI) and K-Dock. High levels of mercury were detected in localized areas between the A-Dock and E-Dock. DDT, PCBs and organotins have a high affinity for fine grained sediment, such as those found within the lagoon channel.

The sediment sampling and analysis of the Entrance and Lagoon Channels associated with the proposed 2020 dredging episode included chemical analysis and bioassay tests. All bioassay tests passed with survivability greater than 90%. The analyses revealed no toxicity to polychaetes and no toxicity in the Modified Elutriate Tests. For the Standard Elutriate Tests, the material met the requirements for unconfined aquatic disposal after mixing model calculations. The concentrations for metals, PCBs, dieldrin, and chlordane were slightly elevated but were in line with the recent 2018 testing results for the directly adjacent MLHD sampling of the non-federal channel. None of the results exceeded the bioaccumulation trigger values that have been in use for Moss Landing, in particular the DDTs threshold was not exceeded. While the PCBs were found to be slightly elevated, MLHD material had similar concentrations with only slightly higher carbon content and that material passed bioaccumulation testing with results well below the total reporting values. Therefore, EPA and the Regional Water Quality Control Board (RWQCB) determined that no bioaccumulation or z-layer analysis for DDTs or PCBs was required for the 2020 federal channel sampling and analysis.

Based on these 2020 testing results, contamination and toxicity in the dredge and fill material associated with the Proposed Action are not anticipated. And the material to be dredged as part of the Proposed Action is expected to be deemed suitable for placement at SF-12 or SF-

14. The final sampling and analysis report will be submitted for a suitability determination to EPA and the RWQCB in early June 2020.

Minor oil spills or leaks from dredges, vehicles, and equipment used during dredging and placement activities could potentially adversely affect water quality. However, best management practices (BMPs) would be developed and implemented throughout the Proposed Action to ensure no oil, petroleum products, other potential fluid leaks, or debris from project activities significantly impact water quality. Fueling of marine-based equipment would take place offsite at authorized marine fueling facilities or at designated locations adjacent to the project. If fueling were to occur adjacent to the project site, marine-fueling BMPs would be implemented to avoid discharge of pollutants to marine waters. Furthermore, a spill prevention plan would be developed prior to project implementation, and spill response equipment would be available for immediate implementation to minimize the impacts of any accidental spills.

In addition to BMPs, pursuant to Section 401 of the CWA (33 U.S.C. Part 1251), the proposed action will require 401 Certification from RWQCB to ensure the project meets State water quality standards. For past dredging episodes, the RWQCB has provided USACE water quality coverage under Waste Discharge Requirements (WDR) 01-007. For the 2020 episode, USACE has initiated coordination with the RWQCB and they requested USACE provide a project description and the Sampling and Analysis Report for their review in order to approve this episode for coverage under WDR 01-007. During the dredging episodes, daily dredge volumes would be provided to the RWQCB as required under the WDR. The RWQCB's WDR-01-007 is included in Appendix A. The project would comply with all provisions of the WDR to ensure project implementation meets permitted requirements. Given the lack of expected effects to water quality parameters, the implementation of BMPs, and compliance with any water quality certification issued by the RWQCB, no significant detrimental impacts to water quality are expected from the Proposed Action.

Turbidity

Dredging is likely to result in temporary but minor turbidity, sediment suspension, and light transmission impacts associated with removal and placement of sand in aquatic habitats. SAIC (2007) report total suspended solids (TSS) concentrations measured 100 feet from hydraulic/cutterhead dredges range from ≤ 150 mg/L near the surface to ≤ 500 mg/L near the bottom. LaSalle et al. (1991, as cited in SAIC, 2007) found general suspended sediment plume lengths around hydraulic suction cutterhead dredges ranged from 0 to 328 feet near the surface, to ≤ 1640 feet near the bottom. It is anticipated that Entrance Channel material will be composed largely of sand therefore there would be less suspended sediment concentrations and turbidity compared to the dredging of fine-grained material located in the Lagoon Channel.

These turbidity concentrations are similar to those experienced during storms, high river runoff, or other vessel activities (SAIC, 2007) and would likely represent minor increases relative to ambient conditions in the action area. During storms off California, TSS concentrations may range from 50 to $>1,000$ mg/L near river discharges and were measured at 340 mg/L in the nearshore (39 feet) off central California's coast during high waves (SAIC, 2007). Moreover, turbidity levels and suspended sediment concentrations in harbors generally range higher than in the open ocean because of creek, river, or stream discharges; relatively shallow depths; or resuspension by vessel traffic. Similarly, although turbidity is the primary

factor affecting light penetration, light transmittance in enclosed bays and harbors may also range lower than in the open ocean because of vessel traffic. Both clamshell and hydraulic dredging agitates bottom sediments that can be resuspended in the water column. Sediment agitated by hydraulic dredging would be resuspended near the bottom of the water column. However, the hydraulic nature of the dredge would suction much of the sediment back in the dragarm, thus reducing the amount of sediment that could be resuspended in the water column, compared to clamshell dredging.

Turbidity also generally dissipates rapidly after construction ceases. TSS concentrations, turbidity values, and associated water quality depressions generally decrease within one hour after dredging operations cease, with ambient conditions returning within one tide cycle (SAIC 2007). This is especially true for sandy material with low silt or clay content (SAIC, 2007). Dredged-material testing associated with the proposed 2020 dredging found that the Entrance Channel is 92.4 percent (%) sand (7.6% fines), while the Lagoon Channel area is 58% silt (99.9% fines). As a result, the increased turbidity associated with clamshell or cutterhead dredging and disposal would be expected to settle and ambient conditions would be expected to remain consistent with the existing condition long-term.

In both the Entrance Channel and Lagoon Channel it is expected that the sediment plume will be relatively localized to the area in the immediate vicinity of the dredge. The duration of the plume is expected to be short; suspended solid concentrations will likely return to background levels within one hour after dredging stops. Measures would be used to minimize any impacts from turbidity and suspended particulates. While cutterhead dredges involve a continuous operation of hydraulic removal and pumping of sediments between the dredge and discharge site, this analysis assumes standard work schedules would be used during the project which would limit impact exposure to daytime and exclude overnight and weekend periods during which turbidity would dilute and dissipate with tides and currents.

Although the Proposed Action includes dredging and placement of a moderate amount of material (approximately 85,000 CY), the changes in turbidity, suspended particulates, and light transmission associated with these actions are expected to be temporary, very short-term, and not significantly greater than certain ambient conditions in the action area. Given this, the high sand content and lack of contamination in tested materials, and the assumed measures that would be employed to minimize turbidity, the Proposed Action is not anticipated to have any significant adverse turbidity or suspended particulate effects.

Disposal of dredged material at the unconfined aquatic disposal sites would result in temporary, localized, minor, short-term changes to erosion and accretion patterns within the footprint of the disposal site. Disposed material would temporarily settle to bottom of the disposal sites and currents would sweep the sediment into the Monterey Submarine Canyon. The proposed disposal would have a minor effect on erosion and accretion patterns that would not be discernable from the No Action Alternative.

Effects of the No Action Alternative

Under the No Action Alternative, there would be no dredging or placement of material at SF-12. As a result, the No Action Alternative would also not result in any adverse effects

associated with turbidity, contaminants in dredged material, water quality parameters in the action area, and would have no additional potential for pollution or spills. However, the No Action Alternative would result in continued shoaling in the Federal navigation channel; if the proposed dredging did not occur subsequent dredging would eventually be required to maintain navigational depths. These future efforts would likely be larger in scope and longer in duration resulting in more severe impacts.

4.3 Biological Resources

4.3.1 Affected Environment/Baseline Condition

Aquatic Habitat, Species, and Special Aquatic Sites

The proposed project area consists of coastal water habitat and sandy seafloor benthic habitat. Habitats near the project area that will not be affected include: beach habitat, coastal dune habitat near the north harbor and in the south harbor between the Old Salinas River channel and Monterey Bay; rocky intertidal habitat on the north and south jetties along the harbor entrance channel, and open water in Monterey Bay to the west of Moss Landing Harbor. There are no mudflat or marsh habitats present. The SF-12 and SF-14 aquatic disposal sites are located within the boundaries of the MBNMS, a special aquatic site.

Coastal water habitat under full tidal influence is located in the outer Entrance Channel, inner Lagoon Channel, and at the aquatic disposal sites. Invertebrates such as abalone and many varieties of jelly fish including spotted jelly live in this habitat. Coastal fish in this habitat include white sturgeon (*Acipenser transmontanus*) and sharks such as pajama catshark (*Poroderma africanum*). Birds such as brown pelican (*Pelecanus occidentalis*), western gull (*Larus occidentalis*), and common murre (*Uria aalge*) feed in coastal water habitat.

Sandy seafloor benthic habitat is located below the open water throughout the project area. Recently accumulated sediments would be dredged from this frequently disturbed habitat in the Entrance Channel and Lagoon Channel. Invertebrates are the dominant type of species found in this habitat. Some species include spiny brittle stars (*Ophiothrix spiculata*), sand dollars (*Dendraster excentricus*), sea cucumbers (*Parastichopus parvimensis*) and globe crabs (*Randallia ornata*) which may feed and rest in or move through this habitat. Fish such as California halibut (*Paralichthys californicus*) and sanddabs (*Citharichthys spp.*) may be found in this habitat. No permanent vegetation occurs in this habitat that would be affected by the project. Eelgrass (*Zostera marina*) does not occur in the project footprint but does occur within about 250 feet.

Endangered or Threatened Species

Federally-listed threatened (FT) or endangered (FE) species, or designated critical habitats (CH) that may be affected by the Proposed Action include Southern sea otter (*Enhydra lutris nereis*) (FT), tidewater goby (*Eucyclogobius newberryi*) (FE), South-Central Coast

California steelhead (*Oncorhynchus mykiss*) (FE) (CH), and North American green sturgeon (FT) (CH)

Sea otters are typically found in nearshore areas, have been reported in Moss Landing Harbor, and have haul out areas in the vicinity of the proposed action area. Tidewater goby are likely to be present in Elkhorn Slough, just upstream of the project area. Steelhead and green sturgeon, may be in the Monterey Bay region during the proposed dredging, but are unlikely to occur in the harbor and channels.

4.3.2 Environmental Effects

Significance Criteria

An impact to aquatic habitat and species will be considered significant if:

- There is a net loss in value of a sensitive biological habitat including a marine mammal haul out site or breeding area, seabird rookery, or Area of Special Biological Significance;
- If the movement or migration of fish is impeded; and/or
- If there is a substantial loss in the habitat of any native fish, wildlife, or vegetation (a substantial loss is defined as any change in a population which is detectable over natural variability for a period of five years or longer).

An impact to endangered species will be considered significant if there is a substantial effect to the species or loss of habitat (a substantial loss is defined as any change in a population which is detectable over natural variability for a period of five years or longer).

Effects of the Proposed Action

Aquatic Species, Habitat, and Special Aquatic Sites

Temporary increase in turbidity and suspended solids may decrease the amount of dissolved oxygen near the dredge site, thus affecting fish and other marine life within the area. Mobile species are expected to relocate out of the area until dredging activities are finished. Some marine populations, such as invertebrates, would be removed by dredging, but are expected to recolonize the area once dredging has ceased. Although haul out sites for sea lions and harbor seals are located in the general vicinity of the dredging site, the dredging site is separated from these areas by a jetty. The Proposed Action is not likely to affect any seabird rookery. Overall, dredging would have a temporary, minor effect to aquatic habitat and species; therefore, no significant environmental impacts are expected on aquatic habitat and species in the dredge area or the aquatic disposal sites.

Endangered and Threatened Species

The potential effects on federally-listed species and critical habitats, and avoidance and minimization measures are discussed below.

Sea Otters: Sea otters are typically found in nearshore marine environments, where they forage on invertebrates such as crabs, clams, and barnacles. Sea otters are highly mobile and capable of avoiding dredging activities. They may be present in significant numbers in the vicinity of the project area, and frequently form rafts in the northern part of the harbor, which is outside of the project area. The USACE has coordinated with the USFWS regarding the potential effects of the Proposed Action on sea otters, and the USFWS has provided an avoidance and minimization measure to ensure that the potential effects of the Proposed Action on this species is less than significant. A biological monitor would conduct a pre-construction inspection before dredging work begins each day and would remain on-site during all dredging activities. The monitor would stop work (or prevent work from beginning at the start of the day) if a southern sea otter were present within 50 meters (164 feet) of dredging equipment.

Tidewater Goby: The tidewater goby is endemic to California and typically inhabits coastal lagoons, estuaries, and marshes, similar to those adjacent to the project area. There is a unit of tidewater goby critical habitat mapped adjacent to, but not overlapping, the project area. Tidewater goby may be present upstream in Elkhorn Slough, but are not expected to occur in the federal channels of Moss Landing Harbor. The dredging and disposal activities are taking place in waters significantly deeper (authorized depth is 15 ft) and of higher salinity (i.e., seawater at 33 ppt) than those that tidewater goby prefer (less than 7 ft and 10 ppt, respectively). It is possible that high streamflow could wash tidewater gobies downstream into the harbor, but dredging will not occur when flows are high. Because of the lack of overlap with critical habitat and low likelihood of individual presence, the project's effects on tidewater goby are expected to be less than significant.

South-Central Coast California Steelhead: The threatened South-Central California Coast steelhead Distinct Population Segment (DPS) inhabits coastal stream networks from the Pajaro River system in Monterey Bay south to, but not including, the Santa Maria River system in Santa Barbara County (NMFS 2011). Adults migrate upstream to spawning grounds from late October through May, with peak migration occurring between mid-December and mid-April, and spawning occurring between January and April. Downstream migration of 1-year old steelhead is from April through late June and 2-year old fish from March through late May (Santa Clara Valley HCP/NCCP 2006).

Steelhead are known to occasionally occur in the project area as they migrate through the Harbor to access the Salinas River via the Old Salinas River channel when the (new) Salinas River mouth is closed off by sand deposition. The proposed dredging would not occur during adult migration. It is anticipated that the potential effects of Proposed Action would be less than significant primarily because steelhead are infrequently present in the Harbor, and the dredging would be done in the work window when steelhead are unlikely to be present. Also, the cutterhead dredge, if used, would be operated only when the cutterhead is inserted in the Harbor sediment thereby avoiding the possibility of entrainment of fish. Fish entrainment also is very unlikely to occur should a clamshell dredge be used.

Southern DPS Green Sturgeon: Green sturgeon occur in Monterey Bay and occasionally may be present in Moss Landing Harbor, but likely would avoid the area of disturbance during dredging. Adults may be swimming near the placement site, but likewise they would be able to avoid the placement of sand. Green sturgeon critical habitat is present offshore where the disposal sites are located, but is not likely be adversely affected by the turbidity and sedimentation caused by placement of the dredged material due to the relatively small size and deepness of SF-12 and SF-14, and dispersion caused by the active currents. Based on this assessment, it is expected that potential effects of the dredging project on green sturgeon would be less than significant.

Essential Fish Habitat(EFH)

The proposed project has been reviewed for potential impacts to EFH, and is expected to temporarily disturb the substrate within the dredge footprint and create localized turbidity. Temporary, localized turbidity and sedimentation also would be expected at SF-12 and SF-14. These adverse effects would be short-term and minor due to the small magnitude and short duration of the dredging activity and relatively small size of the placement sites. The USACE has determined that the project may affect EFH managed as part of the Pacific Groundfish, Pacific Salmon, Pacific Coastal Pelagic Species, and West Coast Highly Migratory Species fishery management plans. Impacts to EFH are expected to be less than significant, but USACE has requested consultation with NMFS on EFH under the Magnuson-Stevens Fisheries Conservation and Management Act.

Effects of the No Action Alternative

Under the No Action Alternative, no dredging or disposal would occur. As a result, the temporary and minor impacts to aquatic habitat and listed species that were described above would not occur. In time, the Federal channels would require dredging to ensure continued operation of the Moss Landing Harbor. If dredging is delayed, it could result in a longer duration of dredging with potentially higher adverse effects.

4.4 Recreation

4.4.1 Affected Environment/Baseline Condition

Moss Landing and the surrounding areas of Monterey County offer a wide variety of recreational activities. There are a number of State Parks in the vicinity of the Moss Landing Harbor, including Salinas River State Beach, Moss Landing State Beach, Elkhorn Slough State Marine Conservation Area, and Moss Landing State Wildlife Area. These beaches and open space areas offer opportunities hiking, wildlife viewing, and other aquatic recreational activities such as fishing, boating, kayaking, and swimming. In addition to these public facilities, there are a number of commercial kayak rental and whale watching facilities, as well as tourism opportunities.

4.4.2 Environmental Effects

Significance Criteria

For recreation, a potential effect would be considered significant if the project results in a permanent loss of existing recreational uses.

Effects of the Proposed Action

During dredging operations, recreation could be impacted by the presence of the cutterhead hydraulic dredge's pipeline. The floating pipeline could block access to the port during active dredging. However, in order to avoid this effect, the dredge pipeline would be anchored to the bottom of any channel crossings to ensure that access is provided to recreational vessels and other vessels using the Harbor. As a result, there would be no adverse effects to recreation from cutterhead dredging operations. Clamshell dredging would differ from cutterhead dredging in that it would not involve use of a pipeline, and instead dredged material would be disposed via a secondary barge. This is not expected to cause access restriction for recreational vessels using the channels.

The proposed dredging would maintain, sustain, and support recreational boating by keeping the approaches and entrance channels open and free of navigational hazards. Conducting the dredging of Moss Landing Harbor would have long-term beneficial effects by ensuring that safe navigation is provided for recreational users of the harbor. Short-term impacts to recreational boaters will be negligible and insignificant. The proposed aquatic disposal at SF-12 or SF-14 would not impact recreation.

Effects of the No Action Alternative

Under the No Action Alternative, USACE would not dredge the Federal Channels and as a result, safe navigation access to the Moss Landing Harbor would not be provided. As a result, there would be an adverse effect to recreational vessels, as they could be restricted from entry to the Harbor at low tides. Recreational benefits described above for the Proposed Action would not occur, unless another entity ensures that the channel is appropriately dredged.

4.5 Navigation

4.5.1 Affected Environment/Baseline Condition

The Monterey Bay and Moss Landing Harbor area is a heavily used recreational and small commercial vessel waterbody. Boat traffic, including commercial boats, fishing vessels, and recreational vessels, often traverse the proposed project site. Safe navigation is maintained

by well-marked channels and the presence and activity of various law enforcement agencies (i.e. U.S. Coast Guard and California Department of Fish and Game).

4.5.2 Environmental Effects

Significance Criteria

For navigation, a potential effect would be considered significant if the proposed project results in a substantial reduction of current safety levels for vessels in the harbor. Safety impacts would be considered significant if activities present a navigational hazard to boat traffic or interfere with any emergency response or evacuation plans.

