Environmental Assessment

with draft FONSI

for

Suisun Bay Reserve Fleet Pier and Pass Channel Dredging
Solano & Contra Costa County, CA

Prepared by U.S. Army Corps of Engineers
San Francisco District for:
Department of Transportation
Maritime Administration (MARAD)

September 2022

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ACRONYMS AND ABBREVIATIONS

APE	Area of Potential Effects
BAAQMD	Bay Area Air Quality Management District
BCDC	Bay Conservation and Development Commission
BMPs	Best Management Practices
CAA	Clean Air Act
CCC	Central California Coastal (distinct population segment of steelhead)
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CHRIS	California Historical Resources Information System
CO	Carbon Monoxide
CRRP	Cullinan Ranch Restoration Project
CSLC	California State Lands Commission
CWA	Clean Water Act
CY	Cubic Yards
CZMA	Coastal Zone Management Act
dBA	A-Weighted Decibels
DMMO	Dredged Material Management Office
DMPS	Dredge Management Placement Site
DO	Dissolved Oxygen
DOT	(United States) Department of Transportation
DPS	Distinct Population Segment
EA	Environmental Assessment
EFH	Essential Fish Habitat
ESA	Endangered Species Act
EIR	Environmental Impact Report
EPA	(United States) Environmental Protection Agency
ER	Engineering Regulation
ESU	Evolutionarily Significant Unit
FMP	Fisheries Management Plan
FONSI	Finding of No Significant Impact
FTA	Federal Transit Administration
GHG	Greenhouse Gases
HVDC	High-Voltage Direct Current
LTMS	Long Term Management
MARAD	Maritime Administration
MBNMS	Monterey Bay National Marine Sanctuary
MET	Modified Elutriate
MHHW	Mean Higher High Water
MLLW	Mean Low Lower Water
MSA	Magnuson – Stevens Fishery Conservation and Management Act
MWRP	Montezuma Wetland Restoration Project
NAAQS	National Ambient Air Quality Standards
NDRF	National Defense Reserve Fleet
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NRHP	National Register of Historic Places
NTU	Nephelometric Turbidity Unit

PM.....Particulate Matter
PPM .....Parts Per Million
RRF.....Ready Reserve Force
SAV .....Submerged Aquatic Vegetation
SBRF.....Suisun Bay Reserve Fleet
SHPO .....State Historic Preservation Office
SF-16.....Suisun Bay Placement Site
SF-DODS.....San Francisco Deep Ocean Disposal Site
SUAD.....Suitable for Unconfined Aquatic Disposal
TSS.....Total Suspended Solids
USC.....US Code
USACE .....United States Army Corps of Engineers
USFWS .....United States Fish and Wildlife Service
WQO.....Water Quality Objective

FIGURES AND TABLES

TABLES

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 and the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of the NEPA (40 CFR §§4321-4370f); United States Department of Transportation (DOT) Order 5610.1C (Procedures for Considering Environmental Impacts); and Maritime Administration (MARAD) Order 600-1. It presents an evaluation of the potential impacts associated with the proposed dredging in and adjacent to the DOT MARAD Suisun Bay Reserve Fleet's (SBRF's) facility pier and Pass Channel and associated placement of dredged material at a beneficial reuse site.

1.2 Description and Location

MARAD's SBRF facility is located in Benicia, Solano County, California along the shoreline of Suisun Bay (Figure 1). The SBRF is part of the National Defense Reserve Fleet (NDRF) and consists of a variety of vessels maintained for National defense and emergency sealift purposes. It is made up of Ready Reserve Force (RRF) ships, NDRF retention vessels, and vessels held in custody for other government agencies. MARAD is also the Government's vessel disposal agent, providing for ship recycling services for obsolete Government and ex- commercial vessels awaiting disposal. The Proposed Action would involve dredging of approximately 250,000 cubic yards (CY) of material from the facility pier and pass channel areas at the SBRF facility and associated transport and placement of suitable dredged material at a beneficial reuse site.

The head of SBRF's facility pier (Area 1) is located offshore of Lake Herman Road in Benicia (Figure 2). This is the area where SBRF berths its service craft and lands its self- propelled crane barge in order to service the Reserve Fleet. Area 1 is comprised of two sections: Area 1A, located to the west of the pier, and Area 1B which is to the east. The authorized depth in Area 1 is 8 feet.

The "Pass Channel" (Area 2) is the vessel entrance to the SBRF and is situated between Bulls Head Reach and the foot of General Anchorage #26 (Figure 3). This is the area that vessel traffic bound to and from the anchorage must pass through from or to the Bulls Head Reach Channel, located just upstream of the Benicia Martinez highway bridge, both in Solano and Contra Costa Counties. The authorized depth of the Pass Channel is 32 feet.

1.3 Purpose and Need for Proposed Action

The purpose of the Proposed Action is to restore the authorized navigational depths at MARAD's SBRF facilities in order to preserve operational functions at the site. Over the years, siltation and accretion have occurred in the pass channel and around the SBRF facility pier resulting in reduced depths that are impeding navigation and impacting SBRF operations (e.g. service craft are unable to utilize the furthest inland finger dock and have limited use of the second dock, and insufficient water depth to moor the self-propelled crane barge at her normal berth on the downstream side of the pier during low tide for providing logistics support (loading and unloading cargo) of vessels in the anchorage. Figure 4). The Proposed Action is necessary for continued operation of SBRF's service craft as well as vessel access into the SBRF

anchorage and out to the Federal navigation channel. The Proposed Action will provide safe and efficient movement of ships and reliable operations to support of MARAD's mission requirements including wartime, national emergencies, and contingency operations in the Pacific Theater.

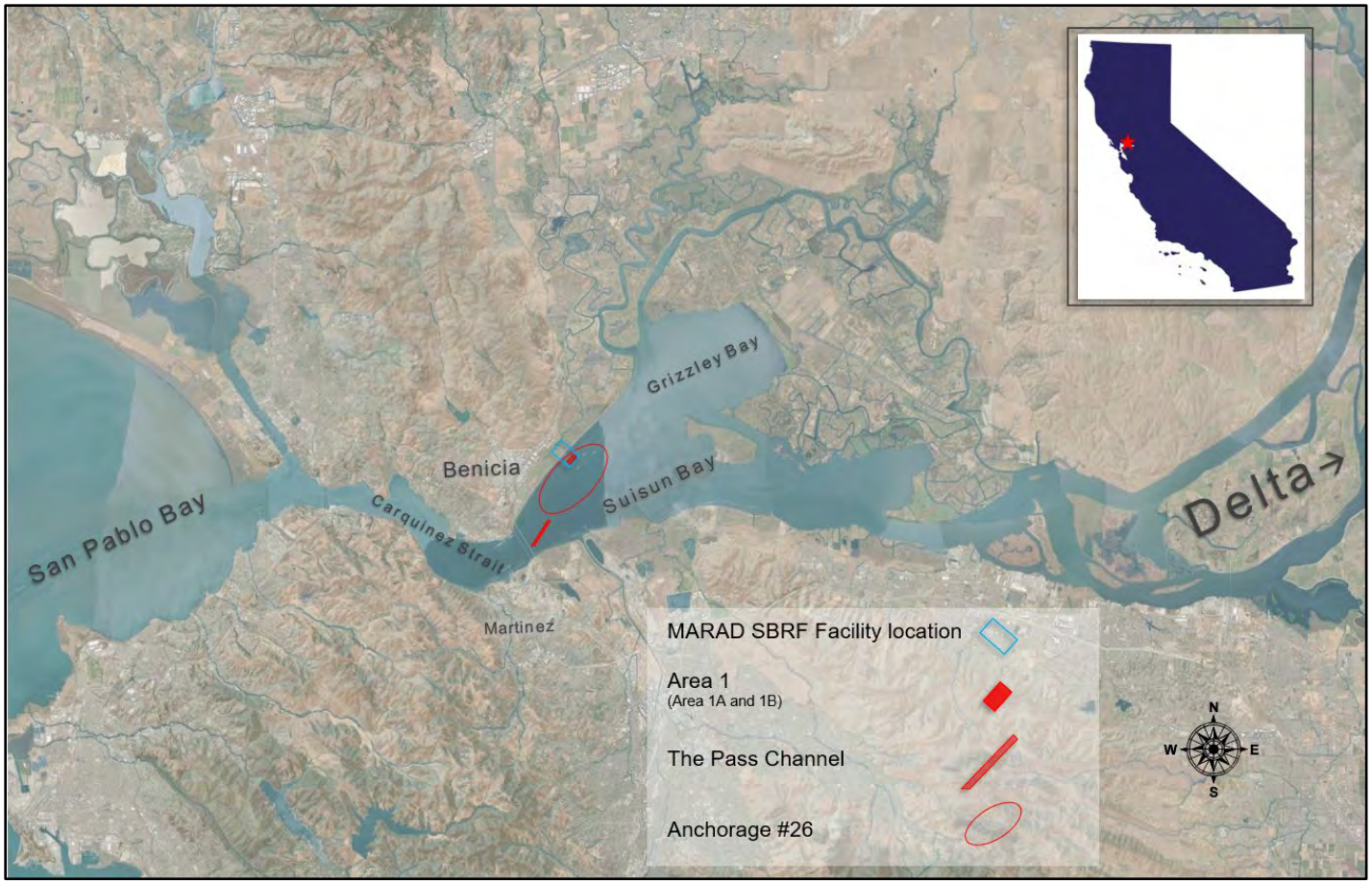

Figure 1: MARAD Project Vicinity and Location Map.

Figure 2: Area 1 Project Location and Limits.

Figure 3: Area 2 (The Pass Channel) Project Location and Limits.

Figure 4: Overhead view of SBRF facility pier during low tide in 2018.

1.4 Study Authority

The DOT's MARAD, as mandated by Congress, is responsible for maintaining navigability of their piers to historic and/or authorized depth or lesser regulatory depth. Section 11 of the Merchant Ship Sales Act of 1946 (46 U.S.C. 57100) established the NDRF. The appropriations citation for the continued operation and maintenance of the NDRF – including related projects, activities, and expenses – is Public Law 116-93, Sec. 8109.

2.0 Scope of Analysis

Limits of the scope of the analysis are defined by the reasonably foreseeable impacts of the Proposed Action and any evaluated alternatives. The action area for this analysis primarily includes the substrate, water column, and aquatic environs in the vicinity of MARAD's SBRF facility pier and pass channel and along the route via which material will be delivered to an upland beneficial reuse site. However, the action area does not include the terrestrial habitat at the authorized upland beneficial reuse placement sites because these sites, and activities at them, have been separately permitted in accordance with applicable environmental laws and regulations. There are currently two authorized and fully permitted upland wetland restoration sites in the San Francisco Bay Area available to accept dredge material: Cullinan Ranch Restoration Project at the San Pablo Bay National Wildlife Refuge in Solano County and the Montezuma Wetland Restoration Project at the eastern edge of Suisun Marsh in Solano County near the confluence of the San Francisco Bay and Sacramento Delta. Both of these upland beneficial reuse sites are fully-permitted to accept dredge material and conduct wetland restoration activities. The Proposed Action would conclude with delivery of material to offloading equipment at these sites and as such, the sites are not included in the action area associated with the Proposed Action.

For certain potential impacts, such as construction-related noise, the scope of analysis also includes adjacent properties surrounding the MARAD SBRF project site. For other resources such as air quality, the action area extends to a larger region, including the extent of the San

Francisco Bay air basin. Additionally, the scope of analysis incorporates evaluation of potential impacts associated with past, present, and reasonably foreseeable future projects that have or may occur within the vicinity of the action area. In this analysis, the temporal scope of the action includes the dredging performance period and the associated period of indirect effects that could follow as described in the resource sections below. Future operation and maintenance (O&M) dredging episodes at the facility pier or pass channel are expected to be sporadic and infrequent and therefore are not considered as future actions in the temporal scope covered by this EA. Table 1 presents the general geographic areas associated with the different resources addressed in the EA.

Resource Area	Geographic Area
Water Quality, Navigation, Recreation	Suisun Bay
Air Quality and Climate Change	Regional (BAAQMD), global for greenhouse gas emissions
Biological Resources, Special Species, Cultural Resources	Suisun Bay, Montezuma Wetlands, and Cullinan Ranch

Table 1: Geographic Scope of Resources

3.0 Proposed Action and Alternatives

To satisfy the requirements of NEPA this EA analyzes the Proposed Action in relation to the No Action Alternative. The purpose of this section is to describe the Proposed Action and No Action Alternatives, as well as summarize alternatives that were considered but eliminated from further study.

3.1 Proposed Action/ Preferred Action Alternative

Under the Proposed Action, dredging would be performed to restore navigability in Area 1 and the Pass Channel for operational and mission capacity. Approximately 26 acres across both sites would be dredged. The Proposed Action would involve a single episode of dredging at each location (Area 1 and the Pass Channel). However, dredging would take place in different years, with Area 1 taking place in 2023 and the Pass Channel taking place in a subsequent year. Area 1 would be dredged to -8 feet mean low lower water (MLLW) plus up to 2 feet of overdepth and the Pass Channel would be dredged -32 feet MLLW, plus up to 2 feet of overdepth. Estimated dredge event volumes by area are provided in Table 2.