Effects of the Proposed Action

Maintenance dredging of the entrance channel would restore shoaled areas to their authorized design depths and improve navigational safety in the harbor, which would be a beneficial effect on navigation. The number of moorings and slips in the harbor would remain unchanged by the proposed dredging. To ensure safe transit during maintenance dredging activities, appropriate coordination would be maintained with the MLHD and the U.S Coast Guard (USCG), and ingress and egress lanes would be established and regulated. Given the general background vessel traffic levels, dredging activities are not expected to significantly increase or impact vessel traffic levels. All vessels will be marked and lighted in accordance with USCG regulations and notices will be published in Local Notice to Mariners warning boat users about times, durations, and locations of construction activities. Vessel traffic should be able to easily navigate around any short-term obstacles created by construction traffic. Dredging will not impede access to any channels or entranceways, as discussed above in the recreation analysis. Therefore, impacts to vessel traffic are considered to be insignificant.

Effects of the No Action Alternative

Under the No Action Alternative, there would be no Federal maintenance dredging in Moss Landing Harbor and no beneficial effects would occur. The number of moorings and slips would remain unchanged; however, continued shoaling of the federal channels would compromise navigational safety and could affect the ability for vessels to access the Harbor, particularly during low tides. Any vessels attempting to navigate through the harbor in these unsafe conditions would have increased potential for stranding and associated risks. Additionally, the inability of USCG vessels to transit the harbor could compromise emergency response in the area. Therefore, the impacts of the No Action Alternative on navigation and navigational safety would be adverse.

4.6 Aesthetics

4.6.1 Affected Environment/Baseline Condition

The overall aesthetic character of the project area is extremely high. Land use is composed of a mix of residential and water-oriented facilities. The beaches further add to the overall impression of a recreational-oriented visual setting. The area is well maintained. The natural resources in the area provide a visually attractive setting and relaxing atmosphere for residents and tourists.

4.6.2 Environmental Effects

Significance Criteria

For aesthetics, a potential effect would be considered significant if the project would significantly change a landscape in a manner that permanently and significantly degrades an existing viewshed or alters the character of the viewshed by adding incompatible structures.

Effects of the Proposed Action

The Proposed Action could result in varying impacts depending on the opinion of the viewer/receptor. Viewers may consider the presence of the dredge to be an adverse impact, interrupting viewpoints from local land points and from boats. Other viewers may consider the presence of the dredge to be a beneficial impact providing an interesting feature to the existing view. If clamshell dredging were to be used, a barge would also be present for transportation of dredged material to SF-14. Given that the dredge and barge would only be temporarily present during dredging operations, this would be a short-term effect, and aesthetic impacts would be less than significant.

Aesthetics along the shoreline of the spit would be slightly degraded if hydraulic dredging were used, due to the presence of temporary floating pipeline used to pump dredged material to SF-12 for disposal. The floating pipeline would be installed from the ocean-ward side of the spit to SF-12. These impacts would be temporary given the pipeline would be installed for approximately 6-7 weeks and removed once dredging is complete. Therefore, impacts of the Proposed Action on aesthetics would be less than significant.

Effects of the No Action Alternative

The No Action Alternative would not cause any changes to the area's aesthetics. There would be no change to the local viewshed. Therefore, the No Action Alternative would have no impact on aesthetics.

4.7 Cultural and Historical Resources

4.7.1 Affected Environment/Baseline Condition

“Cultural resources” describes several different types of properties: prehistoric and historic archaeological sites; architectural properties such as buildings, bridges, and infrastructure; and resources of importance to Native American Tribes (traditional cultural properties and sacred sites). There are two types of cultural resources that generally may be of interest for operations and maintenance dredging actions: (a) archaeological sites from prehistoric Native American settlements that may be situated on the shoreline or submerged on the continental shelf; and (b) abandoned historic vessels that have sunk offshore and historic shoreline structures associated with the early 20th maritime industry.

Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, 54 U.S.C. § 306108 (formerly 16 U.S.C. § 470f), requires federal agencies to take into account the effects of a proposed undertaking on properties that have been determined to be eligible for listing or are listed in the National Register of Historic Places (National Register). A historic property refers to cultural resources (e.g., land-based prehistoric or historical sites, maritime historical resources, including shipwrecks, buildings and structures on the shore or in the water, and cultural artifacts) that are 50 or more years old, possess integrity, and meet the criteria of the National Register found at 36 C.F.R. § 60.4. Additionally, the Abandoned Shipwreck Act (43 U.S.C. §§ 2101–06, *et seq.*) protects shipwrecks found in state waters.

USACE has defined the horizontal and vertical limits of the Proposed Action area for the proposed Moss Landing federal channel dredging. The horizontal limits of the Proposed Action area consist of the areas encompassed by the federal Entrance Channel and Lagoon Channel which will undergo dredging action and within which activities such as anchor placement may occur. The vertical limits of the Proposed Action area are the maximum depth below the surface to which excavations will extend (-17 feet). Also included in the Proposed Action area are the dredged material placement sites.

USACE has established policy and procedures for conducting underwater surveys for maintenance dredging and disposal activities (Dredging Guidance Letter No. 89-01, USACE, March 13, 1989). USACE is directed to make a reasonable and good faith effort to identify submerged archaeological resources that may be affected by project implementation. Typically the review of project documents and research of historical records and other sources is sufficient to determine the potential for submerged resources to be present and whether there would likely be an effect. The policy states that underwater surveys to identify historical archaeological sites (e.g., shipwrecks or other sunken maritime artifacts) are not required within the boundaries of previously dredged channels or previously used disposal areas unless USACE determines that there is a good reason to believe such resources exist and that they would be altered or destroyed as a result of project implementation.

The investigation for this project consisted of reviewing the environmental documents from previous dredging projects, reviewing the archaeological survey reports and site records generated by USACE, consulting with maritime archaeologists and historians in the 1970's and 1980's for development projects in Moss Landing, and information on shipwrecks produced by

the State Lands Commission and MBNMS.. USACE's previous environmental reports and project documents over the past twenty years have identified no historic properties or submerged cultural resources during dredging operations at Moss Landing. Additionally, no traditional cultural properties or sacred sites have been identified the NAHC's sacred lands database.

Two agencies maintain databases of shipwrecks that are available on their public domains. The California State Lands Commission's searchable database generated a list of 37 records of vessels lost off the Monterey County coastline. The latitude and longitude coordinates are provided for each vessel and the remains of shipwrecks that may exist in the vicinity of the disposal site SF-12 were noted. NOAA maintains an online shipwreck database for the MBNMS. The MBNMS database listed 30 shipwrecks by latitude and longitude coordinates, which represents a partial listing of lost vessels in the ocean waters between San Francisco and Point Sur. In addition, the Pacific coast region of California, Washington, and Oregon was studied in the late 1980s by the Minerals Management Service to identify submerged archaeological resources. A database of shipwrecks numbering around 4,000 was generated as a result of this research. The Moss Landing project area is not represented in the database, although mapped data of wreck locations showed that vessels tended to be lost at relatively high frequency in shallow water adjacent to the coast. Based upon the data, it is estimated that 80-90 % of wrecks occurred in depths around 5 fathoms (30 feet), referred to as the "nearshore zone." A review of the results generated by these two databases demonstrated that there are no shipwrecks in the project area.

4.7.2 Environmental Effects

Significance Criteria

Section 106 outlines the process in which federal agencies are required to determine the effects of their undertakings on historic properties. Effects are considered to be adverse if they alter, directly or indirectly, any of the characteristics of a cultural resource that qualify that resource for the National Register so that the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association is diminished. A significant effect to cultural resources would occur if an action results in a substantial adverse change in the integrity of a historical resource. Impacts to cultural resources may be the result of physically altering, damaging, or destroying all or part of a resource, altering characteristics of the surrounding environment by introducing visual or audible elements that are out of character for the period the resource represents, or neglecting the resource to the extent that it deteriorates or is destroyed.

Effects of the Proposed Action

It has been generally accepted that the initial construction of the federal channel and the repeated maintenance dredging of the area alter the seafloor to a point that submerged cultural resources, if present prior to the Proposed Action, would be previously removed or destroyed. Maintenance dredging associated with the Proposed Action would be confined to the removal of sediments in the federal channels that have accumulated since the last dredging effort. By its nature, the Proposed Action has no potential to affect historic resources. Per 36 C.F.R. §

800.3(a)(1), USACE has no further obligations under Section 106 of the NHPA.

Even if the Proposed Action had a potential to affect historic resources, there are no known historic properties within the project area. As described above, there are no previously recorded shipwrecks or submerged resources that have been identified within the project area. Sediments deposited since the previous dredging activities would not contain *in situ* archaeological resources. Based upon the greatly modified conditions in the existing project channels from previous dredging actions, it is reasonable to conclude that there are no historic properties within the federal channels.

Dredged material transport would not involve sediment disturbance, and would therefore not be expected to disturb cultural resources. The material dredged as part of the Proposed Action would be placed at existing placement sites on top of previously placed dredged material. Therefore, placement activities would not result in impacts to historical resources or unique archaeological resources, because the underlying native deposits would not be disturbed. Moreover, the Proposed Action would not include any demolition of existing structures nor introduce elements that could affect the historic setting of the built environment. Therefore, there would be no potential to affect historic resources.

The below mitigation measures would be implemented if any inadvertent discoveries are found during dredging. If an inadvertent discovery is made, USACE would immediately halt all ground-disturbing or depositional activities within the area of the find. A USACE archaeologist or other qualified archaeologist would then ascertain the nature of the discovery, determine its significance as a site or an isolated finding, evaluate the cultural resource for eligibility on the National Register, and provide proper management recommendations pursuant to 36 C.F.R. § 800.13. USACE shall make reasonable efforts to avoid, minimize or mitigate adverse effects for unanticipated discoveries of historic properties and will follow 36 C.F.R. § 800.13(b)(3) when appropriate.

If an inadvertent discovery is made containing human remains, USACE would immediately halt all ground-disturbing or depositional activities within the area of the find reasonably suspected to overlie adjacent remains. Following Cal. Pub. Res. Code § 7050.5, the coroner of the county in which the human remains are discovered will inspect the human remains to determine if they are in their authority. If the coroner recognizes the human remains are Native American, they shall contact within 24 hours the Native American Heritage Commission (NAHC). Upon notification by a county coroner, the NAHC shall notify the most likely descendants (MLD) pursuant to Cal. Pub. Res. Code § 5097.98 regarding the discovery of the Native American human remains. Within 48 hours of notification by the NAHC, the MLD shall inspect the site of the discovery of Native American human remains and recommend to the party responsible for the excavation work means for treating or disposition, with appropriate dignity, the human remains and any associated funerary objects. The owner of the land upon which Native American human remains were discovered, in the event that no descendant is identified, or the descendant fails to make a recommendation for disposition, or the land owner rejects the recommendation of the descendant, shall reinter the remains and burial items with appropriate dignity on the property in a location not subject to further disturbance.

Effects of the No Action Alternative

The No Action Alternative would not cause any disturbance to sediments in the Moss Landing Federal Channels and would not result in any dredge material transport or placement at placement sites. Therefore, the No Action Alternative would have no impact on cultural resources.

4.8 Cumulative Effects

NEPA defines a cumulative effect as an effect on the environment that results from the incremental effect of an action when combined with other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions (40 C.F.R. § 1508.7).

The scope of this cumulative effects analysis is limited by the geographic and temporal scope of the potential effects that could result from the proposed action. As a result, environmental resources which were assessed above and resulted in no effects from the proposed action will not be assessed in this analysis. The geographic and temporal scope of the analysis is defined in Section 2.0.

4.8.1 Past, Present, and Reasonably Foreseeable Future Actions

This section briefly describes other projects in the Moss Landing area. The exact construction timing and sequencing of these projects are not yet determined or may depend on uncertain funding sources. Consideration of each of these projects is necessary to evaluate the cumulative effects of the proposed project on environmental resources in the area.

Federal Dredging and Placement

Federal dredging by the USACE generally takes place at Moss Landing periodically depending on Federal appropriations from Congress. The Federal channels were last dredged by USACE in 2012. Such dredging operations would result in similar effects to those described above for the Proposed Action.

Moss Landing Harbor District Dredging and Beach Nourishment

Moss Landing Harbor District independently removes up to 60,000 CY of dredged material or more every three to five years from berth areas and the non-federal inner channels, although some areas are dredged less frequently (up to every 10 years). The demand for dredging can increase during heavy rainfall years as more shoaling occurs in the navigation channels. Most recently, the MLHD conducted some local dredging in 2019. The MLHD's dredging operation would result in similar effects to those described above for the Proposed Action.

In addition to the dredging program, the MLHD reuses dredged material for beach nourishment. Dredged material that is primarily sand and clean (i.e., meeting USACE, USEPA, and other regulatory guidelines under the Clean Water Act) can be beneficially reused to address

beach erosion. Material that is not used for beach nourishment is disposed at SF-12 or SF-14, as assessed for the Proposed Action.

PG&E Battery Energy Storage System Project

PG&E, in partnership with Tesla, Inc., proposes to upgrade the storage capacity of the Moss Landing Power Plant. The proposed utility-owned project is a 182.5 MW lithium-ion battery energy storage system located within PG&E's Moss Landing substation. This transmission-connected storage system will address local capacity requirements and will participate in the California Independent System Operator markets, providing energy and ancillary services. While this project is occurring in close proximity to the Moss Landing Harbor, the physical scope of the project is limited to the Moss Landing PG&E substation and is unlikely to have effects that would combine with the proposed O&M dredging project to create a cumulative effect.

Moss Landing Rule 20A Underground Utility District Project

This project is transitioning the utility systems in Moss Landing from above ground poles to underground service. The project is being conducted by Monterey County, AT&T and PG&E, among other utility providers. The construction phase of the project is effectively complete, with conversion of service from the above ground to underground lines anticipated through July 2020.

4.8.2 Summary of Cumulative Effects

Water Quality

In the context of the projects discussed above, the Proposed Action would not be anticipated to result in significant cumulative water quality effects. It is unlikely that USACE and the MLHD would be conducting dredging activities at the same time, and as assessed above, the tidal conditions in the project area create a dynamic enough environment that any water quality effects return to ambient conditions within a tidal cycle. As a result, there would not be additional significant cumulative effects on water quality from the Proposed Action in the context of past and future foreseeable actions.

Biological Resources

Similar to the Proposed Action, prior federal dredging episodes and MLHD dredging actions could have temporary impacts to biological resources during dredging activities. These impacts would be expected to be temporary and cease with dredging and placement activities. Because MLHD and federal dredging activities would not be expected to occur at the same time, nor would dredging occur in the same geographic locations, species and habitats would not experience significant cumulative effects from multiple individual projects occurring at once. Moreover, species and habitats would be expected to recover from temporary effects from these projects on the order of days to months and therefore, long-term cumulative effects are not anticipated.

Recreation

Similar to the Proposed Action, the MLHD and prior or future federal dredging actions could have temporary impacts to recreation during dredging activities, but would eventually result in long-term benefits to recreation through the maintenance of the authorized depth of the Federal Channel. Additionally, any beach nourishment activities conducted as part of such dredging activities would temporarily impact recreation during placement activities, but eventually would result in long-term improvements to recreation due to the beneficial improvements to the beach condition. Additionally, while the Underground Utility Project likely had temporary effects to recreation within the city during construction, the construction is effectively complete and therefore would not contribute to a cumulative effect on recreation with the Proposed Action.

Navigation

The Proposed Action and the MLHD and prior or future federal dredging actions would not be anticipated to happen at the same time and therefore would not cumulatively contribute to effects on navigation. However, they would combine to cumulatively benefit navigation through improved access to the Moss Landing Harbor. The Underground Utility Project would not affect navigation and therefore would not contribute to a cumulative effect on navigation.

Aesthetics

Effects to aesthetics associated with the proposed action and the other local projects would be occurring at different times, as USACE and the MLHD likely wouldn't be dredging at the same time, and construction is already effectively complete on the Underground Utility project. As a result, while individually these projects would each have temporary effects on aesthetics, they would not combine to create a cumulative effect on aesthetics.

Cultural Resources

Similar to the Proposed Action, MLHD and Federal dredging and placement activities that occurred in the past and are reasonably foreseeable to occur in the future would not be anticipated to result in significant adverse effects to cultural resources. Initial dredging of the harbor and federal channels could potentially have disturbed cultural resources, but such impacts are not definitively known to have occurred, and there is a lack of known shipwrecks or other identified cultural resources in the channels and at the placement sites. Subsequent and future dredging would be confined to the removal of sediments in the channels that have accumulated since the last dredging effort. Sediments deposited since the previous dredging activities would not contain additional archaeological resources. Moreover, placement activities would not remove, damage, or otherwise have any potential to affect cultural resources. Therefore additional impacts would not be expected from these episodes and the cumulative effects of the Proposed Action, in the context of past and future dredging episodes would be less than significant.

Based on the potential effects of the past and reasonably foreseeable future actions, in relation to the Proposed Action, the cumulative effects of activities in the vicinity of the Moss Landing federal channels or at the disposal site will not create significant negative impacts.

5.0 Environmental Compliance

The following table includes a summary of compliance with applicable laws and regulations. Detailed compliance information, supporting reports, and environmental compliance history for this project can be found in Appendix A - Environmental Compliance.