Year	Area		Dredge Volume (CY) Required Depth -8 MLLW	-32 MLLW	Slope	1rst ft Overdepth	Material to be Dredged	Project Area (SQ Ft)	Duration (Rate: 3,000 CY/day)
2023	Area 1	Area 1A	16,593		1,260	2,521	23,500	212,024	24 days
		Area 1B	34,229		2,352	4,318	47,100		
TBD	Pass Channel			127, 499	4,502	33,996	177,500	910,940	60 days
					Overall Total:		**248,100** CY	**1,291,400** Sq Ft	

Table 2: Proposed Dredging for MARAD SBRF.

Dredging would be conducted using a mechanical clamshell dredge with material being placed in a scow. A mechanical clamshell dredge consists of a crane mounted on a barge, with a clamshell bucket on the end of the crane boom (Figure 4). The scows are open barges that can carry large quantities of sediment and are towed with tugboats to and from placement sites. As soon as one scow is filled and hauled away, another empty scow is maneuvered into place alongside the dredge and the digging continues.

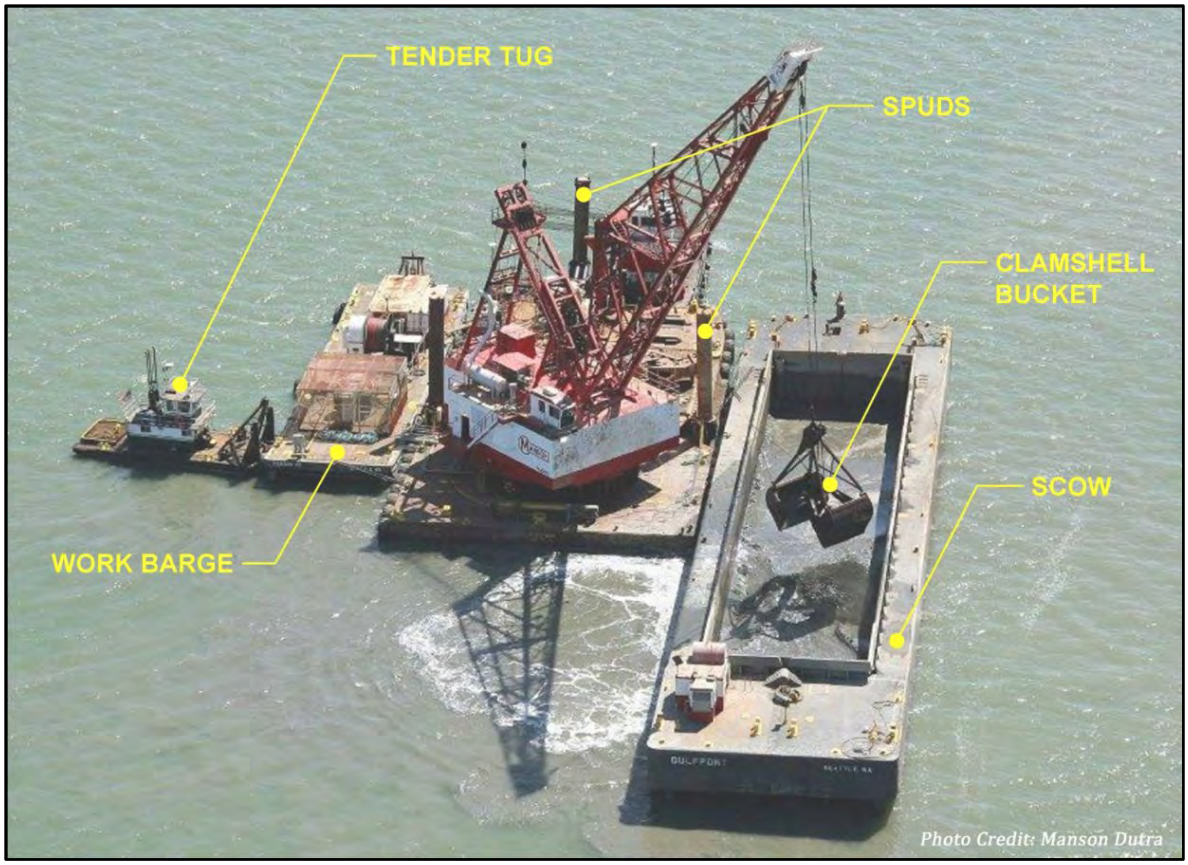

Figure 5: Mechanical clamshell dredge.

All dredging would be conducted during the applicable environmental work windows identified by the Long-Term Management Strategy for Placement of Dredge Material for San Francisco Bay (LTMS) to avoid the presence of special status species, unless expanded environmental work windows are approved through the appropriate consultation(s). The applicable window is August 1 through November 30 of any given year for the Suisun Bay region (USACE 2014a, 2015).

Based on the sampling and testing of the material to be dredged, a cutterhead dredge is not expected to be necessary. Should it later be determined that a cutterhead is needed, supplemental environmental documentation will be prepared.

If dredging were continuous (24 hours a day) a maximum daily rate of approximately 6,000 cubic yards (CY) would be expected. However, dredging typically does not occur 24 hours per day; rather, the effective work time (actual digging of shoaled material) is often 12 to 16 hours per day. Additionally, crew changes, relocation of the dredge, and other activities (e.g. breakdowns) limit the amount of dredging that occurs in practice. Therefore, based on an assumed rate of dredging and transport to the placement site of 3,000 CY per day the duration for dredging of Area 1 is estimated to be 24 days and the duration for dredging of the pass channel is estimated to be 60 Days in a subsequent year.

The project proposes to support beneficial use by placing dredged sediment at one of the two existing upland wetland restoration sites in San Francisco Bay that are currently permitted and actively accepting dredge material: Montezuma Wetland Restoration Project (MWRP) or the Cullinan Ranch Restoration Project (CRRP). Sediment sampling and testing was performed to identify the potential suitability of the material to be dredged from Area 1 and the Pass Channel for placement at these sites. Based on the testing results, the material is assumed to be suitable for either MWRP or CRRP as cover material. The MWRP is approximately 14.5 nautical miles from the SBRF location and the CRRP is 15 nautical miles (figure 6).

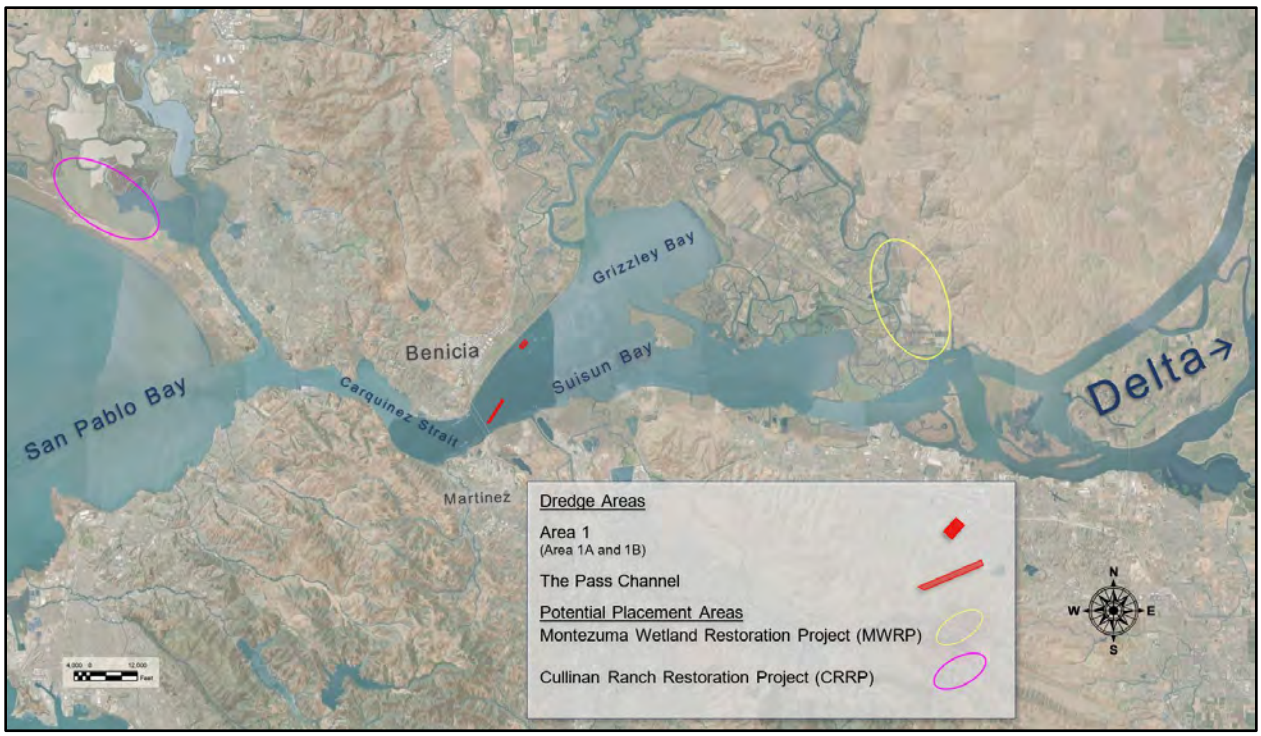

Figure 6: Suitable Beneficial Reuse Placement Sites.

3.2 No Action Alternative

Under NEPA, an action agency is required to consider the effects of the action alternative in relation to taking No Action. The No Action Alternative defines the "without project condition." In this case, the No Action Alternative would involve no dredging in or adjacent to MARAD SBRF's facility pier and the Pass Channel in Suisun Bay and there would be no associated beneficial reuse of material at an existing wetland restoration site.

3.3 Alternatives Considered but Eliminated

Several alternatives to the Proposed Action were identified and evaluated during project planning and development, but were eliminated from detailed analysis, and therefore are not analyzed in detail in this EA. These alternatives were eliminated from analysis because one or more of the following criteria apply, as discussed for each alternative below:

- The alternative is ineffective (it would not respond to project purpose and need);
- Its implementation would be expected to have much greater impacts on environmental resources;
- It is technologically infeasible; or
- Its implementation is remote or speculative.

Dredging only at Area 1 or only at the Pass Channel

Alternatives limiting dredging to either the Pass Channel or Area 1 were considered but were determined to be ineffective because dredging only one area or the other wouldn't fully address the shoaling and associated operational impacts which are taking place at both locations. Because

these alternatives would not fully meet the purpose and need for the action, they were eliminated from further study.

Facility or Fleet Relocation
Relocation of the MARAD SBRF's facilities was considered but this alternative was eliminated from further study because moving the physical facilities to another location would be highly speculative, largely infeasible, and considerably more environmentally impactful. Relocating the fleet to another existing MARAD facility was also considered but determined to be infeasible because the location of the fleet is integral to some of its national defense and emergency sealift purposes, and the SBRF is the only NDRF facility on the west coast and in the Pacific.

Use of Different Dredge Equipment or Different Placement Locations
Different means and methods of dredging and different placement locations were considered but eliminated from further study. Hydraulic Hopper Dredging was considered but eliminated from further analysis due to the limited availability of hopper dredged on the West Coast. Further, the USFWS has required hopper dredging be avoided in the nearby Suisun Bay Federal Channel under the ESA due to the assumed threat to the Federally Endangered Delta Smelt that have potential to occur in the Suisun Bay. Delta Smelt are not strong swimmers and are presumed susceptible to entrainment in the flow fields created around drag heads of trailing suction dredges. There is also a potential for entrainment during water intake for flushing of hopper dredges. Therefore, hopper dredging was eliminated from consideration as a dredging method in this location.

The nearby SF-16 in-Bay placement site was considered as a potential placement location given its close proximity to the dredging location. However, this site is reserved for sandy operation and maintenance dredged material from the Suisun Channel and New York Slough projects only. A new authorization would be required for MARAD SBRF Dredging to use SF-16 as a placement site. The San Francisco Deep Ocean Disposal Site (SF-DODS) was also considered but eliminated as a potential placement location. The transport distance from the dredging area to SF-DODS (48 nautical miles west of the Golden Gate Bridge) would make this site expensive for disposal of material associated with the proposed dredging. This site would be considered only if sediment contaminants made the material unsuitable for placement at an existing available upland beneficial reuse site. Given that the sampling and testing results for the material proposed to be dredged suggest it is suitable for such beneficial reuse, placement at SF-DODs was eliminated from further consideration as a placement location.

4.0 Affected Environment and Consequences

The following subsections evaluate the potential effects of the Proposed Action on physical, biological, and human environment resources. The effects of the Proposed Action are described in relation to the conditions under the No Action Alternative. The significance of the potential effects on each resource is identified. Resources with an "N/A" following the title would be unaffected by the Proposed Action because they do not occur in the action area, or the Proposed Action would have no potential to affect them. Therefore, potential impacts to such resources are not evaluated further below.

4.1 Physical Environment

Water

☑ **Quality - temp, salinity patterns and other parameters:**

Suisun Bay, where the MARAD SBRF's facility is located (Figure 7) represents the central, brackish-transition zone of the San Francisco Bay estuary, where fresh waters from California's Central Valley mix with the saline waters of the Pacific Ocean. Suisun Bay receives freshwater discharges from the Sacramento and San Joaquin rivers to the east, Montezuma Slough, Suisun Slough, and Goodyear Slough to the north, and Sulfur Springs Creek and Pacheco Creek to the south. Waters in this embayment are characterized as being oxygenated, of low to moderate salinity, and high in suspended solids. Typical concentrations of dissolved oxygen (DO) in most of San Francisco Bay range from 9 to 10 milligrams per liter (mg/L) during high periods of river flow, 7 to 9 mg/L during moderate river flow, and 6 to 9 mg/L during the late summer months, when flows are lowest (SFEI, 2008). The seasonal range of water temperatures in San Francisco Bay is from approximately 8 degrees Celsius to 23 degrees Celsius. The temperatures in Suisun Bay largely reflect this seasonal range, but at any given location, there can be small, irregular temperature changes with depth.

Figure 7: Subembayments of the San Francisco Bay Estuary.

The dredging activities associated with the Proposed Action have potential to temporarily alter water quality characteristics at Area 1 and the Pass Channel. The USACE (1976a) found that changes in temperature, salinity, or pH occurred during dredging activities but were localized to the immediate dredging area and short in duration during all types of dredging (hydraulic and mechanical). In general, ambient concentrations of these parameters were found to be regained within 10 minutes following material disturbance via dredging (USACE 1998). Dredging can change water pH balance because excavated material is typically more acidic than the surrounding waters, however pH has remained relatively constant throughout the San Francisco Bay regardless of the continual maintenance dredging projects that have occurred (USACE et al. 2009), which indicates dredging activities have not resulted in permanent modification of pH in Bay waters. Dredging activities also resuspend in situ sediments and expose anoxic material to the water column, both of which can temporarily reduce DO concentrations in the immediate vicinity of activities on the order of 1 to 2 parts per million (ppm). However, ambient DO conditions were found by USACE (1976a) to be regained shortly following settlement of the suspended sediment. 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 32 feet plus two feet of overdepth, which would restore the depth of the water column to approximately match the surrounding bathymetry in the Pass Channel. Therefore, long-term reduction of DO would not occur.

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.

Under the Proposed Action, a single episode of dredging at Area 1 would occur in 2023 and a single episode of dredging at the pass channel would occur in a subsequent year for a combined total of approximately 250,000CY. Based on the localized and short in duration effects to water quality parameters shown to occur with dredging, as well as the fact that the dredging of the areas would be spread over separate years thereby limiting the effects occurring in any single season, the impacts of the Proposed Action on water quality characteristics would be minor, temporary, and less than significant.

The No-Action Alternative would not involve dredging and therefore would result in no change to water quality from existing conditions.

☑ **Turbidity, suspended particulates:**

Turbidity is a measure of the degree to which the water loses its transparency due to the presence of suspended particulates. Higher counts of suspended solids in the water result in higher turbidity levels. Turbidity throughout the San Francisco Estuary is naturally high, with total

suspended solids (TSS) levels varying from 10 mg/L to more than 100 mg/L (Robinson and Greenfield, 2011).

The Proposed Action could temporarily produce increased suspended sediments and turbidity in the action area from clamshell dredging operations. Sediment plumes would be generated from excess sediment being suspended in the water column during dredging. During dredging, sediments may become suspended because of the clamshell bucket's impact to the bottom, material washing from the top and side of the bucket as it passes through the water column, sediment spillage as it breaks the water surface, spillage of material during scow loading, and intentional overflow in an attempt to increase a scow's effective load (generally only permissible for material that is 80 percent or more sand). Movement of the dredge, scow, and other vessels associated with the Proposed Action would not be expected to increase turbidity above ambient ranges generated by natural hydrologic processes, weather, and existing vessel traffic.

Sediment plumes typically have an increased suspended sediment concentration, and thus elevated turbidity. The degree of sediment re-suspension depends on the material, size and composition of the sediment being re-suspended. Plume size, concentration, and duration also depend on environmental and operational factors. Fine-grained material remains suspended in the water column longer whereas sandy material resettles much faster. Dredging fine silt or clay material typically results in suspended sediment levels of less than 700 mg/L at the surface, and less than 1,100 mg/L at the bottom adjacent to a dredge source (within approximately 300 feet) (LaSalle 1988). Much lower concentrations (50 to 150 mg/L at 150 feet) are expected at locations with coarser sediment. These concentrations would decrease rapidly with distance from the dredging action due to settling, mixing, and dispersion from tides, wind, and waves. Turbidity plumes were measured during clamshell dredging in Oakland Harbor and Richmond Inner Harbor, located in Central San Francisco Bay, and Redwood City Harbor, located in the South San Francisco Bay (USACE 2015). Sediment in these channels ranges from very fine silt to sandy-silt. The purpose of the turbidity monitoring was to determine if dredging and/or overflowing of scows exceeded water quality certification limits of 50 Nephelometric Turbidity Unit (NTU) or no greater than 10 percent of baseline NTU if the baseline was found to be greater than 50 NTU at the point of compliance (500 feet downstream of dredging). Exceedances of the water quality turbidity standards occurred periodically for all channels, with most exceedances occurring in the Richmond Inner Harbor, where sediment is very fine-grained.

Turbidity plumes from the SBRF dredging would be localized and affect a relatively small area in relation to surrounding Suisun Bay waters. In the naturally turbid Bay, these elevated turbidity plumes would also be temporary, quickly diluted to near or within background particulate concentrations (USACE and SFRWQCB 2015). While suspension of sediments can release contaminants into the water column if they are bound to the sediments, sediment sampling and analysis was performed to evaluate the characteristics of the sediment to be removed in the dredging areas (see “contaminants in dredge or fill material” section below). The chemical analyses and benthic toxicity test results indicated the material is suitable for unconfined aquatic disposal in the Bay which suggests this material is largely clean and would not significantly expose contaminants the water column when resuspended.

To minimize increases in turbidity during dredging, the Proposed Action would avoid overflowing from scows. No long-term changes to turbidity or suspended sediments would occur

from the Proposed Action. Moreover, placement of dredged materials at upland wetland restoration beneficial reuse sites could result in indirect benefits to turbidity by increasing sediment retention, filtration, and shoreline stabilization at these locations over the long-term. Given this, the Proposed Action alternative would have less than significant turbidity impacts.

The No-Action Alternative would result in no change to turbidity or suspended particulates from existing conditions.

☑ **Substrate:**

The majority of the substrate in the San Francisco Estuary is associated with mobile sediments, which range in size from clay (0.001 to 0.0039 millimeters [mm]) to silt (0.0039 to 0.0625 mm) to sand (0.0625 to 2 mm) to gravel (2 to 64 mm) and cobble (64 to 256 mm), and also includes deposits of shell fragments. All of these substrates can be moved and are sorted by tidal currents as they move through the estuary, as it takes more tidal current to move larger particles. Sandy subtidal substrate is generally limited to the deep-water channels of San Francisco Bay, and around the Golden Gate Bridge where current velocities are higher (SCC, 2010). Mud deposits (including silt and clay) make up the majority of the subtidal substrate in the San Francisco Estuary. Within the Proposed Action area and the vicinity, the primary substrate types include mud (primarily at Area 1) and some sandy sediments (at the pass channel) as well as hard substrates of the piers at Area 1.

Dredging associated with the Proposed Action would directly remove and physically disturb sediment substrate in the dredging footprints of Area 1 and the Pass Channel. Approximately 250,000 CY of sediment substrate covering an area of 26 acres would be disturbed total across both these sites. Sediment sampling and analysis was performed to evaluate the characteristics of the sediment to be removed and that would remain exposed after dredging (see "contaminants in dredge or fill material" section below) and the chemical analyses and benthic toxicity tests indicated the material is suitable for unconfined aquatic disposal in the Bay. While the Proposed Action would place material at an upland beneficial reuse site, these results indicate that the material remaining after removal of shoaled sediments in the dredging footprint is largely clean and would not significantly expose contaminants to the water column.

Substrate in the aquatic environment also provides habitat for benthic invertebrate communities. As discussed further in the "Aquatic Habitat and Species" section below, dredging would directly affect benthic communities through physical disruption and direct removal of benthic organisms along with sediment substrate, resulting in the potential loss of most, if not all, organisms in the dredged footprint. However, this would be a temporary effect and disturbed areas are usually recolonized within one-month to one-year by benthic organisms (USACE 2015). Mollusks and other invertebrates also utilize hard substrates such as the pilings that support the SBRF pier in Area 1. This substrate would not be directly impacted by dredging activities, but species attached to this substrate could be indirectly affected by increased turbidity from dredging. This indirect impact would be limited to dredging at Area 1 and would be minor and expected to dissipate quickly as described in the turbidity section above.

Given the minor indirect effects to hard substrate in Area 1 and that the direct effects of the Proposed Action on sediment substrate would cover a relatively small area compared to the greater Suisun Bay, would not expose sediments with elevated levels of contaminants, and

recovery of substrate dwelling organism would occur over a short to medium time period, the substrate effects of the Proposed Action would be less than significant.

The No Action Alternative would not involve dredging and would not remove sediment substrate. Additional sediment would be expected to continue shoaling over time in the areas in the proposed dredging footprints and the substrate would become less deep.

☑ **Contaminants in Dredge or Fill Material:**

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. Sediment sampling and analysis of Area 1 and the Pass Channel were performed in 2022. Sampling of the proposed sediment to be removed occurred during January 4, 5, 10 and 11, 2022. A total of 34 sediment cores were taken and composited into 8 composite samples (see figures 8 and 9 below which show the 8 areas within which cores were combined to create composite samples). Sediment was also collected at the in-bay SF-10 disposal site as reference sediment in the biological testing. Testing included chemical, biological and sediment bioaccumulation analysis to determine if the material would be suitable for unconfined aquatic disposal, ocean disposal, and/or for beneficial reuse.