Table: Summary of Environmental Compliance

Statute	Status of Compliance
<p>National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. § 4321 <i>et seq</i>)</p> <p>Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of the NEPA (40 C.F.R. §§ 1500-1508) dated July 1986</p>	<p>This Draft EA has been prepared to disclose impacts and develop mitigation measures (where warranted) associated with the proposed maintenance dredging of Moss Landing federal channels, as discussed in the CEQ regulations on implementing NEPA (40 C.F.R. §§ 1500-1508). This document presents sufficient information regarding the impacts of the Proposed Action. The Draft EA will be released for a 30-Day public and agency comment period. After the comment period, the USACE will determine if the Proposed Action warrants the signing of a Finding of No Significant Impact (FONSI), or whether an Environmental Impact Statement is required. A Draft FONSI is included in Appendix A.</p>
<p>Clean Air Act, as amended (42 U.S.C. § 7401 <i>et seq</i>)</p>	<p>In accordance with 40 C.F.R. § 51.853(c)(2)(ix), USACE has determined the proposed agency action is exempt from the requirement to prepare a conformity determination with the State Implementation Plan under the Clean Air Act because the project consists of maintenance dredging, no new depths are required, and placement would be at an approved in-water placement site. As a result, compliance with the Clean Air Act is complete.</p>
<p>Clean Water Act, as amended (33 U.S.C. § 1251 <i>et seq</i>)</p> <p>Rivers and Harbors Act of 1899 (33 U.S.C. § 403)</p>	<p>Pursuant to section 401 of the Clean Water Act (CWA), the proposed action will require a Certification from the Regional Water Quality Control Board (RWQCB) to ensure the project meets State water quality standards. For the 2020 episode, USACE has initiated coordination with the RWQCB and they requested USACE provide a project description and the Sampling and Analysis Report for their review in order to approve this episode for coverage under WDR 01-007. The RWQCB's WDR-01-007 is included in Appendix A.</p> <p>Pursuant to section 404 of the CWA, USACE has prepared a 404(b)(1) analysis for the Proposed Action. The 404(b)(1) analysis is included in Appendix A. The Proposed Action was determined to represent the least environmentally damaging practicable alternative.</p>
<p>Executive Order 11990, Protection of Wetlands, (42 Fed. Reg. 26961, 1977)</p>	<p>No wetlands occur within the proposed project area.</p>
<p>National Oceanic and Atmospheric Administration Federal Consistency Regulation (15 C.F.R. Part 930)</p> <p>Coastal Zone Management Act of 1972 (16 U.S.C. § 1451 <i>et seq</i>)</p> <p>California Coastal Act of 1976</p>	<p>USACE has prepared and will submit to the California Coastal Commission, a Negative Determination (Appendix A) describing how the Proposed Action is consistent with previously submitted Federal Consistency Determinations, pursuant to the requirements of the Coastal Zone Management Act (CZMA). The project will not be implemented until concurrence from the Commission is obtained and compliance with this law is complete.</p>
<p>Endangered Species Act as amended (16 U.S.C. § 1531 <i>et seq</i>)</p>	<p>The USACE is in coordination with the USFWS and NMFS regarding impacts of the proposed dredging on federally listed species and critical habitats. The USACE has determined that the Proposed Action is not likely to adversely affect any federally listed endangered or threatened species, or their critical habitat (Appendix A). Any proposed minimization measures from USFWS and NMFS will be included as requirements of the dredging Contract.</p>

<p>Fish and Wildlife Coordination Act (16 U.S.C. § 661 <i>et seq</i>)</p>	<p>The Fish and Wildlife Coordination Act applies whenever “the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified.” The proposed maintenance dredging does not proposed to impound, divert, deepen, control, or modify any body of water beyond previously authorized depths. Therefore the Fish and Wildlife Coordination Act does not apply.</p>
<p>Magnuson-Stevens Fishery Conservation and Management Act - Fishery Conservation Amendments of 1996, (16 U.S.C. § 1801 <i>et seq</i>) – Essential Fish Habitat (EFH)</p>	<p>The proposed action area includes EFH for three Fishery Management Plans. In compliance with the MSFMCA, an EFH assessment and consultation with NMFS regarding adverse effects to EFH from the Proposed Action has been prepared by USACE (Appendix A) and submitted to NMFS in order to obtain EFH conservation recommendations to avoid, minimize, mitigate, or otherwise offset any potential adverse effects to EFH.</p>
<p>Migratory Bird Treaty Act (16 U.S.C. §§ 703-711)</p>	<p>Since the proposed action is located in open water habitat and would not consist of any land-based activities, there would be no effects anticipated on migratory bird species.</p>
<p>Marine Mammal Protection Act (16 U.S.C. § 1361 <i>et seq</i>)</p>	<p>Based on the avoidance measures proposed in this EA, no disturbance or harassment of marine mammals is expected from the Proposed Action.</p>
<p>National Marine Sanctuaries Act (16 U.S.C. § 1431 <i>et seq</i>)</p>	<p>The portion of the Proposed Action area outside of Moss Landing Harbor is located in the MBNMS and is regulated under the National Marine Sanctuaries Act (NMSA). The USACE is actively coordinating with the MBNMS to obtain a permit for the Proposed Action.</p>
<p>Marine Protection Research and Sanctuaries Act of 1972 (33 U.S.C. § 1401 <i>et seq</i>)</p>	<p>The Proposed Action does not have the potential to affect historic properties and cultural resources as none occur within the Proposed Action areas.</p>
<p>National Historic Preservation Act (16 U.S.C. § 470 and 36 C.F.R. Part 800): Protection of Historic Properties</p>	<p>See above.</p>
<p>Executive Order 11593: Protection and Enhancement of the Cultural Environment</p>	<p>The Proposed Action does not have the potential to affect any archaeological resources as none would occur within the Proposed Action areas.</p>
<p>Archaeological and Historic Preservation Act of 1974, (16 U.S.C. § 469 <i>et seq</i>)</p>	<p>The Proposed Action does not have the potential to affect any abandoned shipwrecks as none occur Proposed Action areas.</p>
<p>Federal Water Project Recreation Act (16 U.S.C. § 4601 <i>et seq</i>)</p>	<p></p>
<p>Abandoned Shipwreck Act of 1987 (43 U.S.C. § 2101 <i>et seq</i>)</p>	<p>The Proposed Action does not have the potential to affect any abandoned shipwrecks as none occur Proposed Action areas.</p>
<p>Submerged Lands Act (Public Law 82-3167; 43 U.S.C. § 1301 <i>et seq</i>)</p>	<p></p>

6.0 Agencies Consulted and Public Notification

The Draft EA was released for public review on May 14, 2020 for 30 days to agencies, organizations, and individuals known to have interest in the project. Copies of the draft EA were made available online. The following agencies and organizations were notified of the availability of the draft EA.

Comments received and USACE responses will be included in Appendix B after close of the public comment period.

A. Federal agencies:

- 1) U.S. Environmental Protection Agency (EPA Region 9)
- 2) U.S. Coast Guard
- 3) U.S. Fish and Wildlife Service
- 4) National Marine Fisheries Service
- 5) Monterey Bay National Marine Sanctuary

B. State and local agencies:

- 1) California Coastal Commission
- 2) State Lands Commission
- 3) State Historic Preservation Officer
- 4) Central Coast Regional Water Quality Control Board
- 5) Monterey Bay Air Resources District
- 6) California Department of Fish and Wildlife
- 7) Department of Water Resources
- 8) California State Parks
- 9) County of Monterey

C. Other organizations and individuals

- 1) Moss Landing Harbor District
- 2) Monterey Bay Aquarium Research Institute
- 3) Elkhorn Yacht Club
- 4) Phil's Snack Shack & Deli
- 5) Michelle Alcantara Studios
- 6) Haute Enchilada Café
- 7) Gregg Marine
- 8) Moss Landing Marine Laboratories
- 9) Technique Mirage
- 10) San Jose State University Research Foundation
- 11) Del Mar Seafood
- 12) La Boutique Gallery
- 13) Stardust Rentals
- 14) Luminant Moss Landing (Moss Landing Power Plant)
- 15) Rodgers Bay Fresh
- 16) Silver Bay Seafoods

7.0 Determinations and Statement of Findings

This EA evaluated the environmental effects of the proposed maintenance dredging of the Moss Landing Harbor's federal channels. Potential adverse effects to the following resources were evaluated in detail: water quality, biological resources, recreation, navigation, aesthetics, cultural resources, and cumulative effects.

The conclusions of the EA are based on field research, and coordination with other agencies indicate that the proposed project would have no significant long-term adverse effects on environmental resources. Short-term effects during construction would either be less than significant or minimized to less than significance using best management practices. Based on this evaluation, the proposed project meets requirements for a Finding of No Significant Impact (FONSI) as described in 40 CFR 1508.13. A FONSI may be prepared when an action would not have a significant effect on the human environment and therefore an environmental impact statement is unnecessary. A Draft FONSI has been prepared and is included in Appendix A. The determination of whether to sign a FONSI will be made after the comment period has been completed and any comments analyzed.

8.0 References

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Appendix A - Environmental Compliance

Appendix A 1.0
Draft Finding of No Significant Impact

DRAFT FINDING OF NO SIGNIFICANT IMPACT

Moss Landing Harbor Maintenance Dredging Moss Landing, Monterey County, California

The U.S. Army Corps of Engineers, San Francisco District (Corps) has conducted an environmental analysis in accordance with the National Environmental Policy Act of 1969, as amended. The Environmental Assessment (EA) dated May 2020, for the Moss Landing Harbor Maintenance Dredging addresses potential environmental effects associated with the proposed 2020 operational maintenance dredging episode in the Moss Landing Harbor, in Monterey County, California.

The EA, incorporated herein by reference, evaluated various alternatives that would enable safe navigation in the project area.

The Proposed Action is the maintenance dredging of the Moss Landing Federal Navigation Channel, and in-water disposal of dredged material at the SF-12 or SF-14 disposal sites. The dredging action would involve the removal of up to approximately 85,000 cubic yards of material from the Entrance Channel and Lagoon Channel to the authorized depth of -15 feet mean lower low water with two feet of allowable overdepth.

In addition to a “no action” plan, the Proposed Action was evaluated including two Proposed Action sub-alternatives.¹ The sub-alternatives include clamshell dredging with disposal at SF-14, or hydraulic pipeline dredging with disposal at SF-12.

For all alternatives, the potential effects were evaluated, as appropriate. A summary assessment of the potential effects of the recommended plan (the Proposed Action) is listed in Table 1:

Table 1: Summary of Potential Effects of the Recommended Plan

	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action
Aesthetics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Air quality	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Aquatic resources/wetlands	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Invasive species	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Fish and wildlife habitat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Threatened/Endangered species/critical habitat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Historic properties	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other cultural resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Floodplains	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Hazardous, toxic & radioactive waste	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

¹ 40 CFR 1505.2(b) requires a summary of the alternatives considered.

	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action
Hydrology	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Land use	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Navigation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Noise levels	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Public infrastructure	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Socio-economics	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Environmental justice	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Soils	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Tribal trust resources	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Water quality	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Climate change	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Recreation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Transportation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the recommended plan. Best management practices (BMPs) as detailed in the EA will be implemented, if appropriate, to minimize impacts.²

All applicable environmental laws have been considered and coordination with appropriate agencies and officials will be completed prior to signing a Final FONSI.

Public review of the draft EA and FONSI will be completed on 15 June 2020. All comments submitted during the public review period will be responded to in the Final EA and FONSI.

Pursuant to section 7 of the Endangered Species Act of 1973, as amended, the U.S. Army Corps of Engineers determined that the recommended plan may affect but is not likely to adversely affect the following federally listed species or their designated critical habitat: southern sea otter, southwestern goby, steelhead, and green sturgeon. The USACE provided the U.S. Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS) the Corps' determination and USACE is awaiting their response. Their concurrence will be obtained prior to signing a Final FONSI.

The USACE has determined that the project may affect EFH managed as part of the Pacific Groundfish, Pacific Salmon, Pacific Coastal Pelagic Species, and West Coast Highly Migratory Species fishery management plans. Impacts to EFH are expected to be less than significant. USACE has requested consultation with NMFS on EFH under the Magnuson-Stevens Fisheries Conservation and Management Act. Their response will be obtained prior to signing a Final FONSI.

Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, the U.S. Army Corps of Engineers determined that the recommended plan has no potential to effect historic properties.

² 40 CFR 1505.2(C) all practicable means to avoid and minimize environmental harm are adopted.

Compliance with Section 401 of the Clean Water Act is expected under Waste Discharge Requirements Order No. 01-007 for the Moss Landing Harbor Dredging. USACE has initiated coordination with the RWQCB and will provide a project description and the Sampling and Analysis Report for their review in order to approve this action for coverage under WDR 01-007. Compliance with Section 404 of the Clean Water Act is documented in the 404(b)(1) analysis prepared by USACE and included with the EA for this action.

USACE has submitted a Negative Determination to the California Coastal Commission (CCC) in accordance with the federal Coastal Zone Management Act (CZMA) of 1972, 16 U.S.C. § 1456, as amended, section 307c(1). Concurrence with the Negative Determination from the CCC would indicate full compliance with CZMA.

Technical, environmental, economic, and cost effectiveness criteria used in the formulation of alternatives were those specified in the Water Resources Council's 1983 Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies. All applicable laws, executive orders, regulations, and local government plans were considered in evaluation of alternatives.³ Based on this report, the reviews by other Federal, State and local agencies, Tribes, input of the public, and the review by my staff, it is my determination that the recommended plan (Proposed Action) would not cause significant adverse effects on the quality of the human environment; therefore, preparation of an Environmental Impact Statement is not required.⁴

Date

John D. Cunningham
Lieutenant Colonel, U.S. Army
District Commander and Engineer

³ 40 CFR 1505.2(B) requires identification of relevant factors including any essential to national policy which were balanced in the agency decision.

⁴ 40 CFR 1508.13 stated the FONSI shall include an EA or a summary of it and shall note any other environmental documents related to it. If an assessment is included, the FONSI need not repeat any of the discussion in the assessment but may incorporate by reference.

Appendix A 2.0
Sampling Point Map

**Moss Landing Harbor Federal Navigation Channel
2020 Maintenance Dredging Sampling & Analysis Plan,
October 22019 Entrance Channel Sampling Points**

Sample Point ID	Easting	Northing
MSL-2019-1-1	5744980.62	2188510.77
MSL-2019-1-2	5746189.37	2189272.02
MSL-2019-1-3	5746385.41	2189381.73
MSL-2019-1-4	5746381.11	2188989.65
MSL-2019-2-1	5746339.34	2188400.29
MSL-2019-2-2	5746250.89	2187726.03
MSL-2019-2-3	5746184.26	2187529.02
MSL-2019-2-4	5746132.25	2187334.04
MSL-2019-3-1	5745701.44	2186566.10
MSL-2019-3-2	5745853.80	2186680.55
MSL-2019-3-3	5745887.74	2186908.53
MSL-2019-3-4	5746027.56	2187157.66

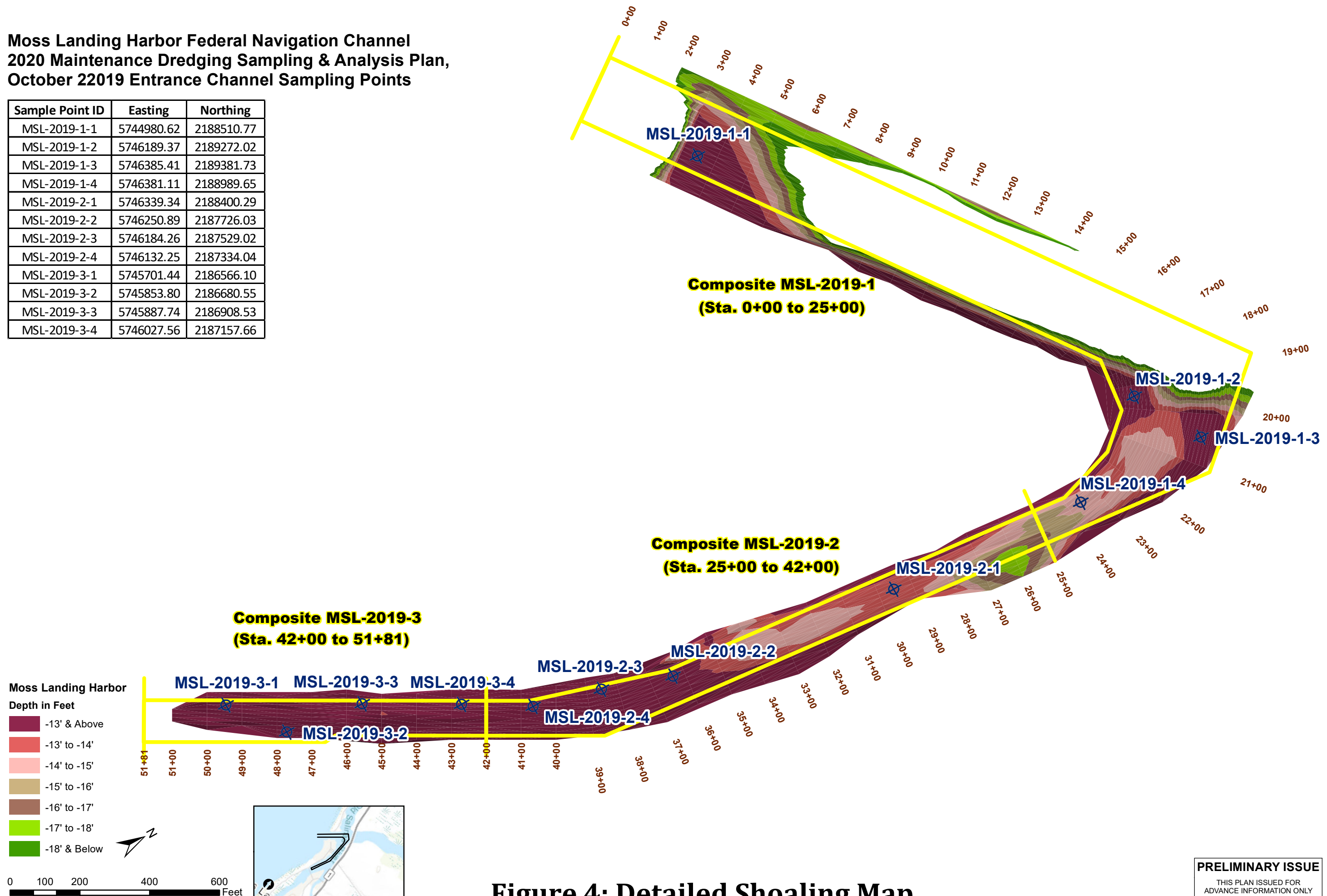


Figure 4: Detailed Shoaling Map

PRELIMINARY ISSUE
THIS PLAN ISSUED FOR
ADVANCE INFORMATION ONLY

Symbol	Description	Date	Appr.

DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	DRAWN/MAP BY:
SHEET NO.:	DATE: 10 / 07 / 2019	CONTRACT NO.:	SOLICITATION NO.:
BRANCH/SECTION: Construction Branch, Hydro Survey Section, 4th Floor 450 Golden Gate Ave, San Francisco, CA 94102			

CALIFORNIA
MONTEREY COUNTY
**MOSS LANDING HARBOR
CONDITION SURVEY
28 MARCH 2019**

SHEET
REFERENCE
NUMBER:
Overview

Appendix A 3.0
Endangered Species Act (ESA) &
Magnuson-Stevens Fishery Conservation and
Management Act (MSFCMA)



DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
450 GOLDEN GATE AVE.
SAN FRANCISCO, CA 94102

April 29, 2020

SUBJECT: USACE Maintenance Dredging of Moss Landing Federal Channel

Leilani Takano, Assistant Field Supervisor
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003

Dear Ms. Takano,

The United States Army Corps of Engineers (USACE) is requesting informal consultation under section 7(a)(2) of the federal Endangered Species Act (ESA) of 1973 (16 U.S.C. § 1536) for maintenance dredging of the Moss Landing Harbor Federal Channel. The channel will be dredged to a depth of -15 ft Mean Lower Low Water (MLLW) with two feet of allowable overdepth. The Moss Landing Harbor Federal Channel Project has two reaches: the Entrance Channel, which is 2,000 feet (ft) long and 200 ft wide, and the Lagoon Channel, which is 3,200 ft long and 100-200 ft wide (See Figure 1). The Entrance Channel provides access from Monterey Bay to the Lagoon Channel. The Lagoon Channel is comprised of the Outer and Inner Lagoon channels and provides access to the North and South Harbor. The listed species potentially present in the project area include the southern sea otter (*Enhydra lutris nereis*) and tidewater goby (*Eucycloglobius newburyii*). The project area does not overlap with designated critical habitat and individuals of listed species are unlikely to be present in the project area, so USACE has determined that this project may affect, but is not likely to adversely affect species within your jurisdiction under the federal ESA.