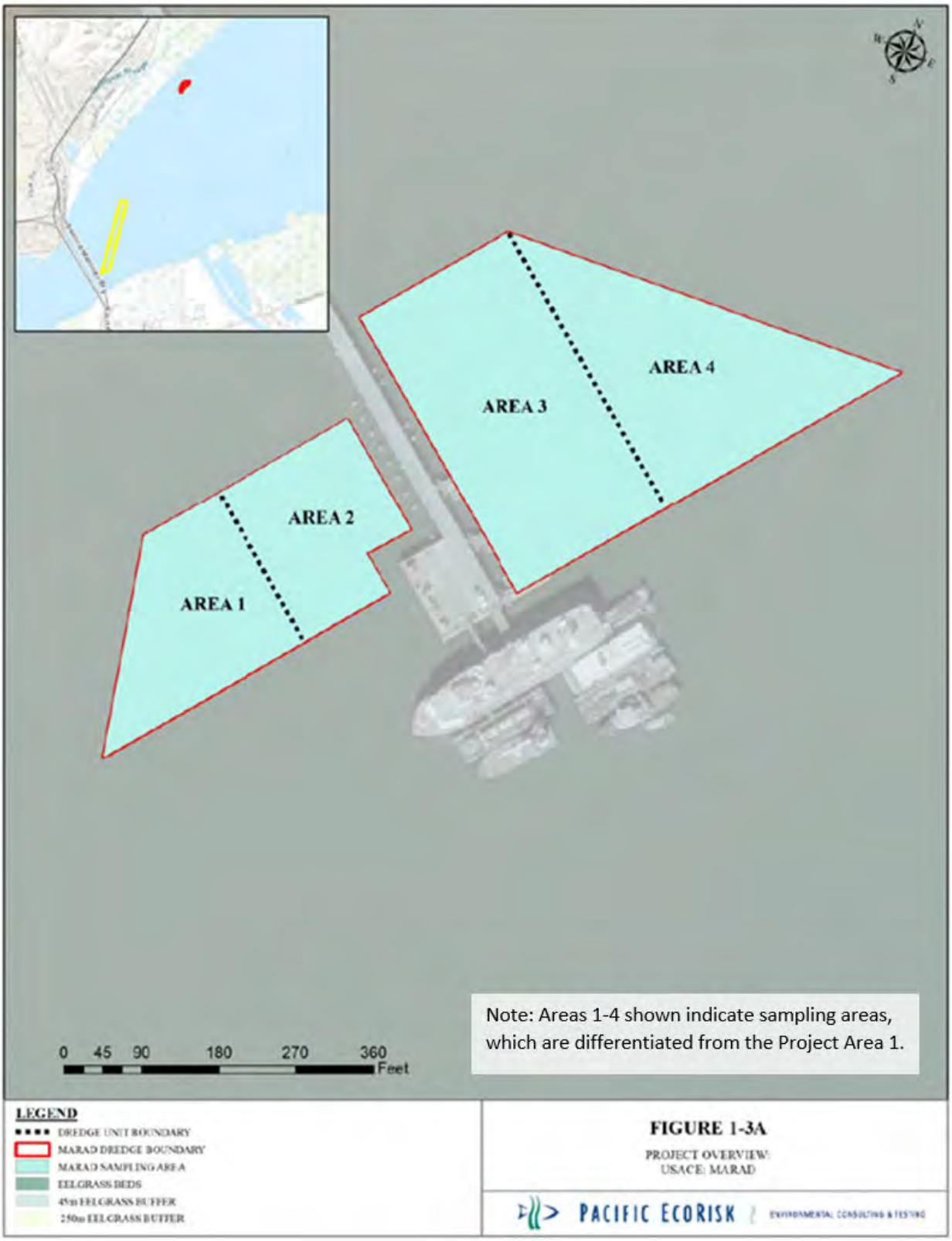

Figure 8: Sampling locations for Area 1

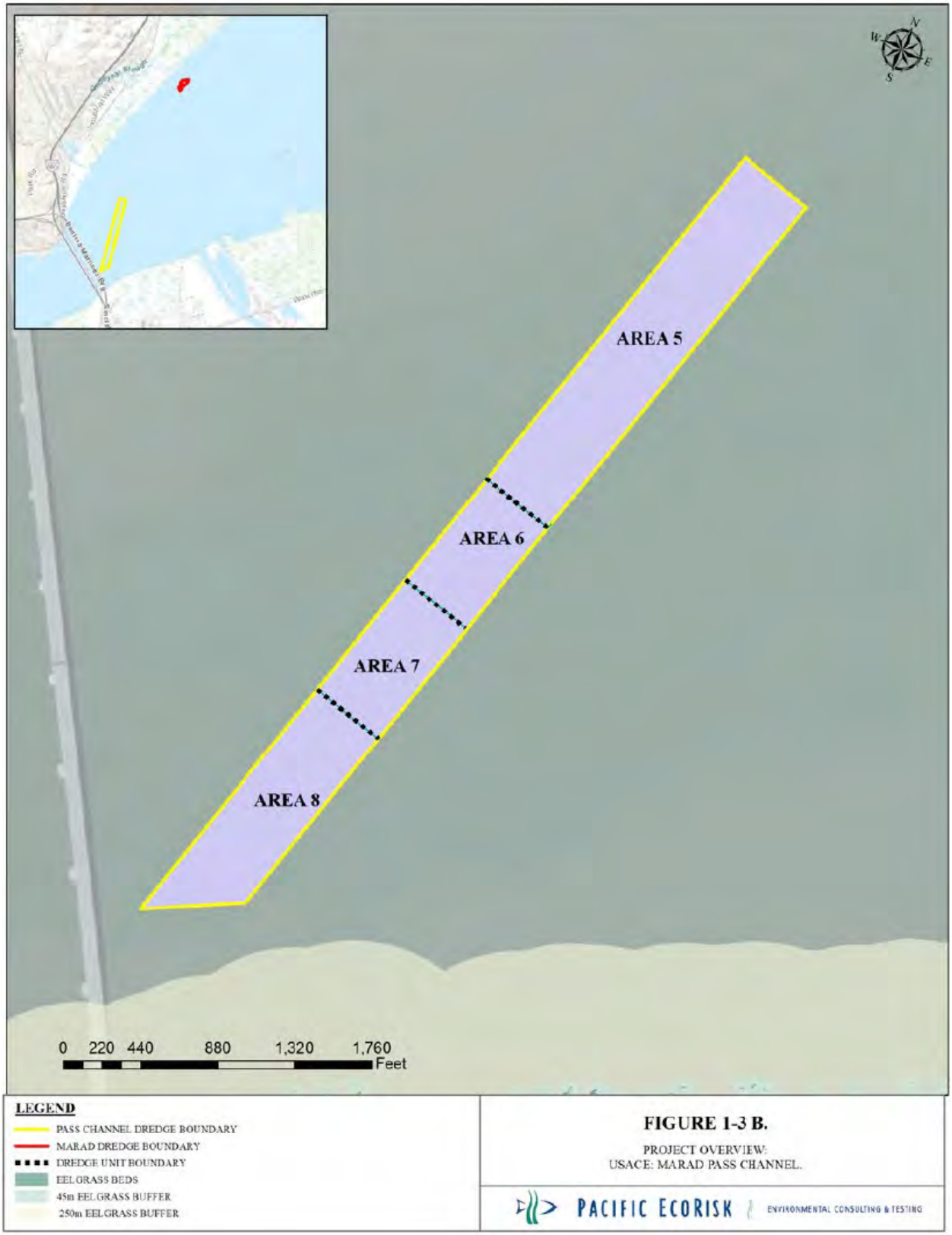

Figure 9: Sampling locations for the Pass Channel.

The full set of analytical chemistry results were provided to USACE on March 3, 2022 and a summary of the chemical and biological evaluations for each potential placement option is included below. Total solids in all the composited samples ranged from 46- 78% with Total Organic Carbon concentrations ranging from 0 – 4%. Particle size ranged from 3% - 100% fines (silt and clay) with total sand and gravel ranging from 0 – 97%. Based on the chemical analyses, USEPA requested that the bioaccumulation tissue analysis be completed for dioxins.

Unconfined Aquatic Disposal at In-Bay Sites. One or more analyte(s) measured in six of the eight composite sediments were above the San Francisco Bay ambient concentrations. Analytes measured in two of the composite samples were below San Francisco Bay ambient concentrations. Benthic toxicity tests indicated that none of the measured compounds were biologically available to cause toxicity in the 10-day sediment tests. The narrative Water Quality Objective (WQO) was met for the sediment elutriate tests. Based on these results, the MARAD SBRF's sediments for each area would be considered suitable for unconfined aquatic disposal (SUAD) at in-Bay placement sites.

Unconfined Aquatic Disposal at the SF Deep Ocean Disposal Site (SF-DODS). One or more analyte concentrations were above SF-DODS reference database concentrations in seven of the eight composite sediments. Analytes measured in one of the composites were below SF-DODS reference database concentrations. Benthic toxicity tests indicated that none of the measured compounds were biologically available to cause toxicity in the 10-day sediment tests. In addition, the narrative WQO was met for each of the sediment elutriate tests. Comparison of bioaccumulation test tissue total dioxins/furans concentrations for each area sediment were compared to available toxicity reference values. The tissue concentrations for compounds for which a reportable value was available were below invertebrate "effects" concentrations. The results of these analyses also indicated that the tissue concentrations were below US Food and Drug Administration action levels. Based on these results, the MARAD SBRF's sediments for each area would be considered SUAD at SF-DODS.

Placement at Upland Beneficial Reuse Sites. None of the analytes exceeded the CRRP or MWRP cover screening criteria. Benthic toxicity tests indicated that none of the measured compounds were biologically available to cause toxicity in the 10-day sediment tests. The results of the Modified Elutriate (MET) analyses indicated that none of the compounds evaluated exceeded MWRP screening criteria. The MET toxicity tests met the narrative WQO for toxicity. Based on the composite sediment data, the MARAD SBRF's sediments for each area would be considered suitable for placement at the CRRP or MWRP dredged material beneficial reuse sites.

In summary, all the material proposed to be dredged from this project is suitable for placement at an in-bay site (SF-10, SF-11), SF-DODS, MWRP and CRRP. An official suitability determination from the Dredged Material Management Office is expected on June 1, 2022.

Because the sediments to be dredged from Area 1 and the Pass Channel were determined to be suitable for in-Bay, Ocean, and upland beneficial reuse at available wetland restoration sites, the sediments are considered to be largely clean and would not pose a significant impact associated with contaminants in dredge material. While the material was evaluated to be suitable for multiple placement locations, the Proposed Action would involve placement of the dredged

material at an upland beneficial reuse site which would result in a beneficial contribution to wetland restoration that benefits listed species.

The No Action Alternative would not involve dredging or fill and therefore would have no effect associated with contaminants in such material. However, the No Action Alternative would also not contribute to wetland restoration.

☑ **Currents, circulation or drainage patterns:**

Net circulation patterns in San Francisco Bay are influenced by Delta inflows, gravitational currents, and by tide- and wind-induced horizontal circulation (LTMS, 1998). Except during periods of heavy outflows from the Delta, the dominant currents of Suisun Bay are those associated with rising (flood) or falling (ebb) tides. In addition to strong tidal currents, strong winds and shallow depths result in thorough mixing and well-oxygenated waters.

Dredging and placement activities associated with the Proposed Action are not expected to 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 8 feet plus two feet of overdepth for Area 1 and 32 feet plus two feet of overdepth for the Pass Channel, which would restore the depth of those areas to approximately match the surrounding bathymetry. As a result, this increase in channel depth would not be expected to change currents or circulation and impacts would be less than significant.

The No-Action Alternative would result in no change to currents, circulation, or drainage patterns from existing conditions.

☐ **Mixing zone (in light of the depth of water at the disposal site; current velocity, direction and variability at the disposal site; degree of turbulence; water column stratification; discharge vessel speed and direction; rate of discharge; dredged material characteristics; number of discharges per unit of time; and any other relevant factors affecting rates and patterns of mixing):**

N/A – Dredge material removed during the Proposed Action will be placed at the Montezuma Wetlands upland site for beneficial reuse, not in an aquatic environment. Therefore, no impacts to the mixing zone at an aquatic disposal site would occur with the Proposed Action. The No Action Alternative would also have no effect on the mixing zone.

☐ **Flood control functions:**

N/A – There are no resources providing flood control functions in the Proposed Action area.

☑ **Storm, Wave, and Erosion Buffers:**

There are no resources providing storm, wave, or erosion buffers in the proposed dredging areas or their vicinity so the Proposed Action would not directly impact any such buffers. However, the Proposed Action would involve placement of dredge material at a wetland beneficial reuse site in the San Francisco Bay. Wetlands can provide storm and wave protection because they slow down water from storm surges and waves. Therefore, the Proposed Action would have an indirect benefit by contributing to the creation of such buffers at the margins of the Bay.

The No Action Alternative would have no impacts or beneficial effects on storm, wave, and erosion buffers.

☑ **Erosion and Accretion Patterns:**

Under the Proposed Action, dredging would remove sediment that has accumulated since the extension of the SBRF Facility Pier (circa 1994) and in the pass channel area. In 2016, MARAD SBRF requested USACE conduct a study to determine whether sand placement at SF 16 was contributing to increased rates of shoaling experience in the pass channel (the study did not examine Area 1 near the SBRF pier). The study determined that placement at SF 16 was not responsible for the increased shoaling. In fact, sediment deposition was trending upstream towards SF 16. While the study did not fully determine the source of the increased shoaling, two contributing factors were identified: the newly constructed eastern span of the Carquinez bridge (2007), and the reduced output/flow of water feeding from the Sacramento-San Joaquin Delta into the Carquinez strait.

Although the Proposed Action alternative could result in minimal, localized erosion in the form of sloughing in the dredging footprints due to the disturbance of sediments, it would not alter drivers of erosion or accretion via construction of new facilities or changes to the flow of water or sediment into the Bay. Thus, the effect of the Proposed Action on overarching patterns of erosion and sediment accumulation in the Bay would be negligible.

The No-Action Alternative would result in no change to erosion or accretion patterns in the Proposed Action area or the greater Suisun Bay.

☐ **Aquifer recharge:**

N/A – The Proposed Action areas do not provide aquifer recharge and therefore there is no potential for the Proposed Action or No Action Alternatives to affect aquifer recharge.

☐ **Base flow:**

N/A – The Proposed Action areas do not contain streams and therefore there is no potential for the Proposed Action or No Action Alternatives to affect base stream flow.

☐ **Water supplies, conservation:**

N/A – No water supply or water conservation resources exist in the Proposed Action areas and the Proposed Action does not involve excessive use or conservation of water. No effect to these resources would occur under the proposed or No Action Alternatives.

☐ **Geology, Soils, and Mineral Resources:**

N/A – The Proposed Action would involve dredging to a maximum depth of 32 feet plus two feet of overdepth. This depth would be consistent with surrounding bathymetry and is not sufficient to encounter geologic resources underlying San Francisco Bay. No effects to soils beyond those already described in relation to substrate and contaminants in dredge or fill material would be expected from the Proposed Action. There are no mineral resources known to occur in the Proposed Action areas. No effect these resources would occur under either the proposed or No Action Alternatives.

☑ **Air Quality:**

Background

Regulation of air pollution is achieved through both national and State ambient air quality standards and emission limits for individual sources of air pollutants. As required by the federal Clean Air Act, the U.S. Environmental Protection Agency (EPA) has identified criteria pollutants and has established the National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. These pollutants are called "criteria" air pollutants because standards have been established for each of them to meet specific public health and welfare criteria, as well as thresholds to determine if a project is in compliance. The following criteria air pollutants have been classified for the project area: ozone (O_3)(Non-Attainment -marginal); carbon monoxide (CO)(Maintenance-Moderate); nitrogen dioxide (NO_2)(Attainment-Maintenance); sulfur dioxide (SO_2)(Attainment-Unclassifiable); particulate matter less than 10 microns in diameter (PM_{10})(Attainment-Maintenance); and particulate matter 2.5 microns or less in diameter ($PM_{2.5}$)(Attainment-Unclassifiable) (EPA 2018). The MARAD SBRF area is a federal project, and in accordance with the Clean Air Act, the project must demonstrate conformance to federal air quality standards and thresholds, as shown in the below table.

Table 3-1. NAAQS & Federal Thresholds for Criteria Air Pollutants

Criteria Pollutant [Federal Attainment Status]	**NAAQS**	**Federal De Minimus Thresholds** (Tons/Year)
Reactive Organic Gases [Nonattainment-marginal]	N/A	100
Nitrogen Oxides (NO_x) [Attainment-Maintenance]	.05 ppm (Annual) .10 ppm (1-Hour)	100
Ozone (O_3) [Nonattainment-Marginal]	.07 ppm (Annual)	100
PM_{10} [Attainment-Maintenance]	150 µg/m^3 (24-Hour)	100
$PM_{2.5}$ [Attainment-Unclassifiable]	12 µg/m^3 (Annual) 35 µg/m^3 (24-Hour)	100
Sulfur Dioxide (SO_2) [Attainment-Unclassifiable]	.03 ppm (Annual) .14 ppm (24-Hour)	100
Sulfate	N/A	-
Carbon Monoxide (CO)	9 ppm (Annual)	100

Criteria Pollutant [Federal Attainment Status]	NAAQS	Federal De Minimus Thresholds (Tons/Year)
[Maintenance-Moderate]	35 ppm (1-Hour)	
Hydrogen Sulfide (H_2S)	N/A	-
Vinyl Chloride	N/A	-

Air Quality Analysis

Based on the Federal emissions thresholds established by EPA using NAAQS, an emissions inventory and air quality analysis was performed to determine if project emissions would exceed de minimus thresholds and therefore require a general conformity analysis.

The results of the air quality analysis for the Proposed Action alternative are presented below in Table 4-2. Based on this process for the emissions inventory and air quality analysis, it was determined that the emissions associated with the alternative are below applicable Federal de minimus thresholds, and thus, the project would not cause a significant impact to air quality nor a general conformity analysis. For the full air quality analysis please see Appendix A8.

Table 3-2. Air Quality Analysis Results

	ROG	CO	NOx	SOx	PM10	PM2.5
Peak Daily Emissions Total (lbs/day)	30.32	27.16	169.70	46.73	18.64	16.14
Yearly Project Emissions Totals (tons/year)	1.27	1.14	7.13	1.96	0.78	0.68
EPA NAAQS Yearly Significance Thresholds (tons/year)	100.00	100.00	100.00	100.00	100.00	100.00
Project Emissions Exceed Federal Yearly Threshold?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

☑ **Climate Change (Greenhouse Gas Emissions):**

Current Conditions

Suisun Bay is classified as warm and temperate, with an average temperature of 56.4 degrees F and 22.9 inches of annual average rainfall. The winters are rainier than the summers and the least amount of rainfall occurs in July, while the greatest amount of precipitation occurs in February, with an average of 4.6 inches. Temperatures are highest on average in September, at around 62.7 degrees F, with the lowest average temperatures in the year occurring in January when it is around 49.2 degrees F (Climate-data.org, 2022).

Background

Recently the Council on Environmental Quality (CEQ) issued a final rule which restores the requirement that federal agencies evaluate all the relevant environmental impacts of the decisions they are making, including those associated with climate change (Whitehouse 2022). Climate change as a broad science can encompass air, water, and biological resources, though the root cause has been attributed by the majority of the scientific community to atmospheric carbon dioxide concentration and other greenhouse gases (GHGs) such as methane and oxides of nitrogen, collectively referred to as GHGs (Mora 2018). In order to more easily make

comparisons for GHGs released by different projects, various GHGs such as carbon dioxide, methane, and oxides of nitrogen are often combined into carbon dioxide equivalents (CO_{2eq}), by using the global warming potential of each gas as it relates to carbon dioxide, as found in 40 CFR Part 98, Table A-1 "Global Warming Potentials". In this way, all emissions from a given project could be converted to CO_{2eq} and used for comparing to a given threshold to determine whether GHG project emissions would represent a significant impact. Although the scientific community largely agrees on GHGs as a major driver of climate change and how to use CO_{2eq} to compare the total GHG emissions from various projects, CEQ and many air quality management districts have not yet issued a threshold for determining whether mobile source emissions from a project would result in a significant impact. Therefore, until a numeric threshold is established a qualitative assessment will be used to determine if the emission of CO_{2eq} from the project constitutes a significant impact.

GHG Emissions Inventory & Qualitative Assessment

Carbon emissions would only be increased temporarily during the project from dredge equipment emissions. Currently the Council on Environmental Quality does not have any thresholds established for determining if the greenhouse gases to be released would constitute a significant impact. However, these emissions would be very small in comparison to the total constant output of the surrounding urban area, such as San Francisco County, which has an output measured in millions of metric tons per year (UCB 2020). Therefore, given this qualitative analysis, the alternative and the No Action Alternative would not have a significant measurable adverse effect on the local and/or global climate. For the full analysis please see Appendix A8.

Table 3-3. GHG Emissions Inventory Results

Total CO2eq (lbs/day)	19345.47
Total Project CO2eq (Tons)	812.51
Council on Environmental Quality Yearly GHG Threshold (CO2eq) (Tons)	None
Project Exceeds Council on Environmental Quality Yearly GHG Threshold?	**No**

4.2 Biological Environment

☑ **Terrestrial Habitat and Species:**

The Proposed Action would involve dredging and transport of material to an upland wetland restoration site, CRRP or MWRP, for beneficial reuse to restore wetlands. Dredging actions associated with the Proposed Action would occur in the aquatic environment and therefore would not affect terrestrial habitat or species that solely occur in the terrestrial environment. Potential impacts from dredging on species that utilize both terrestrial and aquatic environments, such as shorebirds, are discussed in the "Aquatic habitat and species" section below. Delivery of material to upland wetland restoration sites for beneficial reuse would beneficially affect

terrestrial wetland habitat by increasing habitat quantity and/or quality over the long-term. This would also provide benefits to species that utilize these habitats such as California Ridgway's (clapper) rail (*Rallus obsoletus obsoletus*), Salt Marsh Harvest Mouse (*Reihrodontomys raveiventris*) and other species. For example, nearby Suisun Marsh supports more than 221 bird species, 45 terrestrial animal species, 16 different reptilian and amphibian species, and more than 40 fish species.

The No Action Alternative would have no effect on terrestrial habitats or species.

☑ **Aquatic Habitat and species, including special aquatic sites (wetlands, mudflats, coral reefs, pool and riffle areas, sanctuaries):**

The Proposed Action areas include open waters and aquatic substrates in Suisun Bay that serve as habitat for aquatic wildlife such as fish, marine mammals, invertebrates, and birds. Effects to special status species and habitats are discussed in the following section, Therefore, this section focuses on common (non-special status) species and habitats. No special aquatic sites (mudflats, coral reefs, pool/riffles, or sanctuaries) occur in the action area. However, the Proposed Action would include delivery of material to an upland wetland restoration site for beneficial reuse as described in the "Terrestrial Habitats and Species" section above.

Pelagic (open water) habitat and species:

Pelagic communities occupy the open waters of the Bay above the substrate. The Goals Report (Goals Project, 1999) subdivides open bay habitats into two habitat subunits: deep bay and shallow bay. Deep bay habitat is defined as those portions of San Francisco Bay deeper than 18 feet below MLLW. Shallow bay, which includes the vast majority of San Francisco Bay, is defined as that portion of San Francisco Bay between 18 feet below MLLW and MLLW.

Suisun Bay represents a brackish tidal environment and by definition, its subtidal habitats are tidally influenced but continuously submerged. This habitat supports phytoplankton such as dinoflagellates, diatoms, and cyanobacteria (blue-green algae), which are free-floating and serve as a primary food source for zooplankton, which in turn provide food for fish. Within Suisun Bay, phytoplankton become concentrated within the estuarine turbidity maximum or entrapment zone, where variations in tidal inflow of saline water along the bottom from San Francisco Bay, interact with bathymetry and freshwater outflow on the surface from the Delta, resulting in turbulent mixing, sinking, and resuspension of phytoplankton. In shallow subtidal areas the dominant invertebrate species include a bivalve (*C. amurensis*), a polychaete (*M. viridis*), and an amphipod species (*Monocorophium alienense*) (NMFS, 2007). Shallow open bay habitat may function as a feeding area for Pacific herring (*Clupea pallasii*), northern anchovy (*Engraulis mordax*), bat ray, and jacksmelt (*Atherinopsis californiensis*), as well as at least 40 other species of fish, crabs, and shrimp. Spawning habitat for Pacific Herring occurs on hard substrates and eelgrass (*Zostera marina*) along the shallow margins of the Bay. Shallow bay habitat is also a nursery area for juvenile halibut and sanddabs *(Citharichthys stigmaeus*), shiner perch (*Cymatogaster aggregata*) and other fishes. Anadromous fish may use shallow open bay waters as migratory pathways. Shallower waters also provide important avian foraging habitat for diving bird species. Marine mammals may also be present, such as Pacific harbor seals.

Deep pelagic waters may provide habitat to free-swimming invertebrates such as California Bay shrimp (*Crangon franciscorum*), and fishes such as Brown Rockfish (*Sebastes auriculatus*),

halibut, sturgeon (*Acipenser* sp.), and Longfin Smelt. Deepwater habitat may also serve as a migratory pathway for anadromous fish. Waterbirds such as surf scoter (*Melanitta perspicillata*), scaups (*Aythya* spp.), brown pelican, and terns (*Sterna* spp.) may roost or loaf in these open waters, particularly in areas protected from strong winds and waves. Marine mammals, such as Pacific harbor seal and California sea lion, also use pelagic waters of the Bay.

Benthic habitat and species:
Benthic habitat bottom sediments in the proposed dredging areas and associated biota. In subtidal areas, the predominant benthic habitat in San Francisco Bay is composed of unconsolidated soft sediment with a mixture of mud, silt, and clay; and lesser quantities of sand, pebbles, and shell fragments (NOAA, 2007). Benthic habitat in the proposed SBRF dredging action area also includes submerged hard substrates such as the pier in Area 1. Benthic communities are largely composed of macro-invertebrates, such as mollusks and crustaceans. Subsurface deposit feeding worms (polychaetes and oligochaetes) also inhabit these areas. These organisms inhabit the bottom substrates of aquatic habitats and play a vital role in maintaining sediment and water quality. They are also an important food source for bottom-feeding fish, invertebrates, and birds. Suisun Bay channels are dominated by introduced bivalves (*Corbula amurensis* and *Corbicula fluminea*), polychaetes (*Marenzellaria viridis* and *Heteromastus filiformis*), and a small cumacean (*Nippoleucon hinumensis*). Larger mobile benthic invertebrate organisms are also present in San Francisco Bay, such as blackspotted shrimp (*Crangon nigromaculata*), bay shrimp (*Crangon franciscorum*), Dungeness crab (*Metacarcinus magister*), and the slender rock crab (*Cancer gracilis*)

Intertidal habitats and species:
Intertidal habitats fall within the 8-foot vertical range of extreme low to extreme high tides. The proposed Area 1 action area includes the portion of the hard substrates at the pier which are not always submerged and therefore constitute intertidal habitat. These areas that support sparse, patchy growths of green algae (*Ulva spp*., Enteromorpha spp.) and attached epifauna – predominantly barnacles (*Balanus improvises*).

Aquatic Vegetation:
Aquatic flora includes submerged aquatic vegetation (SAV) and various species of algae. Submerged aquatic vegetation includes vascular plants that are adapted for life under water. Estuarine soft bottom habitat is not ideal habitat for most SAV and algae, as fine-grain sediments create complications for organisms that require attachment to the substrate. Most SAV and macroalgae require coarse-grain materials to anchor into or attach to. Algae species typically require higher salinity levels than those found in Suisun Bay, but some species (e.g. *Gracilaria sjoestedtii*, Enteromorpha spp., and Ulva spp.) can adapt to changing salinity levels. Although flexible in their salinity range tolerance, these algae species still require coarse sediments, rocks, or some other stable substrate to attach to (Goals Project 2000).

Eelgrass (*Zostera marina*) is one species of SAV that is capable of anchoring into fine-grain sediments. Eelgrass is an important species because it forms large beds which function as habitat for many invertebrates and a nursery area for juvenile fish. Previous SAV surveys in the San Francisco Bay-Delta did not reveal the presence of eelgrass along the shorelines of Suisun Bay near the project area. Aquatic vegetation survey (Kiewit/Manson 2018) found Sago pondweed and California bulrush in the shallower water landward of the piers within 250 m of the dredging

area. SAV consisting of pondweed (*Stuckenia pectinata* and *Stuckenia filiformis*), however, occurs frequently along Suisun Bay shorelines, and research into the ecological relationships and importance of pondweed SAV in Suisun Bay has only recently begun (Boyer 2011). Areas surveyed within the project footprint were dominated by in-water vegetative communities consisting primarily of California bulrush and pondweed.

Effects to aquatic habitat and species:
Dredging activities have the potential to directly affect aquatic habitat and species through removal and indirectly affect these resources via underwater noise disturbance, changes in water quality characteristics, and increases in turbidity.