Dredging will either be performed with a hydraulic cutterhead dredge or a clamshell dredge. If the contractor elects to use a hydraulic cutterhead dredge, dredged material would be placed at SF-12, a dispersive unconfined aquatic disposal site located approximately 1,500 ft southwest from the harbor entrance. Material dredged from the lagoon channel would be transported to SF-12 using an existing transport pipe that extends under the southern sand spit, while material dredged from the entrance channel would be piped directly to SF-12. If the contractor elects to use a clamshell dredge, dredged material would be taken in bottom-dump scows to SF-14, located approximately 7,000 ft west of the harbor entrance. Dredging would be conducted within the steelhead (*Oncorhynchus mykiss*) work window of June 15th to November 30th and have a duration of approximately six to eight weeks. The work window may be extended to December 31st, contingent on approval from the National Marine Fisheries Service.

Based on the most recent condition survey conducted in March 2019, removing shoaled sediment down to the historically maintained depth of -15 feet MLLW plus one foot of paid overdepth will produce approximately 68,000 cubic yards (CY) of dredged material (Table 1). The amount of shoaled sediment down to project depth is 51,951 CY, and the first foot of overdepth contains approximately 16,046 CY of sediment, as shown in Table 1.

Consultation History

The most recent consultation in the project area was a biological opinion issued to the USACE Regulatory Division for dredging conducted by the Moss Landing Harbor District in the areas that are adjacent but outside the federal channel footprint (USFWS File No. 0SEVEN00-2019-F-0030). That consultation included western snowy plover (*Charadrius nivosus nivosus*) and Monterey spineflower (*Chorizanthe pungens* var. *pungens*), but as this project is entirely in the water and does not include beach placement, it will have no effect on those species.

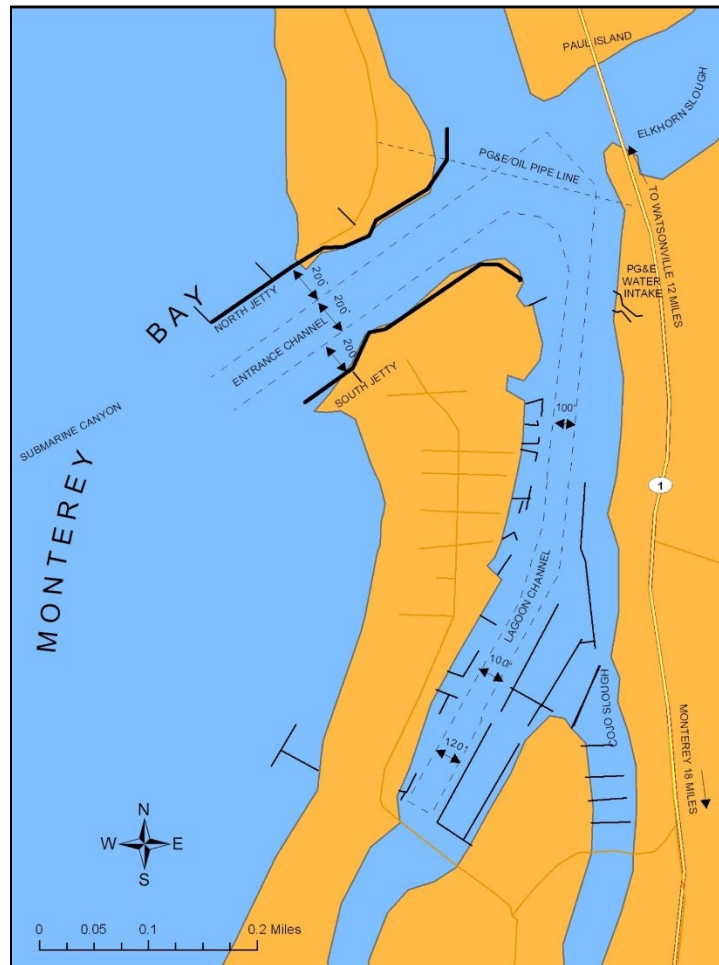


Figure 1. Project Overview Map.

Table 1. Estimated Dredge Quantities.

<u>Station Number</u>	<u>Standard (-15')</u>	<u>1' Overdepth (-16')</u>	<u>Total Volume (CY)</u>
Station 0+00 to 25+00	13,340	6,528	19,868
Station 25+00 to 42+00	16,069	6,186	22,255
Station 42+00 to 51+81	22,542	3,333	25,875
TOTAL	51,951	16,046	67,997

Moss Landing Harbor occupies a unique and environmentally sensitive position on the central coast of Monterey Bay. The watershed and the sloughs that feed into Moss Landing Harbor are home to an abundant and assorted wildlife population including threatened and endangered species. Several migrating shorebirds also use the area surrounding the Harbor as a key stop for foraging before the continuing southward on the Pacific Flyway. Table 2 shows the endangered and threatened species that have been observed or potentially reside within the project area. Figure 2 shows the proximity of the project area to designated critical habitat. The SF-14 disposal site is not shown in Figure 2, but is located approximately 7,000 ft west of the project entrance.

Table 2. Threatened and Endangered Species Potentially Present in the Moss Landing Federal Channel.

Common Name	Latin Name	Status
Tidewater goby	<i>Eucyclogobius newberryi</i>	Federal endangered*
Southern sea otter	<i>Enhydra lutris nereis</i>	Federal threatened

*The USFWS has proposed a reclassification to threatened.



Figure 2. Project Area Proximity to Mapped Critical Habitat.

Potential Impacts from Dredging

Potential impacts of dredging to sensitive species in Moss Landing Federal Channel are generally associated with the following factors:

- Temporary and localized disruption of benthic habitat and food organisms within the proposed dredge boundary,
- Temporary and localized disruption of the aquatic environment within the proposed dredge boundary, and

- Creation of temporary and localized turbidity plumes in the vicinity of the dredge.

Benthic Habitat Disruption. Adverse impacts to the benthic environment are not considered significant on account of the long intervals (about every five years) between maintenance dredging episodes. Based on the scientific literature, it is commonly accepted that recolonization and recovery of benthic communities following a maintenance dredging episode occurs within three months (studies can be provided upon request). As such, impacts to benthic organisms which may serve as food for sea otter and tidewater goby or their prey are considered minor and short-term.

Aquatic Environment Disruption. Maintenance dredging in the Moss Landing Federal Channel is performed with either a hydraulic dredge or mechanical clamshell dredge, both of which involve submersion of the dredge head beneath the sediment surface. Most species would be unlikely to be entrained or injured by dredging because they would depart the immediate dredge area due to the initial noise and movement. Weak swimmers such as the tidewater goby would be more likely to be entrained or injured, but are unlikely to occur in the federal channels of Moss Landing and hence are not expected to encounter the dredge.

Turbidity Plumes. Small, temporary and localized turbidity plumes will likely occur similar to disturbance caused by vessels docking in areas where sediments have shoaled above permitted dredge depths. Some chemical contaminants, particularly DDT may likely be adhered to sediment particulates suspended as a result of dredging in certain areas of the Harbor, but are less likely to be present in the Federal Channel. Ongoing sediment characterization will verify this and will be provided to the USFWS when it is complete. Preliminary results indicate that there was no benthic toxicity during sediment analysis and the sediments meet all applicable EPA thresholds and are suitable for unconfined aquatic disposal.

Conservation Measures to Avoid Potential Impacts from Dredging

The dredge contractor will be required to implement best management practices (BMPs) that will ensure only areas proposed for dredging are affected, and that adjacent areas outside the proposed dredge areas, or areas deemed unsuitable for dredging and offshore disposal (based on the sediment sampling and analysis) are avoided. Staging, storing, and stockpiling of equipment and materials will be onboard the dredge barge and will not require or effect on-land facilities, thus avoiding all effects to land-based listed species such as western snowy plover and Monterey spineflower. Mitigation measures will be in place to prevent/respond to any leakage or spilling, including halting operations until the cause of the leak or spill can be determined and fixed. A qualified biologist hired by the contractor will survey the project site, including the locations of all pipelines, equipment, and materials, for the presence of special-status species prior to mobilization for work, and the immediate area of dredging will be inspected daily by the dredge operator to ensure that southern sea otters are not within 50 meters of the dredge equipment during dredging activities. If using a hydraulic

cutterhead dredge, dredge material transport will occur using an existing permanent “transport” pipe located beneath the South Harbor sand spit to convey dredge materials to the SF-12 aquatic disposal site.

Effects Determination

Southern sea otters are present in significant numbers in the vicinity of the project area, and frequently form rafts in the northern part of the harbor, which is outside of the project area. The contractor’s qualified biologist conduct a pre-construction inspection before dredging work begins each day and would remain on-site during all dredging activities. The biologist would stop work (or prevent work from beginning at the start of the day) if a southern sea otter were present within 50 meters (164 feet) of dredging equipment. With this conservation measure implemented, the proposed dredging may affect, but is not likely to adversely affect the sea otters in the project area.

The tidewater goby is endemic to California and typically inhabits coastal lagoons, estuaries, and marshes, similar to those adjacent to the project area. There is a unit of tidewater goby critical habitat mapped adjacent to, but not overlapping, the project area. Tidewater goby may be present upstream in Elkhorn Slough, but are not expected to occur in the federal channels of Moss Landing Harbor. The dredging and disposal activities are taking place in waters significantly deeper (authorized depth is 15 ft) and of higher salinity (i.e., seawater at 33 ppt) than those that tidewater goby prefer (less than 7 ft and 10 ppt, respectively). It is possible that high streamflow could wash them downstream into the harbor, but dredging will not occur when flows are high. The lack of overlap with critical habitat and low likelihood of individual presence indicate that the project may affect, but not likely to adversely affect the tidewater goby.

With all avoidance and minimization measures implemented, USACE has determined that the project may affect, but is not likely to adversely affect any of the listed species in the project area or their designated critical habitat. We request your concurrence with these determinations, and hereby request informal consultation under section 7 of the federal ESA.

If you need additional information, or if you have any questions, please do not hesitate to call Mr. Jeneya Fertel at (415) 503-6839, or by email at Jeneya.A.Fertel@usace.army.mil or Mr. Chris Eng at (415) 503-6868, or by email at Christopher.K.Eng@usace.army.mil.

Sincerely,

Dr. Tessa Beach
Chief, Environmental Sections



DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
450 GOLDEN GATE AVENUE
SAN FRANCISCO, CALIFORNIA 94102-3661

April 14, 2020

REPLY TO
ATTENTION OF
ENVIRONMENTAL SECTION B

Mr. Barry A. Thom
Regional Administrator
National Marine Fisheries Service, West Coast Region
c/o Mr. Gary Stern
North Central Coast Regional Office
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404-4731

Subject: Moss Landing Federal Navigation Channel Maintenance Dredging Project – Request for Concurrence with Endangered Species Act Determination and for Essential Fish Habitat Consultation under the Magnuson-Stevens Fishery Conservation and Management Act

Dear Mr. Thom:

Pursuant to Section 7(a)(2) of the Endangered Species Act of 1973, as amended (ESA; 50 C.F.R. Part 402), the U.S. Army Corps of Engineers, San Francisco District (USACE) is requesting concurrence from the National Marine Fisheries Service (NMFS) with our determination that the proposed 2020 maintenance dredging of the Moss Landing Federal Navigation Channel is not likely to adversely affect the South-Central California Coast distinct population segment (DPS) of steelhead (*Oncorhynchus mykiss*), the Southern DPS of North American green sturgeon (*Acipenser medirostris*), or the respective critical habitats of these two species. The USACE also is requesting consultation under the Magnuson-Stevens Fisheries Conservation and Management Act (Magnuson-Stevens Act; 50 C.F.R 600.920(e)). We have determined that the proposed action may affect essential fish habitat (EFH) managed as part of the Pacific Groundfish Fishery Management Plan (FMP), Pacific Salmon FMP, Pacific Coastal Pelagic Species FMP, and West Coast Highly Migratory Species FMP.

Project Description

The proposed project involves maintenance dredging of the Moss Landing Federal Navigation Channel in Moss Landing Harbor on Monterey Bay to its authorized depth of -15 ft MLLW with two feet of overdepth (Figure 1). Approximately 85,000 cubic yards of material are expected to be dredged from the Entrance Channel (2,000 feet long and 200 feet wide) and Lagoon Channel (3,200 feet long and 100-200 feet wide) utilizing either a hydraulic (cutterhead) dredge or mechanical (clamshell) dredge. All dredged material would be placed either at SF-12 by the hydraulic dredge or SF-14 by the mechanical dredge (Figure 2), and all in-water work would occur during the period from June 1 through November 30. The work is expected to require seven weeks to complete.

A hydraulic dredge is a barge-type vessel that consists of onboard pump(s), spud piles (long pipes) for anchoring, and a toothed cutterhead attached to a pipeline. The cutterhead is mounted to a ladder that can be lowered, raised, and angled to target material for dredging. Once the dredge is positioned, the ladder with cutterhead would be lowered to the bottom of the channel.

Figure 1. Moss Landing Federal Navigation Channel Maintenance Dredging Project Area

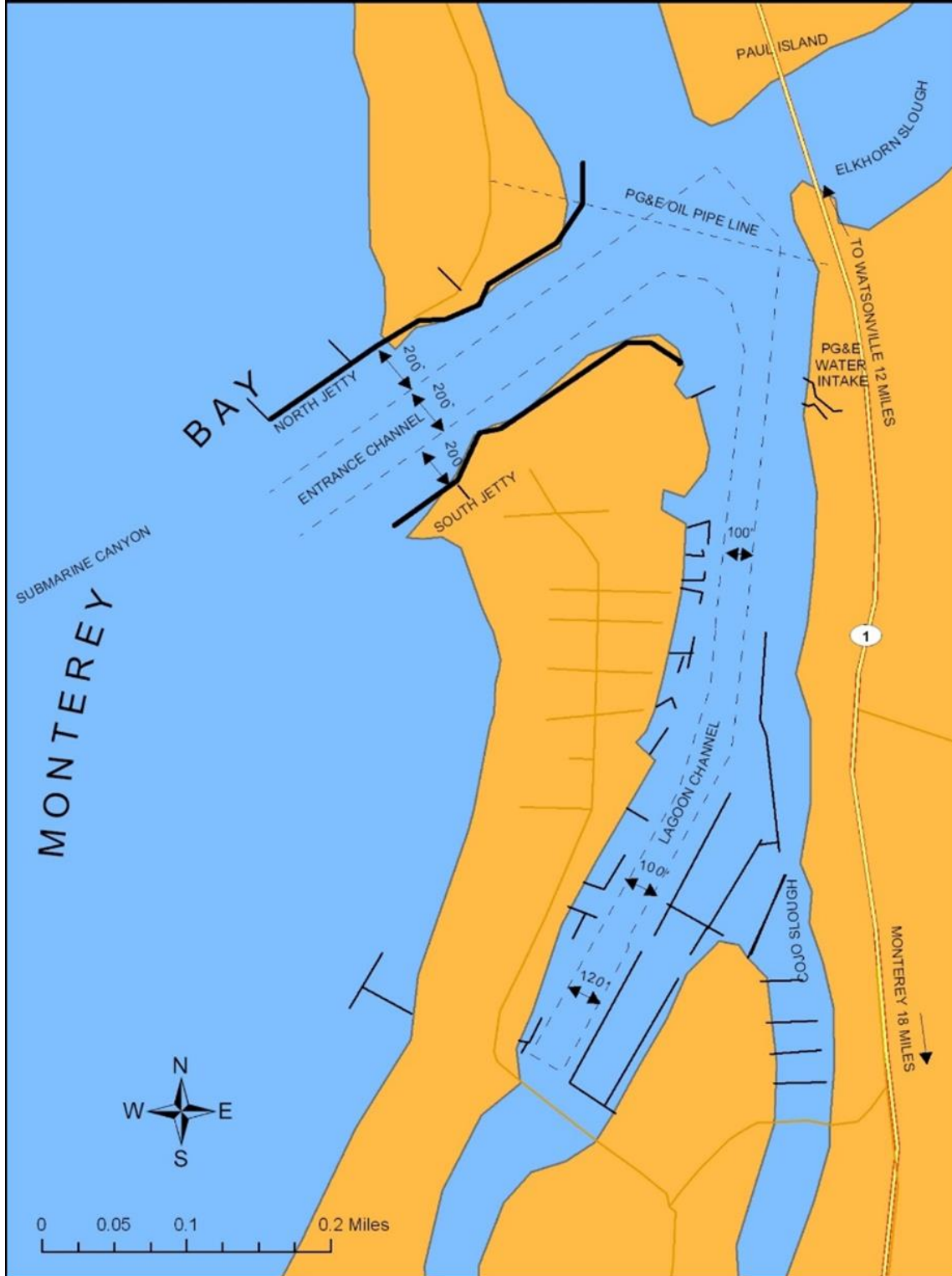
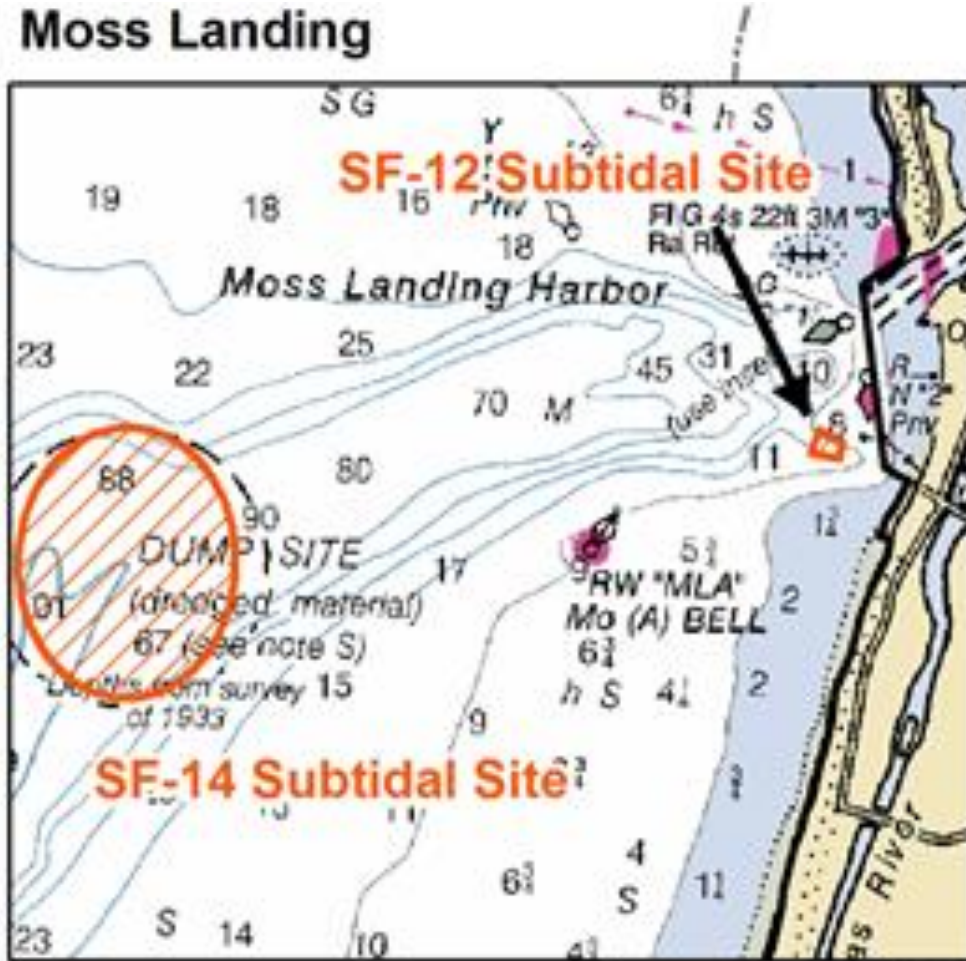


Figure 2. SF-12 and SF-14 Placement Site Locations



The cutterhead would then slowly start to rotate and break up sediment along the seafloor, continuing from side to side in a sweeping arc. The hydraulic dredge would move along the channel self-propelled by walking with its spuds or controlled by tugboat, and a crew would maintain and operate the dredging equipment at all times. The dredge material slurry is pumped from the cutterhead through a transport pipeline which exits at the back (stern) of the dredge. The external pipeline for this project would be supported by floats and extend approximately 1,500 to 3,000 feet to SF-12 where it would discharge material for placement. Skiffs and a tugboat would be used for crew transport, maintenance, and other operations associated with dredging activities.