Dredging may incidentally remove organisms from the water column along with the dredge material, a process referred to as entrainment. Entrained fish are likely to suffer mechanical injury or suffocation during dredging, potentially resulting in mortality. Although individual fish have the potential to be struck or entrained by a clamshell bucket as it falls through the water column to the channel bottom, the falling bucket would generate a pressure wave around it that would force small fish away from the bucket and result in a low risk of entraining fishes (Reine and Clarke 1998, USACE 2019). Mechanical dredging is also generally accepted to entrain far fewer fish than hydraulic dredging because less water is removed along with the sediment, and no suction is involved.

Dredging would directly also affect benthic habitat and species communities through physical disruption and direct removal of substrate and benthic organisms. However, following sediment-disturbing activities such as dredging, disturbed areas are usually recolonized quickly by benthic organisms (USACE 2015). The species that recolonize first are usually characterized by rapid growth and reproduction rates. Marine benthic invertebrates often colonize disturbed sedimentary habitats via pelagic larvae that settle from the water column. Recovery may be slower in deep water; therefore, there is potential for some temporary loss of habitat and forage to organisms that use deep water areas. Studies have indicated that even relatively large areas disturbed by dredging activities are usually recolonized by benthic invertebrates within 1 month to 1 year, with original levels of biomass and abundance developing within a few months to between 1 and 3 years (USACE 2015). Benthic disturbance associated with the Proposed Action would be spread over different years and, during the in-water work window

Underwater noise generated from dredging activities has the potential to affect fish or marine mammals and cause behavioral changes, neurological stress, and temporary shifts in hearing. The Proposed Action area is an active marine waterway and existing vessel activities produce underwater noise. The most intense sound impacts produced by clamshell dredging are during the bucket's impact with substrate. Reine et al. (2002) found peak sound pressure levels of 124 dB measured 150 meters from the bucket strike location. In comparison, commercial shipping vessels can produce continuous noise in the range of 180 to 189 dB (Reine and Dickerson, 2013). Thus, clamshell dredging would not be expected to exceed ambient levels experienced in the vicinity of the area which includes the nearby Suisun Federal Channel that shipping vessels pass through. Similarly, the transport barges carrying dredge material are not expected to generate underwater noise that is different than existing vessel traffic.

Sediment suspension from mechanical dredging would generate temporary localized turbidity plumes as described in the "Turbidity and Suspended Sediments" section above. These could interfere with the ability of pelagic organisms to receive sunlight, respirate, and find food

(Wilber and Clarke 2001) and could smother benthic invertebrates. However, adult and juvenile fish would be mobile enough to avoid turbidity plumes. Waters in the action areas are also naturally turbid due to resuspension of sediments from wind, waves, tides, and existing vessel traffic so temporary, localized sediment plumes from dredging would be similar to natural short term increases in turbidity. Moreover, the dredging associated with the Proposed Action would occur within the environmental work windows established by the LTMS for the Suisun region (August through November of any given year) in order to avoid impacts of the Proposed Action on the most sensitive life stages of species in the action area.

Suspending sediments can circulate contaminants if they are present in disturbed sediments. Communities of benthic organisms are particularly sensitive to pollutant exposure. This sensitivity arises from the close relationship between benthic organisms and sediments that accumulate contaminants over time, and the fact that these organisms receive prolonged exposure to contaminants because they live in the sediment and filter sediment-laden water. However, as described in the "Contaminants in dredge or fill material" section above, the material to be dredged from Area 1 and the Pass Channel was sampled and tested and determined to be suitable for in-Bay, Ocean, and upland beneficial reuse, therefore the sediments are considered to be largely clean and would not pose a significant impact associated with contaminants in dredge material. Additionally, water quality impact minimization measure such as prohibiting overflow and requiring a spill prevention plan would help minimize potential impacts to species and habitats from suspended sediments or contaminants entering the water.

Given the Proposed Action would involve mechanical dredging within the established LTMS work window to avoid sensitive species in Suisun Bay (August 1 to November 30), would split dredging at area 1 and the pass channel over different years allowing for benthic recolonization to start in one area before the other is dredged, would include minimization measure to protect water quality, and would occur in an area with active vessel traffic that produces underwater noise similar to that of a clamshell dredge, the Proposed Action would have temporary impacts to aquatic species and habitats that are less than significant.

The No Action Alternative would not involve dredging and therefore would not affect aquatic species or habitats.

☑ **Special Status Species and Habitats:**

The federal Endangered Species Act (ESA) protects threatened and endangered species and their designated critical habitat from unauthorized take. Section 9 of the ESA defines take as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." In accordance with Section 7 of the ESA, federal agencies are required to consult with the USFWS (United States Fish and Wildlife Service) and/or NMFS (National Marine Fisheries Service) on actions may affect listed species to ensure that any action authorized, funded, or carried out by them is not likely to jeopardize threatened or endangered species, or result in the destruction or adverse modification of designated critical habitat. Federally-listed threatened or endangered species, or designated critical habitats that have the potential to occur in the action area and may be affected by the Proposed Action include Delta Smelt (*Hypomesus transpacificus)*, Green Sturgeon (*Acipenser medirostris*), Central Valley Steelhead (*O. mykiss*), Sacramento River winter-run Chinook (*O. tshawytscha*), and Central Valley spring-run Chinook (*O. tshawytscha*). The Central California Coastal Steelhead (*O. mykiss*), federally listed as threatened, also has the potential to occur in the

action area and may be affected by the Proposed Action but does not have any designated critical habitat occurring within the project area.

Additionally, the subtidal waters and substrates of Suisun Bay help to sustain a number of commercially important fisheries, and as a result have been designated as Essential Fish Habitat (EFH) under three Fishery Management Plans, including those for Pacific Coast Salmon, Pacific Coast Groundfish, and Coastal Pelagic Species (Pacific Fishery Management Council 1998, 2011a–c, 2012). EFH is defined under the Magnuson – Stevens Fishery Conservation and Management Act (MSA) as those waters (i.e., aquatic areas and associated physical, chemical, and biological properties) and substrate (i.e., sediments, hardbottom, structures underlying the waters, and associated biological communities) necessary to fish for spawning, feeding, or growth to maturity. In accordance with the MSA, federal agencies are required to consult with NMFS on Proposed Actions authorized, funded, or undertaken by the agency that may adversely affect EFH for fish species covered under a fisheries management plan (FMP). NMFS is required to comment and provide conservation recommendations for any federal or state activity that could impact EFH.

These listed species and special status habitats are described further below and potential impacts to these species from the Proposed Action are evaluated. The MARAD SBRF has determined that the Proposed Action may affect, but is not likely to adversely affect listed species under the purview of NMFS and USFWS. An informal consultation has been initiated with the services, an informal consultation letter documenting the determination will be included in the Appendix along with the final EA. The MARAD SBRF has also determined that the Proposed Action may adversely affect EFH in the action area. Consultation with NMFS on EFH has been initiated in conjunction with ESA consultation. An EFH assessment has been prepared and the informal consultation letter documenting the determination will also be included in the Appendix along with the final EA.

Delta Smelt:

The delta smelt is a euryhaline species (able to tolerate a wide range of salinity), federally listed as threatened (USFWS, 1993), endemic to the San Francisco Bay and Sacramento-San Joaquin River Delta. Its range is confined to the fresh and low salinity waters of the Delta and Suisun Bay; however, periods of high outflow may move fish westward into San Pablo Bay.

Adults begin migrating north to the tributaries with slower velocities and salinities of Suisun Bay and the Delta in September and October. Spawning takes place from December through July, but the peak is from mid-April to May. Adults spawn in shallow sloughs and backwaters with moderate flows and clean hard substrates where the fertilized eggs adhere by means of a stalk to any clean hard substrate. Hatching occurs in 9 to 13 days and the semi-buoyant larvae remain near the bottom until the development of the fins and swim bladder allow them to swim up into the water column. Young smelt develop quickly and reach adult size within the year. Most delta smelt spawn as 1-year-olds, although 2-year-old spawners are occasionally observed.

Critical habitat includes all areas of water and submerged lands below ordinary high water and the entire water column bounded by and contained in Suisun Bay (including the contiguous Grizzly and Honker bays); the length of Goodyear, Suisun, Cutoff, First Mallard, and Montezuma Sloughs; and the existing contiguous waters contained within the Delta.

Chinook Salmon:
The Chinook Salmon is the largest and least abundant species of Pacific salmon. Like all salmonids, the Chinook Salmon is anadromous, but unlike steelhead, Chinook Salmon are semelparous (i.e., they die following a single spawning event). Chinook Salmon have three distinct runs, referred to as Evolutionarily Significant Units (ESUs), that use San Francisco Bay. These ESUs are distinguished by the seasonal differences in adult upstream migration, spawning, and juvenile downstream migration. The Sacramento River winter-run ESU is listed as an endangered species under the federal ESA. The Central Valley spring-run ESU is listed as threatened under the federal ESA.

In San Francisco Bay, Chinook migrate through the Golden Gate, Central Bay, North Bay, San Pablo Bay, and Suisun Bay, and into the Sacramento River. Out-migrating juveniles follow the same path in reverse. Studies conducted by NMFS (2001) and CDFW (California Department of Fish and Wildlife (Baxter et al. 1999) indicate that the primary migration corridor is through the northern reaches of the Central Bay (Raccoon Straight and north of Yerba Buena Island).

Sacramento River winter-run Chinook ESU enter the Bay between November and May or June. Their migration into the Sacramento River begins in December and continues through early August, with the majority of the run occurring between January and May and peaking in mid-March (Hallock and Fisher 1985). They are suspected to forage in Central Bay shallow water areas (less than 30 feet deep) during in-migration and out-migration transits.

While migrating through San Francisco Bay, the Central Valley spring-run Chinook ESU has a similar life history to the Sacramento winter-run Chinook ESU. The Central Valley spring-run Chinook ESU are primarily present during in-migration and out-migration periods and are known to forage in Central Bay shallow water areas.

Steelhead:
Steelhead are anadromous and there are two distinct population segments (DPSs) known to occur in San Francisco Bay: the Central California Coastal (CCC) DPS (federally listed as threatened), and the Central Valley DPS (federally listed as threatened). The CCC steelhead DPS occupies a large area that includes the drainages of San Francisco, San Pablo, and Suisun Bays eastward to Chipps Island, at the confluence of the Sacramento and San Joaquin Rivers. The Central Valley Steelhead DPS includes the Sacramento and San Joaquin Rivers and their associated tributaries. No CCC steelhead designated critical habitat occurs in the project area.

Typically, individuals migrate to freshwater for spawning after spending anywhere from 1 to 4 years in marine habitats. Steelhead typically enter the Bay in early winter. Studies conducted by NMFS (2001) and CDFW (Baxter et al. 1999) indicate that the primary migration corridor is through the northern reaches of the Central Bay (Raccoon Straight and north of Yerba Buena Island). Juvenile steelhead travel episodically from natal streams during fall, winter, and spring high flows, with peak migration occurring in April and May (Fukushima and Lesh 1998).

Green Sturgeon:
Green Sturgeon are the most widely distributed members of the sturgeon family and the most marine-oriented of the sturgeon species, entering rivers only to spawn. The Green Sturgeon migrate through Suisun Bay between freshwater, estuarine, and nearshore marine habitats. The southern DPS spawns only in the Sacramento River system and is federally listed as threatened.

Adult Green Sturgeon migrate into freshwater beginning in late February, with spawning occurring March through July, with peak activity in April and June. After spawning, juveniles remain in fresh and estuarine waters for 1 to 4 years, and then begin to migrate out to sea (Moyle et al. 1995). According to studies, Green Sturgeon adults begin moving upstream through the Bay during winter (Kelly et al. 2003). During periods of migration, adults occur throughout the Bay and Delta.

Juvenile distribution and habitat use are still largely unknown, but Juveniles are presumed present year-round in all parts of the San Francisco Bay Estuary in low densities (Israel and Klimley 2008). As a result, Green Sturgeon are potentially present throughout all marine portions of the Proposed Action area at any time of the year.

Designated Critical habitat for the Green Sturgeon includes the Sacramento River, the Delta, and Suisun and San Pablo Bays, along with all of the San Francisco Bay below the higher high-water elevation. This includes all of the Proposed Action areas.

EFH:
The Pacific Coast Groundfish FMP covers the groundfish fishery in California, Oregon, and Washington, and protects habitat for dozens of species of sharks and skates, roundfish, rockfish, and flatfish. The extent of Pacific Coast Groundfish EFH includes all waters and substrates with depths less than or equal to 3,500 meters (approximately 11,500 feet) to Mean Higher High Water (MHHW) level, or the upriver extent of saltwater intrusion in estuaries The entirety of the San Francisco Bay Estuary below MHHW is designated as EFH for Pacific Coast Groundfish.

The Coastal Pelagic FMP protects and manages northern anchovy, Pacific sardine, Pacific (chub) mackerel, jack mackerel, market squid, and all krill species that occur in the West Coast exclusive economic zone. Coastal Pelagic EFH includes all marine and estuarine waters from the shoreline along the coasts of California, Oregon, and Washington; offshore to the limits of the exclusive economic zone; and above the thermocline, where sea surface temperatures range between 10 and 26 degrees Celsius. The entirety of the San Francisco Bay Estuary below MHHW is designated as EFH for Coastal Pelagic Species.