A typical mechanical dredge consists of a crane mounted on a floating flat deck barge, with a dredging bucket or clamshell on the end of the crane boom. The barge would have two to four spud piles to anchor the dredge, likely located at the corners. The mechanical dredge would move along the

channel self-propelled by walking with its spuds or controlled by tugboat, and a crew would maintain and operate the dredging equipment at all times.

Once the dredge is positioned, the spud piles would be anchored vertically into the seafloor. The mechanical dredge, typically powered by a diesel generator, would then lower and raise the dredge bucket through the water column using a series of cables and winches. The weight of the dredge bucket allows it to sink into the sediment, with the cables restricting the clamshell from falling too deep or beyond the maximum allowable overdepth. The dredge bucket is then closed, raised up through the water column, and swung over to place material into a bottom dump or split hull barge. When all the material within the swing reach of the mechanical dredge is removed, the spud piles would be raised and the tug would relocate the dredge equipment. The process would repeat until all required dredging is completed. Once a haul barge is full, it would be transported by tug to SF-14, the doors along the bottom of the barge would be opened, and the dredged sediment would be discharged into the site.

SF-12 is an unconfined dredged-material placement site located at the head of the Monterey Submarine Canyon that is regulated by the USEPA. The site is in Monterey Bay about 1,100 feet west-northwest of the Moss Landing Marine Lab pier abutment. The site is an irregular quadrangle with an area of approximately 7,700 square feet and a centroid at 36°48'07.0890" latitude and 121°47'33.5056" longitude. Depths range from 100–150 ft because the sea floor within SF-12 slopes at an angle of approximately 30°. The bottom sediment at SF-12 primarily is fine sand because currents carry the fines down the canyon to the abyss. Fauna is dominated by crustaceans: predominately small, mobile amphipods and ostracods. The dredge slurry is expected to consist of 80% to 90% water and 10% to 20% solids by volume and will be discharged into the surface waters and allowed to settle onto the sea floor.

SF-14 is a circular aquatic placement site located approximately 1.3 nautical miles from shore centered at 36°47'52.8" north latitude and 121°49'7.8" west longitude in a depth of approximately 600 feet that is regulated by the USEPA. The circle, which has a 1,500-foot radius, includes part of the Monterey Submarine Canyon. Because of SF-14's location at the head of the Monterey Submarine Canyon, sediment placed there settles into the abyss rather than mounding.

The USACE has included conservation measures as a part of this project that are intended to avoid or minimize adverse effects to protected species and habitats. The cutterhead dredge, if used, would be operated only when the cutterhead is inserted in the Harbor sediment thereby avoiding or minimizing fish entrainment. Eelgrass (*Zostera marina*) does not occur in the project footprint although there is a patch of eelgrass about 250 feet away, near where the Entrance Channel transitions into the harbor area (Sealaska Engineering and Applied Sciences 2019). The USACE consulted with NMFS on eelgrass for the adjacent Moss Landing Harbor Maintenance Dredging Project (NMFS file number WCR-2016-5680) in 2016; consequently, consultation on eelgrass for the current project may not be required. However, we intend to conduct pre- and post-dredge monitoring in accordance with the California Eelgrass Mitigation Policy (CEMP) and submit the monitoring reports to NMFS for review and approval.

Endangered Species Act Consultation

The proposed project has been reviewed for its impacts to endangered species and their designated critical habitat. Moss Landing Harbor serves as the outlet to Monterey Bay for Elkhorn Slough and the Old Salinas River. South-Central California Coast DPS of steelhead are known to occasionally occur in the project area as they migrate through the Harbor to access the Salinas River via the Old Salinas River channel when the (new) Salinas River mouth is closed off by sand deposition. North American green sturgeon may be present in Elkhorn Slough and the Harbor, and critical habitat for this species is present offshore from the Harbor in Monterey Bay where the SF-12 and SF-14 are located. Steelhead are infrequently present in the Harbor, and the dredging would be done in the work window when steelhead are unlikely to be present. Also, the cutterhead dredge, if used, would be operated only when the cutterhead is inserted in the Harbor sediment thereby avoiding the possibility of entrainment of fish. Fish entrainment also is very unlikely to occur should a clamshell dredge be used. Green sturgeon occasionally may be present in the Harbor, but likely would avoid the area of disturbance during dredging. Green sturgeon critical habitat is present offshore where the disposal sites are located, but is not likely to be adversely affected by the turbidity and sedimentation caused by placement of the dredged material due to the relatively small size and deepness of SF-12 and SF-14, and dispersion caused by the active currents. Project impacts consequently are expected to be localized, minor, and temporary. The USACE has determined that the proposed project may affect, but is not likely to adversely affect steelhead and green sturgeon, or critical habitat for these species.

Magnuson-Stevens Fisheries Conservation and Management Act (Essential Fish Habitat) Consultation

The proposed project area consists of coastal water habitat and sandy seafloor benthic habitat. There are no mudflat or marsh habitats present. Coastal water habitat under full tidal influence is located in the outer Entrance Channel, inner Lagoon Channel, and at the SF-12 disposal site. Sandy seafloor benthic habitat is located below the open water. Recently accumulated sediments would be dredged from the frequently disturbed habitat in the Entrance Channel and Lagoon Channel, and placed either at SF-12 or SF-14. Eelgrass does not occur in the project footprint or within 45 m, hence is outside the limit of direct effects from dredging per the CEMP. However, eelgrass monitoring will be conducted as described above.

The proposed project has been reviewed for potential impacts to EFH, and is expected to temporarily disturb the substrate within the dredge footprint and create localized turbidity. Temporary, localized turbidity and sedimentation also would be expected at SF-12 and SF-14. These adverse effects would be short-term and minor due to the small magnitude and short duration of the dredging activity and relatively small size of the placement sites. The USACE has determined that the project may affect EFH managed as part of the Pacific Groundfish, Pacific Salmon, Pacific Coastal Pelagic Species, and West Coast Highly Migratory Species fishery management plans.

We are requesting your written concurrence with our determination that the proposed project is not likely to adversely affect steelhead and green sturgeon or critical habitat for these species, and also a response regarding EFH. If you disagree with our determination and request for informal section 7

consultation or require additional information, please contact Beth Campbell of my staff at elizabeth.a.campbell@usace.army.mil, or at (415) 503-6845 regarding this consultation request.

Sincerely,

Dr. Tessa Beach
Chief, Environmental Sections A&B

Reference:

Sealaska Engineering and Applied Sciences. 2019. Moss Landing Eelgrass Map. Figure plotted May 15, 2019. Survey date February 21-22, 2019. 1 page.

Appendix A 4.0
Clean Water Act (CWA) Section 401 &
Section 404

Section 404(b)(1) Guidelines

Summary Evaluation

1. Summary of Technical Evaluation Factors (Subparts C-F).

A detailed evaluation is provided in the main body of this report

	<u>N/A</u>	<u>Not Signif- icant</u>	<u>Signif- icant*</u>
a. Potential Impacts on Physical and Chemical			
Characteristics of the Aquatic Ecosystem (Subpart C) (Sec. 230.20-230.25)			
<i>See section 4.2 of the Environmental Assessment</i>			
1) Substrate		X	
2) Suspended particulates/turbidity		X	
3) Water		X	
4) Current patterns and water circulation		X	
5) Normal water fluctuations		X	
6) Salinity gradients		X	
b. Potential Impacts on Biological Characteristics of the Aquatic Ecosystem (Subpart D)(Sec. 230.30-230.32)			
<i>See Section 4.3 of the Environmental Assessment</i>			
1) Threatened and endangered species		X	
2) Fish, crustaceans, mollusks and other aquatic organisms in the food web		X	
3) Other wildlife		X	
c. Potential Impacts on Special Aquatic Sites (Subpart E)(Sec. 230.40-230.45)			
<i>See Section 4.3 of the Environmental Assessment</i>			
1) Sanctuaries and refuges		X	
2) Wetlands		X	
3) Mud flats		X	
4) Vegetated shallows		X	
5) Coral reefs	X		
6) Riffle and pool complexes	X		
d. Potential Effects on Human Use Characteristics (Subpart F)(Sec 230.50-230.55)			
<i>See Sections 4.4, 4.5, 4.6, and 4.7 of the Environmental Assessment</i>			
1) Municipal and private water supplies	X		
2) Recreational and commercial fisheries		X	
3) Water-related recreation		X	
4) Aesthetics		X	
5) Parks, national and historic monuments, national seashores, wilderness areas, research sites, and similar preserves		X	

2. Evaluation and Testing (Subpart G) (Sec. 230.60-230.61)

a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material. (Check only those appropriate.)

See Sections 1, 3, and 4 in the Environmental Assessment

- 1) Physical characteristics | X |
- 2) Hydro-geography in relation to known or anticipated sources of contaminants | X |
- 3) Results from previous testing of the material or similar material in the vicinity of the project | X |
- 4) Known, significant sources of persistent pesticides from land runoff or percolation | X |
- 5) Spill records for petroleum products or designated hazardous substances (Section 311 of CWA) | X |
- 6) Public records of significant introduction of contaminants from industries, municipalities, or other sources | X |
- 7) Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities | X |
- 8) Other sources (specify) | |

References:

Draft Environmental Assessment for 2020 Moss Landing Harbor Maintenance Dredging

b. An evaluation of the appropriate information in 2a above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants, or that levels of contaminants are substantively similar at extraction and disposal sites and not likely to require constraints. The material meets the testing exclusion criteria.

YES NO

3. Disposal Site Delineation (Section 230.11(f)).

a. The following factors, as appropriate, have been considered in evaluating the disposal site. *See Section 4 of the Environmental Assessment.*

- 1) Depth of water at disposal site | X |
- 2) Current velocity, direction, and variability at the disposal site | X |
- 3) Degree of turbulence | X |
- 4) Water column stratification | X |
- 5) Discharge vessel speed and direction | X |
- 6) Rate of discharge | X |
- 7) Dredged material characteristics (Constituents, amount, and type of material, settling velocities) | X |
- 8) Number of discharges per unit of time | X |

- 9) Other factors affecting rates and patterns of mixing (specify) | |

References:

Draft Environmental Assessment for 2020 Moss Landing Harbor Maintenance Dredging

- b. An evaluation of the appropriate factors in 4a above indicates that the disposal site and/or size of mixing zone are acceptable

X	
YES	NO

4. Actions To Minimize Adverse Effects (Subpart H)(Sec. 230.70-230.77).

All appropriate and practicable steps have been taken, through application of recommendation of Section 230.70-230.77 to ensure minimal adverse effects of the proposed discharge.

X	
YES	NO

See Section 4 of the Environmental Assessment

List actions taken:

- a. A spill prevention plan will be implemented with spill response equipment available for immediate implementation to minimize the impacts of any accidental spills
- b. Best management practices (BMPs) would be developed and implemented throughout the proposed action to ensure no oil, petroleum products, other potential fluid leaks, or debris from project activities significantly impact water quality
- c. Fueling of marine-based equipment would take place offsite at authorized marine fueling facilities or at designated locations adjacent to the project. If fueling were to occur adjacent to the project site, marine-fueling BMPs would be implemented to avoid discharge of pollutants to marine waters
- d. Sediment samples were tested for heavy metals and organic compounds and deemed suitable for placement by the Environmental Protection Agency and the Regional Water Quality Control Board for placement at the federal standard site SF-12 for hydraulic dredging and SF-14 for mechanical dredging.
- e. Effects to turbidity were evaluated and the proposed action is not anticipated to have any significant adverse turbidity or suspended particulate effects which could impact the marine or biological environment.

5. Factual Determination (Section 230.11).

A review of appropriate information as identified in items 2 - 5 above indicates that there is minimal potential for short or long term environmental effects of the proposed

discharge as related to:

- a. Physical substrate
(review sections 2a, 3, 4, and 5 above). YES | | NO | |
 - b. Water circulation, fluctuation and salinity
(review sections 2a, 3, 4, and 5) YES | | NO | |
 - c. Suspended particulates/turbidity
(review sections 2a, 3, 4, and 5). YES | | NO | |
 - d. Contaminant availability
(review sections 2a, 3, and 4) YES | | NO | |
 - e. Aquatic ecosystem structure, function
and organisms(review sections 2b and
c, 3, and 5) YES | | NO | |
 - f. Proposed disposal site
(review sections 2, 4, and 5) YES | | NO | |
 - g. Cumulative effects on the aquatic
ecosystem YES | | NO | |
 - h. Secondary effects on the aquatic
ecosystem YES | | NO | |
6. Review of Compliance (Section 230.10(a)-(d)).
- a. The discharge represents the least environmentally
damaging practicable alternative and if in a special
aquatic site, the activity associated with the discharge
must have direct access or proximity to, or be located
in the aquatic ecosystem to fulfill its basic purpose. YES NO
 - b. The activity does not appear to:
1) violate applicable state water quality standards or
effluent standards prohibited under Section 307 of the
CWA; 2) jeopardize the existence of Federally listed
threatened and endangered species or their critical
habitat; and 3) violate requirements of any Federally
designated marine sanctuary YES NO
 - c. The activity will not cause or contribute to significant
degradation of waters of the U.S. including adverse
effects on human health, life stages of organisms

dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values

YES NO

- d. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem

YES NO

7. Findings of Compliance or non-compliance. (Sec. 230.12)

The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines ...

YES | | NO | |

DATE

John D. Cunningham
Lieutenant Colonel, U.S. Army
District Commander and Engineer

**STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION
81 Higuera Street, Suite 200
San Luis Obispo, California 93401-5427**

**WASTE DISCHARGE REQUIREMENTS ORDER NO. 01-007
Waste Discharger Identification No. 327073001
Amended on September 14, 2001
For
UNITED STATES ARMY CORPS OF ENGINEERS,
MOSS LANDING HARBOR DISTRICT,
AND DUKE ENERGY MOSS LANDING, LLC
MOSS LANDING HARBOR DREDGING OPERATION
Monterey County**

The California Regional Water Quality Control Board, Central Coast Region (Regional Board), finds:

SITE OWNER AND LOCATION

1. Moss Landing Harbor District is located approximately 80 miles south of San Francisco along of Monterey Bay, halfway between the cities of Santa Cruz and Monterey (Attachment A). The Pajaro River mouth is three miles north of Moss Landing Harbor and the Salinas River mouth is four miles to the south. Moss Landing Harbor is located in the old Salinas River channel. Directly behind the sandpits is Elkhorn Slough, which extends 11 miles inland and has over 3,000 acres of open waterways, mudflats, and salt marshes.
2. United States Army Corps of Engineers, Planning Branch, San Francisco District (Corps), Moss Landing Harbor District (District) and Duke Energy Moss Landing Power Plant (Duke Energy), formerly Pacific Gas and Electric Company, have conducted dredging operations under this Board's Order No. 90-21, "Waste Discharge Requirements for United States Corps of Engineers, Pacific Gas and Electric, and Moss Landing Harbor District, Moss Landing Harbor Dredging Operations, Monterey County."
3. The Corps is responsible for maintenance of the Federal Channel and turning basins; The District is responsible for maintaining the berth areas; and Duke Energy is responsible for the areas in front of its two cooling water intake

stations (Attachment A). The Corps, District, and Duke Energy are referred herein as Dischargers.

PURPOSE OF ORDER

4. The Corps submitted a Report of Waste Discharge dated April 6, 1999, seeking authorization to dispose dredging material from the Federal Channel and turning basins. The District submitted a Report of Waste Discharge on December 15, 2000, seeking authorization to continue the disposal dredging material from the berths and non-federal channels within the Harbor. Duke Energy submitted a Report of Waste Discharge on December 6, 2000, seeking authorization to dispose of dredging material in front of the cooling water intake stations.
5. The Waste Discharge Requirements, Order No. 01-007, was revised to include all current guidance and criteria applicable to the dredging activities in the Moss Landing Harbor. The Regional Board adopted Order No. 01-007 on May 18, 2001. Following adoption, Duke Energy requested dredging depth be revised in front of its two intake stations. This amendment addresses Duke Energy's request.

FACILITY DESCRIPTION

6. The District and the Corps conduct maintenance dredging in the Moss Landing

Harbor in order to facilitate boat traffic to and from the harbor and accommodation of vessels.

7. Most dredging in the Harbor has been performed by using hydraulic suction. Other dredging methods such as clamshell dredging and knockdown dredging may also be used.
8. The District has its own dredging equipment for its dredging operations. The Corps contracts dredging of the federal channel and turning basins, and disposal of dredged material to qualified contractors. The District agrees to dredge the area in front of Duke Energy's two cooling water intake stations.