The Pacific Coast Salmon FMP guides the management of commercial and recreational salmon fisheries off the coasts of Washington, Oregon, and California, and includes Chinook Salmon (*Oncorhynchus tshawytscha*) and Coho Salmon (*O. kisutch*). Pacific Coast Salmon freshwater EFH includes all rivers or creek currently or historically occupied by Chinook Salmon or Coho Salmon. Estuarine and marine areas such as San Francisco Bay are also included in this essential fish habitat designation. In estuarine and marine areas, Pacific Coast Salmon EFH extends from the nearshore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone offshore of California, north of Point Conception. The FMP also defines five Habitat Areas of Particular Concern for the Pacific Coast Salmon essential fish habitat: complex channels and floodplain habitats, thermal refugia, spawning habitat, estuaries, and marine and estuarine submerged aquatic vegetation.

Effects to special status species and habitats:
The effects of the Proposed Action on the listed fish species with the potential to occur in the action area and their critical habitat would be the same as those described in the "Aquatic Habitat

and species" section above. The potential for clamshell dredging to entrain or physically injure or kill listed fish species would be avoided by limiting dredging to the August 1 through November 30 work window established under the LTMS, when the listed delta smelt and salmonids are not expected to be present. To the extent feasible, dredging associated with the Proposed Action would be attempted earlier in the work window, from August 1 through September 30, before delta smelt begin any upstream spawning migration. Dredging earlier in the work window when possible would further minimize the potential effects on migrating delta smelt and migratory critical habitat. Green Sturgeon may be present in the Bay during dredging activities, but only in low densities and juveniles and adults would be mobile enough to avoid the clamshell bucket.

Benthic habitat can also provide important foraging areas for special-status fish species, especially for Green Sturgeon, which primarily forage in the benthos at depths up to 33 feet. Steelhead and Chinook Salmon are primarily drift feeders, but also occasionally forage in the benthos typically in waters less than 30 feet deep. The loss of benthic invertebrates during dredging or other bottom-disturbing activities may decrease the forage value of benthic habitat in the action area. This impact would be localized, negligible in the context of the forage habitat available in Suisun Bay, and temporary with recolonization and restoration of sediment substrate habitat expected to occur within months to a year.

Underwater noise could also affect special status species if they were present in the action area during dredging, but the clamshell dredging sound pressure levels (124 dB at 150m from the bucket) are well below established interim criteria for underwater noise impacts to fish from pile driving which suggest a peak sound pressure of 206 dB is injurious to fishes and sound pressure levels of 183-187 dB (depending on fish weight) can cause temporary shifts in hearing, resulting in temporarily decreased fitness (e.g., reduced foraging success and reduced ability to detect and avoid predators; Caltrans 2020). Moreover, the mechanical dredging sound pressure levels are below 150 dB, which is the threshold NMFS has used for triggering behavioral effects (e.g. avoidance) in fish. Therefore, underwater noise from the Proposed Action would not have significant effects on these species.

As described above, dredging would result in increased turbidity from suspended sediments which could effect fish species and critical habitats. Early life stage individuals tend to be more sensitive to turbidity than adults but spawning areas are not present in the proposed dredging footprints or vicinity so eggs or larval life stages would not be present. Large adult and juvenile fish would be mobile enough to avoid areas of high-turbidity plumes caused by dredging. Suspending sediments can also suspend contaminants into the water column, however sampling and testing of the material to be dredged indicated it was suitable for unconfined aquatic placement suggesting its resuspension would not have significant adverse impacts on biota. Moreover, turbidity plumes would be local and quickly disperse.

Dredging activities would also affect EFH. Because both open waters and substrates are included as primary components of EFH, the potential impacts described in this section and the "Aquatic Habitat and Species" section above for pelagic and benthic fauna are applicable to EFH as well. Such impacts include entrainment of fish and plankton and the removal of substrates and benthic invertebrates during dredging.

Based on the analysis above and the proposed avoidance and minimization measure associated with the Proposed Action, impacts to special status species and habitats from the Proposed Action would be temporary, localized, and less than significant.

The No Action Alternative would have no effect on special status species or habitats.

4.3 Human Environment

☑ **Noise:**

Both Area 1 and the Pass Channel are located in an industrial area and are not near sensitive receptors (e.g., residences, schools, and hospitals). Commercial and recreational ship traffic utilize the action area and channels in the vicinity and contribute to existing ambient noise in the area. As a measure of potential effects of construction related noise, the Federal Transit Administration (FTA) has guidelines that suggest for residential land uses the daytime noise standard during construction for an adverse impact is 90 A-weighted decibels (dBA) equivalent continuous sound level over a 1-hour period and for an industrial area 100 dBA equivalent continuous sound level over a 1-hour period (FTA, 2006). Noise from dredging equipment such as an excavator and a dredging ship can generate noise levels of approximately 78 to 82 dBA. Based on these levels, construction noise thresholds in the FTA guidelines would not be exceeded and therefore the ambient noise contribution associated with the Proposed Action would not have a significant effect. In addition, in consideration of the ambient noise from existing vessel traffic and the lower frequency at which these channels are dredged, the impacts of short-term intermittent noise from dredging would be negligible. The proposed dredging operations would not increase noise levels above the ambient level of noise associated with traffic in the Suisun Bay in the vicinity of the dredging project and therefore the noise effects of the Proposed Action would be less than significant.

The No Action Alternative would result in no change to noise levels in the Proposed Action area or the greater Suisun Bay.

☑ **Recreation (boating, fisheries, other):**

The proposed dredging and dredged material placement activities would not involve the construction of recreation facilities and would not create demand or result in increased use or deterioration of existing recreational facilities.

While recreational watercraft (e.g. fishing vessels and sail boats) may travel through or by the proposed dredging action areas, MARAD SBRF has regulations restricting non-government watercraft from cruising or anchoring within 500 feet of the end vessels in the Reserve Fleet without express permission. Therefore, recreational vessels are less likely to be in the vicinity of Area 1 than the pass channel. Recreational vessels may travel through but must not stop or anchor within the adjacent Federal navigation channel.

Vessels carrying dredge material to the upland wetland restoration site for beneficial reuse associated with the Proposed Action would primarily use the federal navigation channels and therefore the transport of material to the upland site would not interrupt recreational fishing. The Proposed Action could occasionally delay or temporarily impede recreational watercraft during dredging

and material transport activities, but there would be sufficient room for recreational vessels to maneuver around dredge equipment and therefore, these impacts are expected to be negligible.

During dredging and placement activities, notes to mariners and navigational warning markers would be used as needed to prevent navigational hazards; however, the dredging associated with the Proposed Action is not anticipated to affect the use of the channel to pass through the Suisun Bay. Therefore, the impacts of the proposed project on recreational vessel activity would be negligible and temporary.

The delivery of material in support of wetland restoration would also provide an indirect beneficial impact as CRRP and MWRP could be used as recreational resources for hiking, birding, and other terrestrial recreation activities.

The No-Action Alternative would result in no changes to recreational resources from existing conditions in the Proposed Action area or the greater Suisun Bay.

☐ **Land use classification:**

N/A – The Proposed Action has no potential to affect land use.

☐ **Transportation and traffic:**

N/A – Maritime traffic (navigation) is discussed in the following section. The Proposed Action areas do not contain terrestrial transportation facilities or infrastructure and would not noticeably add to traffic or ridership on any transportation modes. Dredging vessels will access the project site from the water. A minimal number of worker vehicle trips may occur on local highways and roadways in association with the Proposed Action and would be a negligible addition to existing traffic levels on those roadways. The No Action Alternative would not alter the existing transportation and traffic conditions in the area.

☑ **Navigation:**

Existing navigation in Suisun Bay and the greater San Francisco Bay are described in USACE's 2015 Federal Navigation Channels EA/EIR (Environmental Impact Report). Dredging and placement activities would temporarily increase vessels and vessel traffic in the proposed dredging footprints and along the dredge material transport route. However, this vessel traffic would be similar to that which has occurred during USACE's past maintenance dredging operations in the nearby Suisun federal navigation channel. Dredging activities may occasionally delay or temporarily impede some vessels but there is ample area for vessels to maneuver around dredge. Adverse impacts to navigation would be very minimal and short-term. The Proposed Action will also provide navigation benefits by restoring the authorized depths at the pass channel and in Area 1 to provide safe movement of ships and vessel access into the MARAD SBRF anchorage and out to the Federal navigation channel for continued reliable operations to support of MARAD's mission requirements.

Under the No-Action Alternative siltation and accretion would continue to occur in the Pass Channel and around the MARAD SBRF facility pier anchorage and impacts to navigation associated with that shoaling would worsen.

☐ **Prime and unique farmland:**

N/A – No farmland exists in the Proposed Action areas and therefore the Proposed Action has no potential to affect farmland.

☑ **Aesthetics/visual impact:**

The aesthetics of the greater San Francisco Bay region are of particular importance to the area. Suisun Bay offers scenic views of expansive wetlands. Dredging of Area 1 and the Pass Channel have the potential to minimally disrupt those enjoying the viewshed surrounding the Bay; however, the waters of San Francisco Bay already include similar uses and equipment, such as ferry terminals, ports, barges, and industrial and commercial shipping operations that are part of the existing visual landscape. To some observers, the aesthetics may be considered to be slightly degraded during dredging and placement activities from the presence of dredge equipment and turbidity produced during dredging activities. These impacts would be minor and temporary, take place in different years in Area 1 and the Pass Channel, and have relatively short durations falling during the environmental windows in any given year. The Proposed Action would occur immediately adjacent to locations where dredging activities have occurred regularly in the past (Suisun federal channel). In this context, impacts to aesthetics and visual resources from the Proposed Action would be less than significant and temporary in duration.

Under the No Action Alternative, the existing aesthetic and visual characteristic of the area would remain the same.

☑ **Public facilities, utilities, and services:**

Evaluation of impacts to public services typically involves determining whether the Proposed Action would affect level of service and the need for facility expansion for fire protection, police enforcement, school capacity, parks, and libraries. Public services are predominately land-based services; however, the waters of San Francisco Bay are used for maritime enforcement and emergency response. The proposed dredging and dredged material placement activities would not increase the service population in the San Francisco Bay Area, and therefore would not result in increased demand on public services, the need for construction of new public facilities, or the expansion of existing public facilities. The potential impacts of the Proposed Action on navigation in the Bay are discussed in the navigation section above. The presence of dredge vessels in the dredging footprint or scows transiting to the material placement location, could create a potential impediment to vessels transiting for maritime enforcement and emergency response services, but as described above, these effects would be negligible given the available surrounding open water areas that other vessels can transit through. Therefore, implementation of the Proposed Action would have no significant impacts on public services.

In terms of utilities, the Proposed Action area includes an area where the Trans-Bay Cable utility, a high-voltage direct current (HVDC) underwater transmission cable interconnection is buried in the Carquinez Strait. As-Built drawings, supplied by TransBay LLC, indicate the trans-bay cable was buried to a depth that is approximately -48 to 49 feet MLLW (which is 6 feet below the existing natural channel bottom). The Proposed Action would include dredging to a depth of 32 feet plus two potential feet of overdepth and is therefore not expected to impact the trans-bay cable utility or require any relocation. Furthermore, TransBay LLC has reviewed the Proposed Action and approved a 100-foot buffer that the Proposed Action will enforce around the path of the cable to ensure it is avoided. Therefore, the Proposed Action would not impact utilities.

The No Action Alternative would have no effect on public facilities, utilities, and services.

☑ **Public health and safety:**

The Proposed Action would the involve use of marine vessels and construction equipment such as clamshell dredge 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, effects to public health and safety from the Proposed Action would be less than significant.

The No Action Alternative would not alter the existing public health and safety conditions in the region of the project.

☑ **Hazardous and toxic materials:**

A discussion of the potential for contaminants to occur in the material proposed to be dredged is included in the "Contaminants in dredge of fill material" section above. As discussed in the "Water Quality" section, 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. Additionally, a spill-prevention plan would be developed prior to project implementation and spill-response equipment would be onsite for immediate implementation to protect aquatic resources from releases of hazardous materials used by vessels or construction equipment. Therefore, hazardous and toxic material impacts from the Proposed Action would be less than significant.

The No Action Alternative would have no hazardous and toxic material effects.

☑ **Energy consumption or generation:**

Although dredging and placement activities do require consumption of nonrenewable energy resources, such as fuel, this consumption would be negligible and consistent with levels of consumption by common marine vessels. The Proposed Action would not require any new energy generation infrastructure. Therefore, energy impacts from the Proposed Action would be less than significant.

The No Action Alternative would have no effect on energy consumption or generation.

☐ **Historic monuments, parks, national seashores, wild and scenic rivers, wilderness area, research sites, etc:**

N/A – No historic monuments, parks, national seashores, wild and scenic rivers, wilderness areas or research sites exist in the Proposed Action areas and therefore the Proposed Action has no potential to affect such sites.