Dredging Areas

9. The harbor has four dredging sections and each section is further divided into several dredging areas. There are approximately twenty-five (25) dredging areas. Dredging area locations are shown on Attachments B and C.
10. The four dredging sections are: 1) South Harbor Western Berths; 2) South Harbor Eastern Berths; 3) North Harbor Channels and Berths; and 4) Federal Channels and Turning Basin.
11. The following table indicates various dredging depths in each section:

Dredging Sections	Dredging Depth*
Southern Harbor Western Berths	-12 feet
Southern Harbor Eastern Berths	-10 feet
Duke Energy Intake Station Unit 1 & 2	-23 feet
Duke Energy Intake Station Unit 6 & 7	-21 feet
North Harbor Channels and Berths	-10 feet
Federal Channels and Turning Basins	-15 feet

* All depths are in feet in mean lower low water (MLLW); a foot over-dredge is allowed in addition to the depth shown above.

12. Sediments are sampled and analyzed for

metals, organochlorine pesticides, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), organotins, grain size, solids, sulfides and total organic carbons (TOC). Screening levels used to evaluate dredged materials include Effects-Range Low and Effects Range-Median values.¹ These levels are not regulatory limits, rather they are used by regulatory agencies to predict the likelihood of toxicity of chemical constituents in sediments to aquatic life.

Southern A-Dock, MBARI Dock, and Emergency Dredging Areas

Three metals: arsenic, copper and nickel exceeded the sediment screening level. However, these metals are known to occur at elevated levels throughout California inland waters, bays and estuaries including in the whole Monterey Bay. The Emergency Dredging Area (Gravelle Dock) has an Aroclor 1254 (PCB) concentration of 28 ug/kg barely exceeding the sediment screening level, and a tributyltin concentration of 351 ug/kg exceeding the screening level. DDT concentrations exceeded USEPA bioaccumulation trigger level in some samples. Bioassay samples indicate that dredged material from the Monterey Bay Aquarium Research Institute and A-dock may have potential impacts to the SF-12 disposal site.

Area F

Three metals, arsenic, copper and nickel exceeded the sediment screening level. However, these metals are known to occur at elevated levels in the whole Monterey Bay. Concentrations of these metals in the Moss Landing harbor are not significantly higher than Monterey Bay ambient levels. Bioassay samples indicate that dredged material from the Monterey Bay Aquarium Research Institute may have potential impacts to the SF-12

¹Incidence of Adverse Biological Effects Within Ranges of Chemical Concentrations in Marine and Estuarine Sediments. *Inviron. Manage.* 19(1):81-97; Long, E.R., D.D. MacDonald, S.L. Smith, and F.D. Calder, 1995

disposal site.

Federal Channels

Six metals, cadmium, chromium, copper, mercury, nickel and zinc, exceeded the screening level. The copper and nickel levels are known to occur at elevated levels in the Monterey Bay. Total DDT and three pesticides, chlordance, dieldrin and endrin exceeded the screening level in the southern portion of the channel. Bioassay study results were nonconclusive in determining any potential impact to the SF-12 site by disposing dredged material from the federal channels.

Areas B/C1, C2/A, G, H, IJ, and North Harbor Sand Bar

Three metals, arsenic, copper, and nickel exceeded the sediment screening level. However, these metals are known to occur at elevated levels in the Monterey Bay. Total DDT exceeded USEPA bioaccumulation trigger level in a portion of Area C2/A. Pesticide concentrations were much lower in the North Harbor areas. Bioassay study results indicate no potential impact from disposing dredged material from these sections to the SF-12 site.

Area D

Three metals, arsenic, copper, and nickel exceeded the sediment screening level. However, these metals are known to occur at elevated levels in the Monterey Bay.

13. An Ecological Risk Assessment is currently underway to further study the potential impacts of dredging and disposal activities as part of a joint District/Corps Dredged Material Management Plan. Upon the completion of the Management Plan, the Order may need to be revised to incorporate the findings in the report.

Disposal Locations

14. There are two federally designated dredged material disposal sites, SF-12 and SF-14, in this Order. The locations are shown in Attachment A and described as follows:

SF-12, Moss Landing, 36°48'05" N, 121°47'22" W, offshore of Sandholdt Pier, at a depth of 48 feet, near the head of the underwater Monterey Canyon.

SF-14, Moss Landing, 36°47'53" N, 121°49'04" W, 1.3 nautical miles from the shore, at a depth of 100 fathoms and bounded by a 500 yard radius.

15. There are three beach replenishment areas for this Order. Their locations are shown in Attachment A and described as follows:
 - a. Between Sandholdt Pier and the south entrance jetty;
 - b. Area near north entrance jetty;
 - c. Area between the Jetty Road tide gate and Zmudowski State Beach.
16. Up to 100,000 cubic yards of dredged material may be removed from Moss Landing Harbor each year. The dredged material is sampled prior to dredging. Dredge material may be disposed of the designed aquatic sites SF-12 and SF-14, if it is found to be suitable for unconfined aquatic disposal.
17. For dredged material unsuitable for either unconfined aquatic disposal or for beach replenishment, the Dischargers may use an approved upland dredge material handling and disposal sites. A former North Harbor upland disposal site used by the District has been closed. The District is currently looking for another upland handling site for future dredged material handling. In the mean time, the Dischargers can either avoid dredging in areas requiring upland handling or dredge in small quantities such that the dredged material can be handled in small contained areas onsite.

Adjacent Properties and Land Use

18. California Highway 1 runs north south to the east of the harbor. Duke Energy Power Plant is located to the east of Hwy 1. National Refractories lies to the east of the harbor and south of Duke Energy Power Plant. Pacific Gas & Electric operates a power switchyard

northeast of the harbor (Attachment A).

19. Land use in the area is mainly agricultural, industrial and commercial with a small residential community of approximately 520 people.

Geology and Hydrology

20. The area surrounding Moss Landing Harbor consists of flat marshlands, flat sandy areas, and sand dunes. The harbor has been used for commercial fishing and recreational water sports.

21. Monterey Bay, the largest open embayment along the central California coast, is 12 miles wide from the east to the west and 25 miles long from Santa Cruz to Point Pinos. The sea floor consists of four distinct geologic types: bed rock, fine sand, coarse sand and nearshore belt. The continental shelf is narrow within the bay, extending no farther than 10 miles offshore at a depth of approximately 350 feet slopping downward and is bisected by Monterey canyon off Moss Landing. The canyon is steep-walled and V-shaped, a major depository for sand moving into the bay.

22. The Salinas River drains a large watershed and is a major source of suspended sediments to the bay and the harbor. Elkhorn, Moro Cojo and Bennett Slough all drain to the harbor. The Salinas River mouth is located about 4.4 miles south of Moss Landing, but still provides occasional flow to the south portion of the harbor.

23. The surface sediment within Moss Landing Harbor and the surrounding sloughs mainly consists of fines. Sediments at the SF-12 disposal site are predominately coarse-grained sand, and sediments within Monterey Canyon are largely fines.

24. Ocean currents, ocean temperature, sediment transportation, salinity and oxygen content, all vary correspondingly to the three oceanographic seasons each year: an upwelling period from February through July; an oceanic period from July through

November; and the California Countercurrent period from November through February.

25. Surface water bodies in the area include the Pacific Ocean, Moss Landing Harbor, Elkhorn Slough, Salinas River, Old Salinas River Channel, Moro Cojo Slough, and Bennett Slough.

26. Beneficial uses of the Pacific Ocean in the general vicinity of Moss Landing include:

- a. Water contact recreation;
- b. Non-contact water recreation, including aesthetic enjoyment;
- c. Industrial water supply;
- d. Navigation;
- e. Marine habitat;
- f. Shellfish harvesting;
- g. Ocean commercial and sport fishing;
- h. Preservation of rare, threatened and endangered species;
- f. Wildlife habitat; and
- g. Spawning, reproduction and early development of some aquatic organisms

27. The present and potential beneficial uses of Moss Landing Harbor are:

- a. Water contact recreation;
- b. Non-contact water recreation, including aesthetic enjoyment;
- c. Industrial water supply;
- d. Navigation;
- e. Marine habitat;
- f. Shell fish harvesting;
- g. Ocean commercial and sport fishing;
- h. Preservation of rare and endangered species,
- i. Wildlife habitat;
- j. Migration of aquatic organisms; and
- k. Spawning, reproduction and early development of some aquatic organisms.

28. Beneficial uses of the Salinas River include:

- a. Municipal and domestic supply
- b. Agricultural supply
- c. Industrial Process Supply
- d. Industrial Service Supply
- e. Groundwater recharge

- f. Water contact recreation
 - g. Non-contact water recreation
 - h. Wildlife habitats
 - i. Cold freshwater habitats
 - j. Migration of aquatic organisms
 - k. Spawning, reproduction, and early development
 - l. Rare, threatened, or endangered species; and
 - m. Commercial and sport fishing.
29. The beneficial uses of Moro Cojo Slough are:
- a. Water contact recreation;
 - b. Non-contact water recreation;
 - c. Warm fresh water habitat;
 - d. Cold fresh water habitat;
 - e. Ground water recharge;
 - h. Shellfish harvesting;
 - i. Spawning, reproduction and/or early development;
 - h. Preservation of biological habitat of special significance;
 - i. Rare, threatened, or endangered species;
 - j. Estuarine habitat;
 - k. Commercial and sport fishing;
 - l. Wildlife habitat; and
 - m. Migration of aquatic organisms
30. The beneficial uses of Elkhorn Slough and Bennett Slough are:
- a. Water contact recreation;
 - b. Non-contact water recreation;
 - c. Warm fresh water habitat;
 - d. Cold fresh water habitat;
 - e. Migration of aquatic organisms;
 - f. Shellfish harvesting;
 - g. Spawning, reproduction and/or early development
 - h. Preservation of biological habitat of special significance;
 - i. Rare, threatened, or endangered species;
 - j. Wildlife habitat;
 - k. Marine habitat;
 - l. Commercial and sport fishing; and,
 - m. Aquaculture.
31. The Moss Landing Harbor lies within the Salinas Sub-Basin, over the Lower Salinas

Valley deposits. There are three major aquifers in the area: the 900-foot aquifer, the 400-foot aquifer, and the 180-foot aquifer. Ground water flows generally west towards the ocean. Most production wells in the area withdraw water from the 400-foot or deeper aquifers. Recharge to the Salinas Sub-Basin occurs by infiltration from precipitation, seepage from the Salinas River, lateral flow from outcropping formations along the valley margins, and irrigation return flow. Over pumping of the 400-foot and 180 foot aquifers since the 1940's has lowered the pressure surface of the water bearing zones, resulting in seawater intrusion. There are approximately 64 water production wells located within a three-mile radius of the Harbor.

Monitoring and Reporting Program

32. Monitoring and Reporting Program No. 01-007 is a part of the Order. The Monitoring Program requires routine pre-discharge and discharge monitoring, sediment monitoring, and disposal area impact assessment, Elkhorn Slough impact assessment, dredged material transport assessment, and decant water monitoring to verify compliance and protection of water quality.

Reporting Schedule

33. Monthly reports are due on the 15th of each following month during any dredging operations. An annual report is due on March 31 of each following year.

REGIONAL BASIN PLAN

34. The Water Quality Control Plan, Central Coast Basin (Basin Plan) was adopted by the Regional Board on November 19, 1989, and approved by the State Water Resources Control Board (State Board) on August 16, 1990. Amendments to the Basin Plan were approved on February 11, 1994, and September 8, 1994. The Basin Plan incorporates statewide plans and policies by reference and contains a strategy for protecting beneficial uses of State Waters.

CALIFORNIA OCEAN PLAN

35. Maintenance dredging activities regulated under this Order are categorically exempt from the California Ocean Plan which states in the third paragraph of the Introduction Section:

“This plan is not applicable to discharges to enclosed bays and estuaries or inland waters nor is it applicable to vessel wastes, or the control of dredging spoil.”

CALIFORNIA ENVIRONMENTAL QUALITY ACT

36. Maintenance dredging activities regulated under this Order are categorically exempt from CEQA pursuant to 14 CCR Section 15304(g) which states:

“Maintenance dredging where the spoil is deposited in a spoil area authorized by all applicable state and federal regulatory agencies.”

A Notice of Exemption was sent to the State Clearinghouse on April 14, 1987.

CLEAN WATER ACT

37. The Clean Water Act provides for regulation of dredged material disposal separately from other types of wastes covered in the National Pollutant Discharge Elimination System (NPDES) and dredge activities are not required to obtain NPDES Permits for authorization of discharge. In lieu of NPDES Permits, dredging activities are regulated by the Corps through a federal decision making process in accordance with the National Environmental Policy Act.

NATIONAL ENVIRONMENTAL POLICY ACT

38. There have been several environmental assessments conducted on Corps and District dredging projects.

a. Aquatic Disposal Sites SF-12 and SF-14
The Corps prepared a Final Environmental Impact Statement in April 1975. It

indicated long-range impacts on water quality from dredging and disposal operations would be minimal. A reassessment in 1981 indicated disposal of dredge material at SF-12 could have a detrimental impact on mariculture operations which have seawater intakes nearby; however, a detailed reevaluation during 1982, the Corps and USEPA recommended both sites, SF-12 and SF-14, described in this Order. This Order includes specific criteria for use of each site so water quality impacts are minimized.

b. Beach Replenishment Sites

An Environmental Assessment and “Finding of No Significant Impact” was issued on August 29, 1983. Measures to prevent nuisance and protect beneficial uses of surface water during beach replenishment will be implemented through this Order.

EXISTING ORDER/GENERAL FINDINGS

39. The USEPA has formulated “Guidelines for Specification of Disposal Sites for Dredge or Fill Material.” Supplemental regional procedures have been published by U.S. Corps of Engineers, San Francisco District.

40. The Corps Regulatory and Compliance Branch San Francisco District, the Regional Board and the California Coastal Commission, in consultation with the US Environmental Protection Agency, the Monterey Bay National Marine Sanctuary, and California Department of Fish & Game, approve each aquatic dredged material disposal event. Upland disposal of dredged material may involve other local agencies depending on site-specific circumstances.

41. The discharge has been regulated by Waste Discharge Requirements Order, No. 90-21, adopted by the Board on March 9, 1990. The Regional Board has regulated the discharge since the 1980's.

42. Discharge of Waste is a privilege, not a right, and authorization to discharge is conditional upon the discharge complying with provisions of Division 7 of the California Water Code and any more stringent effluent limitations necessary to implement water quality control plans, to protect beneficial uses, and to prevent nuisance.
43. On July 16, 2001, the Regional Board notified the Discharger and interested parties of its intent to amend waste discharge requirements for the discharge and has provided them with a copy of the proposed Order and an opportunity to submit written views and comments.
44. After considering all comments pertaining to this discharge during a public hearing on September 14, 2001, this Order was found consistent with the above findings.

IT IS HEREBY ORDERED, pursuant to authority in Section 13263 of the California Water Code, Moss Landing Harbor District, the U.S. Army Corps of Engineers and Duke Energy Moss Landing Power Plant, their agents, successors, and assigns, may discharge dredged materials at the designated disposal sites described in this Order, providing compliance is maintained with the following:

(Note: Other prohibitions and conditions, definitions, and the method of determining compliance are contained in the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated January 1984.)

1. Throughout these requirements footnotes are listed to indicate the source of requirements specified. Requirement footnotes are as follows:

^{BP} = Basin Plan

^{APM} = Administrative Procedures Manual

^{BPJ} = Best Professional Judgement

^{ROWD} = Requirement of Waste Discharge

A. PROHIBITIONS

1. Discharge of dredging material to areas other than the disposal areas described in this Order and as shown in Attachment A is prohibited.^{ROWD}
2. Discharge of any wastes, not described in this Order, including overflow, bypass or leakage from the dredging, transport, or disposal system to Moss Landing Harbor, its adjacent drainageways, or adjacent properties is prohibited.^{ROWD}
3. Discharge of dredged material inconsistent with the disposal criteria for the appropriate disposal method is prohibited.^{BPJ}
4. Discharge of dredged material which causes odors or undesirable coloration at the beach sites or at the beach adjacent to the offshore site is prohibited.^{BPJ}

B. DISCHARGE SPECIFICATIONS

Maximum Dredging

1. The maximum annual maintenance dredging for unconfined aquatic disposal at SF-12 or SF-14 shall not exceed 100,000 cubic yards. Additional dredging over the 100,000 can be approved on a case-by-case basis by the regulatory agencies.^{ROWD}

Dredging Projects

2. Prior to each dredging event, the Dischargers shall submit a report containing the following information:^{ROWD}
 - a. Area of dredging (map)
 - b. Depths of dredging
 - c. Amount of dredge material
 - d. Date when the area is last dredged
 - e. Proposed dates of dredging
 - f. Proposed disposal area
 - g. Dredging methods and controls
 - h. Sampling and monitoring of the dredge material
 - i. Current bathymetry of dredge area; and
 - j. Reporting.

3. The depth of each dredging project shall follow the table below. Any variance from the following table shall be approved by the Executive Officer prior to the commencement of the dredging project: ^{ROWD}

Dredging Sections	Dredging Depth*
Southern Harbor Western Berths	-12 feet
Southern Harbor Eastern Berths	-10 feet
Duke Energy Intake Station Unit 1 & 2	-23 feet
Duke Energy Intake Station Unit 6 & 7	-21 feet
North Harbor Channels and Berths	-10 feet
Federal Channels and Turning Basins	-15 feet

* all depths are in feet from mean lower low water (MLLW);
a one foot over-dredge is allowed in addition to depths shown above.

4. Dredging depths shall be confirmed by measuring during and immediately after the dredging. ^{BPJ}
5. The immediate dredging area shall be inspected by the dredge operator to ensure that southern sea otters and brown pelicans are not within 50 meters of the dredging equipment. ^{ROWD}
6. Any wetland impacts by a dredging project shall be reported to the Executive Officer and Corps within 48 hours. ^{ROWD}
7. If solid debris is encountered during dredging, the operation shall be halted immediately. The solid debris shall be removed and disposed of properly before recommencing the dredging. ^{ROWD}
8. The Dischargers shall notify local mariculture operations in the Harbor (currently there are none) 24 hours prior to each dredging project. ^{ROWD}
9. Sampling requirements for the dredge material are detailed in MRP No. 01-007. Testing methods shall follow the Inland

Testing Manual (USEPA/USACE, 1998). ^{BPJ}

Disposal Criteria for Dredged Materials

10. Prior to disposal of dredged material, written approval for the specific project written

approval of the project must be obtained from the Executive Officer. The disposal site will be chosen based on the monitoring data submitted for the material to be dredged according to the criteria below: ^{ROWD}

- a. Dredged material composed of essentially clean coarse sand (less than 80% passing No. 200 sieve) can be discharged at one of the beach replenishment sites.
 - b. Use of SF-12 and SF-14 for disposal of dredged material is dependent upon results of testing specified in the attached MRP No. 01-007. To use SF-12 or SF-14, test results must show that the dredged material will not adversely affect marine communities in the disposal area or in Elkhorn Slough, as determined through compliance with Table 2, below.
 - c. Disposal of suitable harbor dredged material, with more than 20% passing through a No. 200 sieve, may be discharged to SF-12 or SF-14 only between September 1 and June 1, unless authorization is obtained from the Executive Officer.
11. Disposal of dredged material to the beach replenishment sites shall be conducted in a manner which will not cause a nuisance to beach users. The Dischargers shall provide information on beach replenishment timing to Monterey County Environmental Health Department, enabling the County to post project times on its beach advisory web site. ^{BP}
 12. The Dischargers shall notify mariculture operations and the research institutions in Moss Landing Harbor and Elkhorn Slough at least 15 days in advance of discharge of dredged material at SF-12 or the beach

replenishment sites. Should the mariculture operators experience excessive culture mortality or difficulties in removing increased turbidity as a result of the discharge, the Executive Officer may modify or suspend use of SF-12 and/or the beach replenishment sites. Additionally, the Executive Officer may require the Dischargers to use the offshore disposal site, SF-14. ^{BPJ}

13. If Monitoring Program results indicate that re-suspended harbor sediment discharged at SF-12 is adversely affecting Elkhorn Slough, the Executive Officer may restrict the use of SF-12. USEPA and the Corps may choose to move the approved disposal site, with consultation of other agencies.
14. If clamshell dredging is shown to cause increased turbidity in the Elkhorn Slough and adversely affect the slough as determined by the Executive Officer, the clamshell dredging method in Moss Landing will be prohibited. ^{BPJ}

Decant Water Discharge

15. If dredged material is found to be unsuitable for unconfined aquatic disposal at SF-12 or the beach replenishment projects, the dredged material shall be handled at an approved upland handling site and disposed of at an approved disposal site. Dredged material decant water, if generated, shall be disposed of only after analyzing in accordance with MRP No. 01-007 and complying with the following limits (Tables 1 & 2): The discharge of decant water to any aquatic disposal sites shall comply with the limits:

Table 1. Turbidity Effluent Limit for Decant Water Discharge

Analyte	Units	30 Day Average	7 Day Average	Instantaneous Maximum
Turbidity	NTU	75	100	225

If turbidity exceeds the levels specified in Table 1 above, discharge to the Pacific Ocean is prohibited in accordance with Discharge Specification B.10.b., until the decant water turbidity is brought back into compliance with the levels specified in the Table 1.

Table 2. Decant Water Discharge Specification B.10.b. Enforcement Limits

Analyte	Units	6-Month Median	30 day Average	Daily Maximum	Instantaneous Maximum
Metals					
Antimony	mg/l		1.2		
Arsenic	ug/l	8		32	80
Beryllium	ng/l		33		
Cadmium	ug/l	1		4	10
Chromium III	mg/l		190		
Chromium VI	ug/l	2		8	20
Copper	ug/l	3		12	30
Lead	ug/l	2		8	20
Mercury	ug/l	0.04		0.16	0.4
Nickel	ug/l	5		20	50
Selenium	ug/l	15		60	150
Silver	ug/l	0.7		2.8	7
Thallium	ug/l		14		
Zinc	ug/l	20		80	200
Pesticides					
Aldrin	ug/l		0.04 ²		
HCH	ug/l		0.04 ²		
Chlordane (total)	ug/l		0.04 ²		
DDT (total)	ug/l		0.04 ²		
Dieldrin	ug/l		0.04 ²		
Endosulfan	ug/l		0.04 ²		
Endrin	ug/l		0.04 ²		
Heptachlor	ug/l		0.04 ²		
Toxaphene	ug/l		1.0 ²		
Others					
Tributyltin	ug/l		0.02 ²		
PAHs (total)	ug/l		0.02 ²		

¹ The discharge specification enforcement limits are based on the Water Quality Control Plan for Ocean Waters of California, also been referred to as the Ocean Plan Limits.

² The discharge specification enforcement limits are based on method detection limits.

C. PROVISIONS

1. Order No. 90-21, "Waste Discharge Requirements for United States Corps of Engineers, Moss Landing Harbor District and Duke Energy Moss Landing Power Plant Dredging Operation in Monterey County", adopted by the Regional Board on March 9, 1999, is hereby rescinded.
2. The Discharger shall comply with the attached Monitoring and Reporting Program No. 01-007, as specified by the Executive Officer.
3. The Discharger shall comply with all items of the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements," dated January 1984 except A1, A5, A6, A8, A13- A15, A17, B2, C8, C9, C16 and D2.
4. Pursuant to Title 23, Chapter 3, Subchapter 9, of the California Administrative Code, the Dischargers must submit a written report to the Executive Officer not later than **March 14, 2001**, addressing:
 - a. Whether there will be changes in the continuity, character, location, or volume of the discharge; and,
 - b. Whether, in their opinion, there is any portion of the Order that is incorrect, obsolete, or otherwise in need of revision.
 - c. A summary of all violations of Waste Discharge Requirements, Order No. 00-007, which occurred since adoption of the order along with a description of the cause(s) and corrective action taken.
5. The Moss Landing Dredging Program shall be operated and maintained according to an operation and maintenance plan acceptable to the Executive Officer. In the event of conflict with this Order, this Order shall govern.
6. Whenever significant changes in operation of the discharge area are initiated, they shall be incorporated into the plan and reported within seven days to the Executive Officer.
7. Adherence to this Order does not relieve the Dischargers of the responsibility of obtaining applicable permits from other Federal, State, or Local agencies.

I, Roger W. Briggs, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, Central Coast Region, on September 14, 2001.

Roger W. Briggs, Executive Officer

Appendix A 5.0
Coastal Zone Management Act (CZMA)

Negative Determination

Moss Landing Harbor Federal Channel 2020 Operation and Maintenance Dredging

1. AUTHORITY

The United States Army Corps of Engineers (USACE), San Francisco District, is submitting this Negative Determination for maintenance dredging of the Moss Landing Harbor federal channels in accordance with the federal Coastal Zone Management Act of 1972, 16 U.S.C. § 1456, as amended, section 307c(1).

2. DETERMINATION

Pursuant to the Federal Coastal Zone Management Act (CZMA) of 1972, as amended, the USACE has evaluated the dredging of Moss Landings Harbor and placement at the designated SF-12 site. USACE has determined that the project is consistent to the maximum extent practicable with the California Coastal Management Program (CCMP), pursuant to the requirements of the CZMA and the California Coastal Act (CCA) of 1976, as amended. The Environmental Assessment, included with this Negative Determination, provides the basis for the USACE's findings and can be referenced for more detailed information.

3. PROJECT AREAS AND ACTIVITIES SUBJECT TO CONSISTENCY DETERMINATION

Section 304(1) CZMA defines the coastal zone as “the coastal waters (including lands therein and there under), strongly influenced by each other and in proximity to the shorelines of the several coastal states, and includes islands, transitional and intertidal areas, salt marshes, wetlands, and beaches.”

The coastal zone is further defined by Section 30103(a) of the CCA as “. . . land and water area of the State of California from the Oregon border to the border of the Republic of Mexico. . . tending seaward to the state's outer limit of jurisdiction, including all offshore islands, and extending inland generally 1,000 yards from the mean high tide line of the sea. In significant coastal estuarine, habitat, and recreational areas it extends inland to the first major ridgeline paralleling the sea or five miles from the mean high tide line of the sea, whichever is less, and in developed urban areas the zone generally extends inland less than 1,000 yards.”

The Moss Landing Harbor and Monterey Bay regions are part of the Central Coast Area Land Coastal Program (LCP), which includes coastal areas along Santa Cruz County, Monterey County, and San Luis Obispo County.

Moss Landing Harbor is located in the center of Monterey Bay, in Moss Landing, Monterey County, California (Figure 1). It is approximately 80 miles south of San Francisco and halfway between the cities of Santa Cruz and Monterey. The mouth of the Pajaro River is located 3 miles

north of Moss Landing and the mouth of the Salinas River is 4 miles to the south. Moss Landing Harbor is located in the old Salinas River channel. Directly behind the sand spits is Elkhorn Slough, which extends 11 miles inland and has over 2,500 acres of open water-ways, mud flats, and salt marshes.

Two jetties and related shore protection revetments maintain a stabilized entrance channel through the sand spits, into Moss Landing Harbor. The entrance to the harbor is located at the head of the Monterey Submarine Canyon. Moss Landing Harbor consists of two harbors: the North Harbor, utilized by approximately 154 recreational boats; and the South Harbor, utilized by approximately 446 commercial fishing and recreational boats. The Moss Landing Harbor District (MLHD) maintains about 600 berths and docking facilities.

The Moss Landing Harbor Federal Channel has two reaches: the Entrance Channel, which is 2,000 feet (ft) long and 200 ft wide, and the Lagoon Channel, which is 3,200 ft long and 100-200 ft wide (Figure 2). The Entrance Channel provides access from Monterey Bay to Lagoon Channel. The Lagoon Channel provides access to the North and South Harbor. Figure 2 provides a detailed schematic of Moss Landing harbor.

The proposed dredging and dredged material placement activities would be located within areas defined as *Coastal Zone* by Section 304(1) of the CZMA and Section 30103(a) of the CCA.



Figure 1: Moss Landing Harbor Proposed Dredging Location

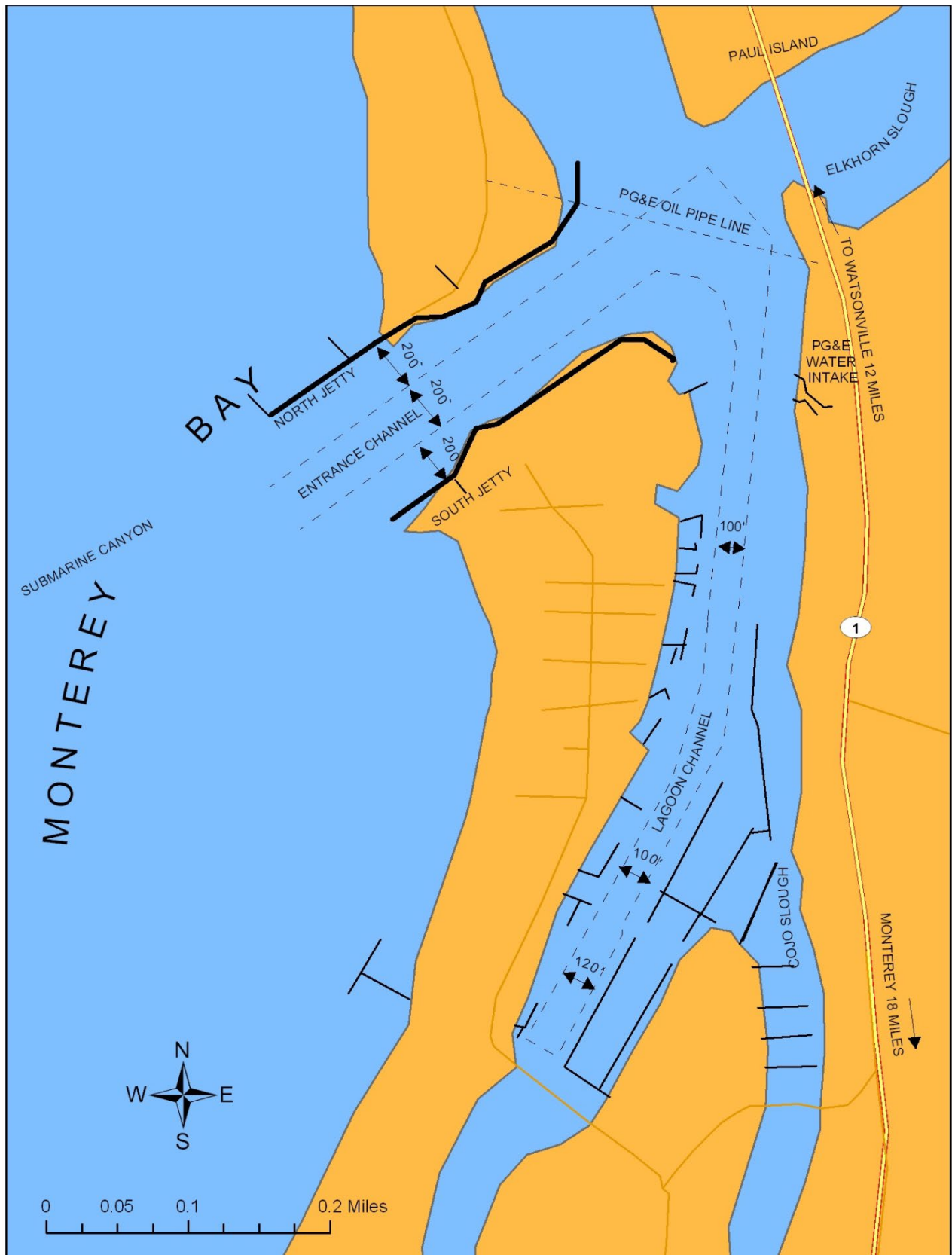


Figure 2: Moss Landing Harbor Federal Channels

4. PROJECT PURPOSE

Moss Landing Harbor’s federal channel has experienced normal shoaling rates since the last dredging episode in 2012, depositing additional sediments each year. If not removed periodically by maintenance dredging these sediments can severely limit the movement of vessels, as in the 2012 emergency dredging performed in response to the United States Coast Guard (USCG) declaration that shoaling in the Moss Landing channels had created a hazard to navigation. To avoid these hazardous conditions maintenance dredging is to take place during the 2020 dredging season.

5. PROJECT DESCRIPTION

The proposed project consists of maintenance dredging of the shoaled portion of Entrance Channel to restore the channel to the authorized depth of 15 feet MLLW, plus a maximum 2-foot overdepth, for a total depth of 17 feet MLLW. The proposed project would remove approximately 67,997 cubic yards of accumulated sediment using a contractor furnished hydraulic cutterhead pipeline dredge when including the first foot of overdepth (to -16”) (see Table 1 below for estimated dredge quantities). If the entire two feet of overdepth were dredged, the total volume would be approximately 85,000 CY (See Table 1 in the attached EA). Dredging would occur between stations 0.0 and 51+81; the area proposed for dredging is shown on Figure 3, for a more detailed shoaling map see Figure 4. Dredging would be conducted between June 15th to November 30th and have a duration of approximately six to eight weeks, though USACE is coordinating with NFMS for a work window extension to be allowed to work within an extended window of up to December 31st for this episode, if needed.

<u>Station Number</u>	<u>Standard (-15')</u>	<u>1' Overdepth (-16')</u>	<u>Total Volume (CY)</u>
Station 0+00 to 25+00	13,340	6,528	19,868
Station 25+00 to 42+00	16,069	6,186	22,255
Station 42+00 to 51+81	22,542	3,333	25,875
TOTAL	51,951	16,046	67,997

Table 1: Estimated Dredge Quantities

Sediment testing was performed in a manner consistent with the guidelines for implementing the Inland Testing Manual in the San Francisco Bay Region, (DMMO, 2001) and in accordance with the procedures outlined in the 2014 Master Sampling and Analysis Plan, USACE SF-District O&M Dredging (Master SAP) which was approved by the EPA, Water Board, Monterey Bay National Sanctuary, and the California Coastal Commission in January 2020. A contract was awarded for sampling and analysis; samples were collected from the channel on March 4th, 2020 and were tested for metals and underwent other “wet tests” for inorganic and organic known toxic chemicals in April 2020, which together

comprised the full suite of Tier III tests on all the sediments, with the exception of bioaccumulation testing.

Draft grain size, chemistry and bioassay tests were received on 25-APR; a final report will be available in late May. Results from the draft report showed that shoaled material in the Entrance Channel contained 92.4% sand (7.6% fines) which required no additional testing by the EPA or the Water Board. The draft report showed that shoaled sediments in the Harbor Area contained 58% silt (99.9% fines). Chemical analysis and bioassay tests were performed and all bioassay tests passed with a survivability of more than 90%. No toxicity to polychaetes was found, and no toxicity from the Modified Elutriate Tests was found. For the Standard Elutriate Tests, all samples passed for unconfined aquatic disposal after mixing model calculations.

USEPA and the Water Board concurred on 1 May, 2020 that high resolution chemistry was not necessary to delineate the entrance and harbor boundaries since there is not much shoaling between the two areas. The concentrations for metals, PCBs, dieldrin, and chlordane are slightly elevated but are in line with the recent 2018 testing results for the directly adjacent MLHD sampling. None of the results exceed the bioaccumulation trigger values that have been in use for Moss Landing, in particular DDT's threshold. Regarding PCB, MLHD had similar concentrations with only slightly higher carbon content and they passed the bioaccumulation testing well below the total reporting values. Therefore, no bioaccumulation or z-layer analysis for DDTs or PCBs is required. The material to be dredged for this project is expected to be deemed suitable for placement at SF-12 or SF-14 when the final report is submitted for a suitability determination to USEPA the RWQCB in early June 2020.

The RWQCB issued a Waste Discharge Requirement (WDR 01-007) amended September 14, 2001, which mandates how the dredged material is placed in the aquatic environment, that no other pollutants enter the aquatic environment during placement or dredging operations, and that odors and coloration do not affect the beach location. For the 2020 episode, USACE has initiated coordination with the RWQCB and they requested USACE provide a project description and the Sampling and Analysis Report for their review in order to approve this episode for coverage under WDR 01-007.

Sediment dredged from the channel is expected to be placed at the designated placement site SF-12 (Figure 3).¹ SF-12 is an in-bay placement site located in Monterey Bay, approximately 1,100 feet offshore from Moss Landing. The trapezoidal dispersive site, SF-12, has been periodically used since 1947 for dredged material placement and is a Section 404 disposal site. On January 1, 1993, the area in which the site is located was designated as the Monterey Bay National Marine Sanctuary; however, the use of SF-12 as a placement site was grandfathered in and the location of the placement site was later changed.

¹ As described in section 3.1.2 of the EA, there is a possibility that the sediment would be dredged with a clamshell and placed at SF-14, however it is currently expected that material would be dredged with a cutterhead and placed at SF-12.

The dredging would be performed using a contractor furnished cutterhead pipeline dredge. Cutterhead-pipeline dredges are hydraulic dredges that use a cutterhead at the end of a pipeline. A cutterhead-pipeline dredge has onboard pumps that suction material through one end, the intake pipe, and then push it out the discharge pipeline directly onto the placement site. Because cutterhead-pipeline dredges pump directly to the placement site, they operate continuously and can be more cost-efficient than other types of dredges.

A cutterhead is a mechanical device that has rotating blades or teeth to break up or loosen the bottom material so that it can be suctioned through the dredge. Some cutterheads are rugged enough to break up and remove rock. Cutterhead-pipeline dredges work best in areas with deep shoals where the cutterhead is buried in the sediment. The pipeline is constructed of durable plastic material and is slightly buoyant, designed to float approximately 2 inches above the water's surface when empty, and to sink to the bottom when filled with the dredge slurry mixture. Water pumped with the dredged material must be contained in the placement site until the solids settle out. It is then discharged, usually back into the waterway. Cutterhead-pipeline dredges are not suitable for use in areas where sediments are contaminated with chemicals that would dissolve in the dredge water, and be spread to the environment during discharge.

Material dredged from the lagoon channel would be transported to SF-12 using an existing transport pipe that extends under the southern sand spit, though normally existing pipelines are not available and must be brought in and placed for each dredging event; which is how material dredged from the entrance channel would be piped to SF-12. Pipeline dredges are mounted on barges. Usually, they are not self-powered, and therefore are towed to the dredging site and secured in place by special anchor pilings, called spuds or pivot pipes. Once the dredge is positioned, the pipeline and cutterhead are lowered to the bottom of the channel by the ladder. The cutterhead then begins to slowly rotate, at about 30 revolutions per minute, breaking up the sediment. As it becomes buried in the sediment, the dredge pumps are on, and sediment slurry is suctioned through the pipeline to the placement site. During operation, the cutterhead swings from side to side, alternately using the port and starboard spuds as a pivot. Cables attached to anchors on either side of the dredge control its lateral movement and help "walk" the dredge forward.

Advantages of a cutterhead-pipeline dredge include the ability to excavate most types of material and pump it long distances; to operate continuously, and therefore economically; and to dredge some rock formations using larger machines without blasting. Limitations include being unsuitable for open, rough water projects; increased turbidity over ambient conditions during dredging; requiring towboats to move between locations; difficulties working in strong currents; and navigation impacts caused by the pipeline from the dredge to the disposal site, especially in areas of confined, heavy traffic.

Use of SF-12 for Placement of Dredged Material

For the 2012 dredging episode the California Coastal Commission (CCC) expressed concern with placing clean, beach compatible sand at the SF-12 ocean placement site, thus removing it from the littoral zone. They requested that the USACE investigate either placing

the sediment directly on the beach, stockpiling the material for beneficial use at a later date, to buttress the sand dunes in the nearby area. The Central Coast Regional Water Quality Control Board (Central Coast RWQCB) also expressed concern regarding removing clean sand from the littoral system and requested that the USACE consider using SF-12, which is approximately 1,100 feet west from the existing South Sandspit Beach beneficial use site. (Note that the United States Fish and Wildlife Service (USFWS) had concerns with placing sediment directly on the beach because of western snowy plover nesting).

Based on the CCC and Central Coast RWQCB's concerns and their recent Coastal Development Permit Action requiring the Moss Landing Harbor District to place suitable dredged materials on the beach, USACE investigated placing the sand directly on the beach for beach nourishment. It was found through the analysis that placement for beach nourishment was not the Federal Standard, which relies on the 1978 guidance and USACE current regulations which are predicated on the essential principle that federal funds available for maintenance of federal navigation channels nationwide are limited, and thus must be allocated and spent responsibly and carefully. To that end, USACE establishes the federal standard (in the manner prescribed by USACE regulations; see, e.g., 33 CFR 335.7) that will govern every federal maintenance dredging project. A state's desired dredging methods, placement locations, or other requirements that exceed the federal standard can usually be accommodated to "the maximum extent practicable," so long as the state or non-federal sponsor agrees to pay any difference between the cost of implementing the federal standard and the cost of implementing the state's requirements. As in the case of a beach nourishment agency preferred placement alternative, the additional costs that are incurred for placement at this location would need to be funded by a non-federal source such as the state or an NGO and would require a memorandum of agreement (MOU). To date, there has been interest from CCC and RWQCB to have placement for beach nourishment but no funding for the additional cost above the federal standard has been received nor has an MOU been signed. USACE therefore proposed that sediment be placed at SF-12, which would keep the sediment closer to the shore than SF-14, and requested a suitability determination from the United States Environmental Protection Agency (USEPA) to place the dredged material at SF-12. The USEPA approved this request, that SF-12 was suitable for placement of sediments from the Moss Landing Federal Channel. In addition to being under EPA jurisdiction, SF-12 also lies within the Monterey Bay National Marine Sanctuary (MBNMS). USACE will seek authorization from MBNMS for placement at SF-12; in order to process this in a timely manner they have requested that a copy of this Negative Determination be sent to their director.



Figure 3: Proposed Maintenance Dredging and SF-12 Dredged Material Placement Site

**Moss Landing Harbor Federal Navigation Channel
2020 Maintenance Dredging Sampling & Analysis Plan,
October 22019 Entrance Channel Sampling Points**

Sample Point ID	Easting	Northing
MSL-2019-1-1	5744980.62	2188510.77
MSL-2019-1-2	5746189.37	2189272.02
MSL-2019-1-3	5746385.41	2189381.73
MSL-2019-1-4	5746381.11	2188989.65
MSL-2019-2-1	5746339.34	2188400.29
MSL-2019-2-2	5746250.89	2187726.03
MSL-2019-2-3	5746184.26	2187529.02
MSL-2019-2-4	5746132.25	2187334.04
MSL-2019-3-1	5745701.44	2186566.10
MSL-2019-3-2	5745853.80	2186680.55
MSL-2019-3-3	5745887.74	2186908.53
MSL-2019-3-4	5746027.56	2187157.66

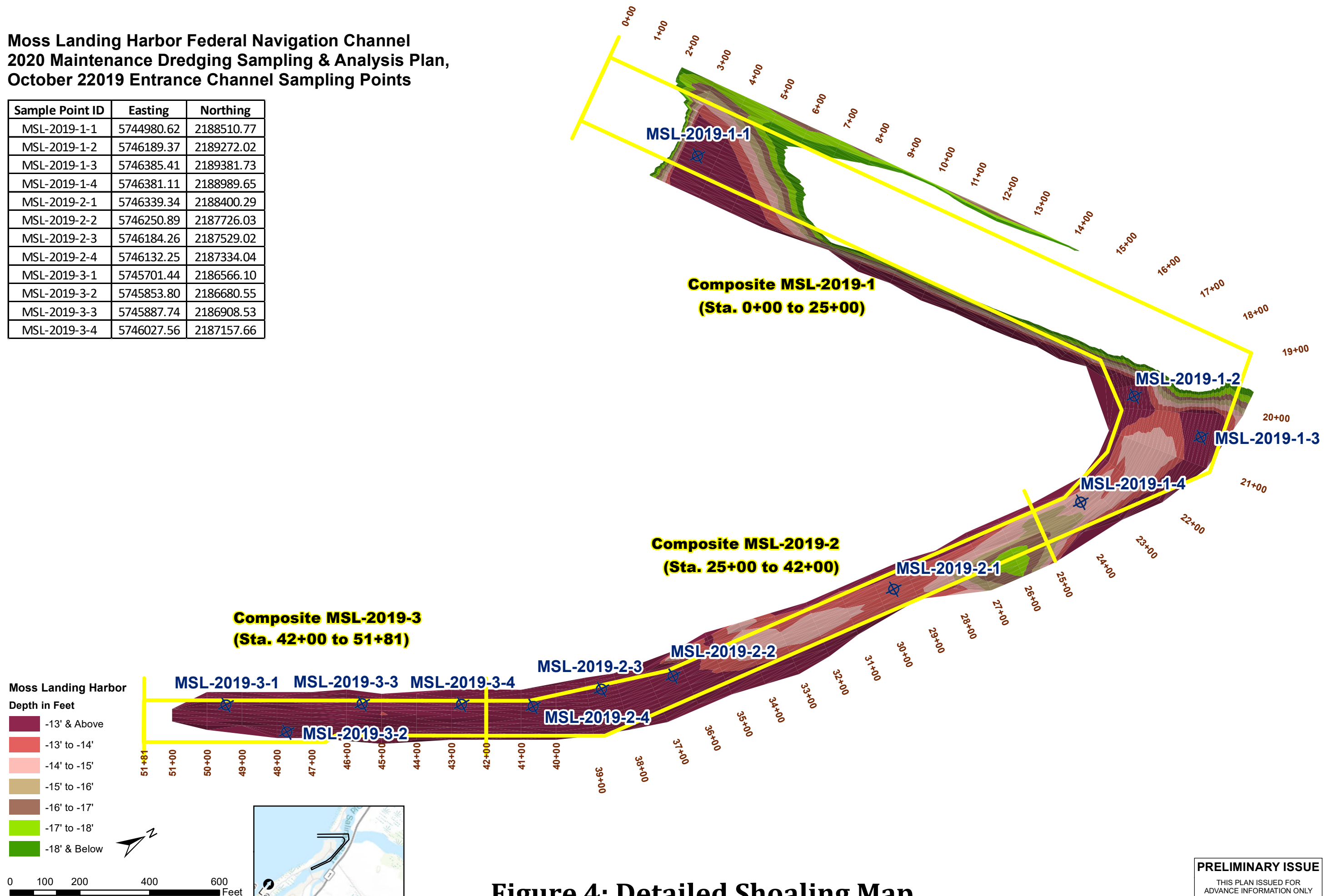


Figure 4: Detailed Shoaling Map

PRELIMINARY ISSUE
THIS PLAN ISSUED FOR
ADVANCE INFORMATION ONLY

Symbol	Description	Date	Appr.

DESIGNED BY:	CHECKED BY:	SUBMITTED BY:	DRAWN/MAP BY:
SHEET NO.:	DATE: 10 / 07 / 2019	CONTRACT NO.:	SOLICITATION NO.:
BRANCH/SECTION: Construction Branch, Hydro Survey Section, 4th Floor 450 Golden Gate Ave, San Francisco, CA 94102			

CALIFORNIA
MONTEREY COUNTY
**MOSS LANDING HARBOR
CONDITION SURVEY
28 MARCH 2019**

SHEET
REFERENCE
NUMBER:
Overview

6. CONSISTENCY WITH PROVISIONS OF THE CALIFORNIA COASTAL ACT

This section of the Consistency Determination analyzes the consistency between the proposed dredging of Moss Landing Federal Navigation Channel and the policies set forth in Chapter 3 (*Coastal Resources Planning and Management Policies*) (Section 30200 *et. seq.*) of the California Coastal Act (Division 20, Cal. Pub. Resources Code Section 30000 *et. seq.*; California Code of Regulations, Title 14, Section 13000 *et. seq.*).

ARTICLE 2. PUBLIC ACCESS (Section 30210 thru 30214)

Article 2 of the CCA requires that development shall not interfere with the public's right of access to the sea.

Public access to the shorelines of Monterey Bay will not be hampered by the dredging of the federal channel or placement of the sediment at SF-12. Specifically, the proposed activity would occur within the open water such that coastal access via beaches, roads and parking lots will not be impacted.

ARTICLE 3. RECREATION (Sections 30220 thru 30224)

Article 3 of the CCA requires that coastal areas suited for recreational activities shall be protected for such uses and places priorities on development of recreational or visitor serving uses rather than residential uses, that upland areas necessary to support coastal recreation uses shall be reserved for such uses, and that recreational boating use of coastal waters shall be encouraged.

Dredging this project has the potential to briefly disrupt some recreation activities, including wildlife and viewshed viewing, boating and kayaking, and fishing. Dredge equipment has the potential to briefly disrupt those enjoying the wildlife and viewshed viewing during times when the dredge is working in the area or being piped to SF-12; however, vessels are a common occurrence in Monterey Bay and dredging equipment would mostly not be discernible to recreationist enjoying wildlife and viewshed viewing. Furthermore, dredging would only occur between June 15th to November 30th and have a duration of approximately six to eight weeks, which would limit the potential effects on recreation in the bay. Based on these findings, the USACE believes that the proposed annual maintenance dredging is consistent with the provisions set forth in Chapter 3 Article 3 of the CCA.

ARTICLE 4. MARINE ENVIRONMENT (Sections 30230 thru 30237)

Article 4 of the CCA requires that marine resources be maintained, enhanced, and, where feasible, restored and special protection given to areas and species of special biological or economical significance. It further requires that uses of marine environments be such that habitat function, biological productivity, healthy species populations, and fishing and recreational interests of coastal waters be maintained for long-term commercial,

recreational, scientific, and educational purposes and that marine resources be protected against the spillage of crude oil, gas, petroleum products, or hazardous substances.

The vicinity in and around Monterey Bay consists of many types of habitats that provide roosting, breeding, and foraging grounds for many species of plants, invertebrates, fishes, mammals, and birds; and the entire region is part of the designated Monterey Bay National Marine Sanctuary.

Marine environments that have the potential to be affected by the proposed action include open water habitat and sandy seafloor benthic habitat at the dredge site and SF-12. Open water habitat is located in the outer Entrance Channel and at the SF-12 disposal site. Invertebrates such as abalone and many varieties of jelly fish including spotted jelly live in this habitat. Coastal fish in this habitat include white sturgeon (*Acipenser transmontanus*) and sharks such as pajama catshark (*Poroderma africanum*). Birds such as brown pelican (*Pelecanus occidentalis*), western gull (*Larus occidentalis*), and common murre (*Uria aalge*) feed in coastal water habitat.

Sandy seafloor benthic habitat is located below the open water. Species that inhabit this habitat include spiny brittle stars (*Ophiothrix spiculata*), sand dollars (*Dendraster excentricus*), sea cucumbers (*Parastichopus parvimensis*) and globe crabs (*Randallia ornata*) which may feed and rest in or move through this habitat. Bottom fish such as California halibut (*Paralichthys californicus*) and sanddabs (*Citharichthys* spp.) may be found in this habitat. The most common invertebrate species occurring in the sandy bottom benthic habitat include the shore crab (*Hemigrapsis oregonensis*), the arthropod *Pachygrapsus crassipes*, the gastropod *Littorina scutulata*, and bivalves *Protothaca staminea*, *Tapes japonica*, and *Gemma gemma*. Sand crabs (*Emerita analoga*) are common to the beach environment. Taxa known to be distributed throughout Moss Landing Harbor include polychaetes such as *Streblospio benedicti* and *Capitella capitata*, and amphipods such as *Trasorchestia traskiana*.

Several common aquatic organisms use Monterey Bay during part or all of their life history. Various species of loons, albatross, cormorants, scooters, gulls, terns, murrelets, auklets, and puffins inhabit the Monterey Bay area and use the nearshore and open water for feeding. As discussed below, there are also several aquatic mammals that frequent the bay. Common fish include hagfish, sharks, skates, herring, sardine, white sturgeon, northern anchovy, American shad, Pacific sardine, smelt, rockfish, sol, groundfish, and several others. A detailed list of species that inhabit the Monterey Bay area was prepared by NOAA in September 2008 and is available at: http://montereybay.noaa.gov/intro/mp/feis/app_C.pdf (NOAA 2008).

Monterey Bay also provides habitat for several special status species. Because the project would occur entirely in the waters of the federal channel and Monterey Bay, the proposed action would not affect most special status terrestrial and wetland species. However, some marine birds, and several aquatic organisms could be affected by the project activities. Species that may be in the Monterey Bay area are listed under the respective law for which they are protected.

Federal Endangered Species Act (16 U.S.C. 1531 et seq): These species include federally threatened (FT), endangered (FE), critical habitat (CH), and proposed critical habitat (PCH), including: California least tern (*Sterna antillarum browni*) (FE) (CH), marbled murrelet (*Brachyramphus marmoratus marmoratus*) (FT), western snowy plover (*Caradrius alexandrinus nivosus*) (FT) (PCH), Southern California steelhead (*Oncorhynchus mykiss*) (FE) (PCH), tidewater goby (*Eucyclogobius newberryi*) (FE), southern sea otter (*Enhydra lutris nereis*) (FT), green sturgeon (FT) (CH), blue whales (FE), fin whales (FE), and humpback whales (FE).

Magnuson-Stevens Fishery Conservation and Management Act Amendments of 1996 (16 U.S.C. 1801 et seq)—*Essential Fish Habitat (EFH)*: Monterey Bay is located within an area designated as EFH for three Fishery Management Plans (FMPs): the Pacific Coast Salmon, the Coastal Pelagics, and Pacific Groundfish. Many of the 87 species protected under this law are known to occur in the area. Additionally, the Monterey Canyon is listed as an area of interest. Areas of interest are discrete areas that are of special interest due to their unique geological and ecological characteristics.

Conservation Measures to Avoid Potential Impacts from Dredging

The dredge contractor will be required to implement best management practices (BMPs) as provided by the USFWS, NMFS, EPA and the RWQCB, which will ensure only areas proposed for dredging are affected, and that adjacent areas outside the proposed dredge areas, or areas deemed unsuitable for dredging and offshore disposal (based on the sediment sampling and analysis) are avoided. One such BMP by NMFS as a part of the Essential Fish Habitat consultation that was performed for the project is that eelgrass surveys be performed to ensure that any populations in the area will not be affected by the project operations. Staging, storing, and stockpiling of equipment and materials will be onboard the dredge barge and will not require or effect on-land facilities, thus avoiding all effects to land-based listed species such as western snowy plover and Monterey spineflower. Mitigation measures will be in place to prevent/respond to any leakage or spilling, including halting operations until the cause of the leak or spill can be determined and fixed. A qualified biologist hired by the contractor will survey the project site, including the locations of all pipelines, equipment, and materials, for the presence of special-status species prior to mobilization for work, and the immediate area of dredging will be inspected daily by the dredge operator to ensure that southern sea otters are not within 50 meters of the dredge equipment during dredging activities. While using a hydraulic cutterhead dredge, dredge material transport will occur using an existing permanent “transport” pipe located beneath the South Harbor sand spit to convey dredge materials to the SF-12 aquatic disposal site. All other equipment besides the existing pipeline (see “discharge pipe” on Figure 3), will be removed after dredging has been completed, as recommended by the MBNMS to ensure that buoys, anchors, etc. will not ensnare wildlife, especially marine mammals.

ARTICLE 6. DEVELOPMENT (Sections 30250 thru 30255)

Article 6 applies to new residential, commercial, or industrial development and requires that new development be contiguous with, or in close proximity to, existing developed

areas. It requires that scenic and visual qualities, of coastal areas be considered as a resource of public importance and protected during the process of development. Additionally, it maintains that new development shall not impede access to coastal resources, minimize risks to life and property, and be serviceable by public works.

The proposed dredging is not a development project and, therefore, does not apply to this project.

ARTICLE 7, INDUSTRIAL DEVELOPMENT (Sections 30260 thru 30265.5)

Article 7 states that the California Coastal Commission has permitting authority over all offshore oil and gas development within the three – mile jurisdiction and onshore facilities within the coastal zone. Further, it encourages coastal – dependant industrial facilities to be located or expanded within existing sites.

The proposed dredging does not involve industrial development; as such, this article does not apply to this project.

Appendix B - Agency and Public Participation

Appendix C – Preparers

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