☑ **Cultural and Historical Resources:**

Section 106 of the National Historic Preservation Act of 1966, as amended (54 U.S.C. § 300101 et seq.), and its implementing regulations, 36 CFR § 800, requires federal agencies to take into

account the effects of their undertakings[1] on properties that are included in, or are eligible for, listing on the National Register of Historic Places (NRHP). The eligibility criteria are found at 36 CFR Part 60.4. For a USACE dredging project, typically, the review of project documents and research of historical records, survey data, and resources from the California Department of Transportation Bridge Surveys, USACE Federal Shipping Channels dredging studies and inhouse records is sufficient to determine what the potential is for submerged sites and objects in the Area of Potential Effects (APE). In general, underwater surveys to identify historical archaeological sites (e.g., shipwrecks, training walls, or other submerged or sunken maritime artifacts) are not required within the boundaries of previously dredged channels or previously used disposal areas unless there is a reason to believe that such resources exist and that they would be altered or destroyed as a result of project implementation.

There are two types of cultural resources of interest for the MARAD SBRF Pass Channel and Pier Dredging Project: (a) archaeological sites from Native American settlement that may be situated on the shoreline or submerged on the floor of the Bay and (b) vessels that have sunk offshore and shoreline structures associated with the early 20th century maritime industry. A qualified USACE archaeologist conducted an in-house records and literature search of USACE and MARAD environmental projects, cultural resource studies, dredging surveys, and permits to identify submerged cultural resources within the APE. Records were also reviewed online for results from California State Lands Commission's searchable database, underwater surveys at NOAA's Automated Wreck and Obstruction Information System (AWOIS), in addition to T-Charts from the U.S. Coast Survey located at https://historicalcharts.noaa.gov/.

Affected Environment, Area of Potential Effects (APE)

The APE is defined as the geographic area of a federal undertaking within which the changes in character or use of a historic property would occur. Typically, an archaeological APE includes any area where project activities could affect the land surface, either through excavation or deposition. The MARAD project APE has two components: (1) the existing Pier and (2) the Pass Channel. Area 1 is comprised of two sections: Area 1A, located to the west of the pier, and Area 1B which is to the east (Figure 2). The total area for the pier is approximately 2500 square feet. The authorized depth in Area 1 is eight feet, which is the extant of the vertical APE for Area 1. The width of the Pass Channel is 450 feet, and the authorized depth of the Pass Channel is 32 feet, which is the extent of the horizontal and vertical APE for the Pass Channel. The sediment will be beneficially reused for restoration projects at the Montezuma Wetlands or the Cullinan Ranch Restoration Project. Agreement documents for the management of historic properties during restoration work at Montezuma Wetlands and Cullinan Ranch were executed in consultation with SHPO and other signatories. Therefore, these sites are not included in the APE.

It is generally accepted that the initial construction of shipping lanes, entering and exiting passing lanes, and maneuvering areas (docks and piers), their repeated use, and maintenance

[1] An undertaking is any project, activity, or program that can result in changes in the character or use of historic properties, if any such historic properties are located in the area of potential effects. The project, activity, or program must be under the direct or indirect jurisdiction of a Federal agency, or licensed or assisted by a Federal agency. Undertakings include new and continuing projects, activities, or programs and any of their elements not previously considered under Section 106.

dredging of these areas alter the seafloor to a point that submerged cultural resources, if present prior to the work, would be severely damaged or destroyed. The MARAD SBRF project would clearly fit this scenario. Environmental reports and project documents for the past 30+ years did not find submerged cultural resources having been encountered during use or maintenance operations in Suisun Bay. Therefore, historic properties are not expected to exist within the Pass Channel or the Pier docking areas.

Records Search and Literature Review
A qualified USACE archaeologist conducted an in-house records and literature search of USACE and MARAD environmental projects, dredging surveys, and permits to identify submerged cultural resources within the APE.

The CSLC's searchable database generated a list of 9 vessels lost in Solano County. All of the vessels were situated north of Suisun Bay and outside the APE. In 1994 USACE conducted a survey of the files and records at the Northwest Information Center (NWIC) of the California Historical Resources Information System (CHRIS) located on the campus of Sonoma State University in Rohnert Park, California. The USACE archeologist reviewed all archaeological site records, historical data, site surveys, ethnographic reports, and CSLC shipwreck logs. No shipwrecks are known to exist within or adjacent to the APE.

A survey of the files and records at the NWIC of the CHRIS, and in-house records, resulted in the identification of six archaeological surveys in Benicia and Suisun Bays. Two surveys overlap the APE for the current project: one completed for the Benicia- Martinez Bridge System Improvement Project in 2002 and another remote sensing survey completed in 2007 for PG&E's submerged Transbay Utility Cable. Four additional archaeological surveys were conducted within one mile of the APE (Cartier 1980, Cupples 1979, Ecumene Associates 1980, and Napton 1985). No historic properties were identified within the APE.

Findings
No cultural resources eligible for listing on the National Register of Historic Places (NRHP) were identified in the APE or in either Area 1 or the Pass Channel. In addition, the information acquired from the literature research and database reviews, and the significantly modified conditions in the existing project channels support the finding of No Historic Properties Affected pursuant to 36 CFR 800.4(d)(1).

Pursuant to 36 CFR 800.3(c), MARAD has initiated consultation with the California SHPO and has notified the Scotts Valley Band of Pomo Indians, the California Valley Miwok Tribe, and the Tule River Indian Tribe of the Tule River Reservation about the proposed project and requested their input (Appendix A).

Environmental Consequences
No known submerged cultural resources, eligible for the NRHP, exist near the pier. Deposition has filled the area with at least 8 feet of sediment over the last 20 years. The Pier causeway was constructed from the shoreline out to the 15-foot MLLW depth. The pier now sits on mud at the high tide. The removal of 8 feet of bay mud will bring the depth of the pier back to its navigable water level of 8 feet needed for the transportation boats to access

and maintain the reserve fleet. Based upon the lack of cultural resources within the Proposed Action area, impacts from the Proposed Action on Cultural Resources would be negligible.

With the No Action Alternative, there would be no impacts to Cultural Resources.

☐ **Socio-economic:**

N/A – the Proposed Action has no potential to affect socio-economic conditions.

☐ **Environmental Justice:**

N/A - Based on the nature and location of the proposed dredging and dredged material placement activities, no adverse impacts resulting from the proposed project would be disproportionately borne by minority or low-income populations. The adjacent area is primarily industrial with a low social vulnerability ranking based on the designations from the Bay Conservation and Development Commission (BCDC) vulnerability mapping tool (Figure 10). Because no socially vulnerable communities exist within or around the Proposed Action areas, the Proposed Action would not result in environmental justice effects.

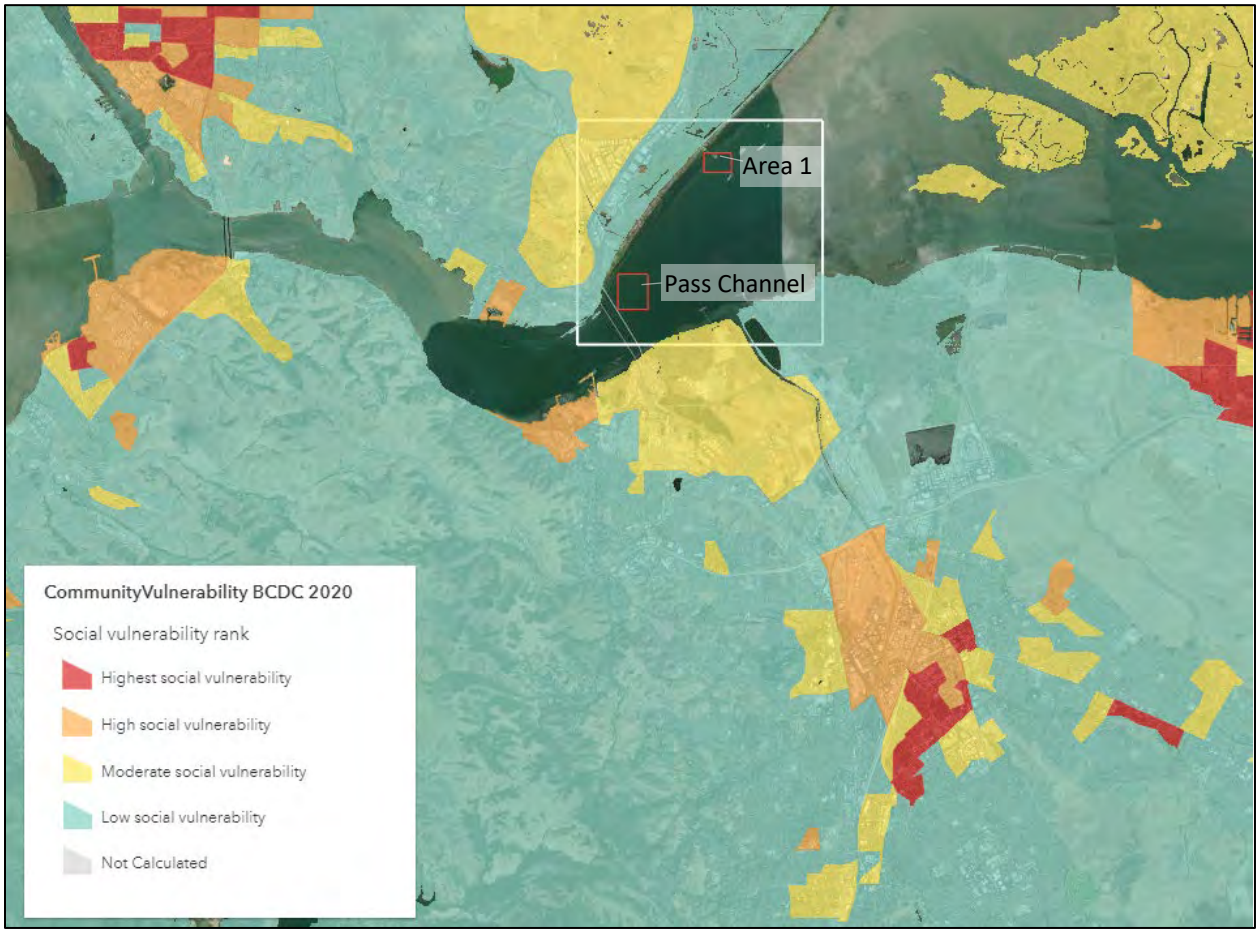

Figure 10: BCDC vulnerability map of the Project Area.

☐ **Growth inducing impacts - community growth, regional growth:**
N/A - The Proposed Action does not have the potential to affect community and regional growth in Solano County or the Suisun Bay area.

☐ **Conflict with other use plans, policies or controls:**
N/A - The Proposed Action and the No Action Alternative would not conflict with any land use plans, policies, or controls governing the project site.

☑ **Irreversible changes, irretrievable commitment of resources:**
The use of fossil fuels and materials for dredging activities associated with the Proposed Action would be an irreversible commitment of resources, but one that would be extremely limited and minor. No significant impacts related to irreversible changes or commitment of resources would occur with the Proposed Action.

With the No Action Alternative, there would be no irreversible commitment of resources.

4.4 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 CFR § 1508.7).

This section discusses the potential cumulative effects of MARAD SBRF dredging when added to other past, present, and reasonably foreseeable future actions. The geographic and temporal scope of the analysis is defined in Section 2.0. Environmental resources which were assessed above and resulted in no effects from the Proposed Action will not be assessed in this analysis.

If the project is not expected to contribute to a cumulative effect on a resource, then that resource is not included in the sections below. The resources not included below include Noise; Public facilities, utilities and services; Public health and safety; Hazardous and toxic materials; and Energy as these resources would not have cumulative effects when considered with other past, present, or reasonably foreseeable future actions. The remaining resources could potentially involve a cumulative effect, and therefore are discussed in more detail in Section 4.4.1 below.

Methodology

The cumulative effects analysis determines the combined effect of the MARAD SBRF Proposed Action and other closely related past or reasonably foreseeable projects. Cumulative effects were evaluated by identifying projects in and around the Suisun Bay region that could have individually minor but collectively significant actions taking place over a period of time. These potential effects are combined to the potential adverse or beneficial effects of the Proposed Action to determine the type, length, and magnitude of potential cumulative effects. Those effects that cannot be avoided or reduced to less than significant are more likely to contribute to cumulative effects in the area. Mitigation of significant cumulative effects could be accomplished by rescheduling actions of proposed projects and adopting different technologies.

4.4.1 Past, Present, and Reasonably Foreseeable Future Actions

Cumulative impacts of the Proposed Action, including beneficial reuse, would be confined solely to local considerations. Within the local context, dredging and placement activity would be conducted between mid- March through the end of September. The local context would involve any other known, constructed, in progress, or planned projects occurring in the Suisun Bay region.

This section briefly describes other projects in the Suisun Bay 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 Suisun Bay and New York Slough annually. The Federal channels were last dredged by USACE in 2021. Past and future dredging operations would result in similar effects to those described above for the Proposed Action.

This list includes projects that are likely to result in impacts similar to those of the Proposed Action. The list of projects generally includes those in close proximity to the Federal channels and placement site (i.e., those that could result in overlapping impacts, such as navigation and air quality), or other projects along the San Francisco Bay/Sacramento-San Joaquin Delta Estuary that could result in overlapping impacts to resources such as biological resources and water quality.

Table 4: Cumulative Scenario – Present and Reasonably Foreseeable Projects

Project Name/ Location	Status/ Anticipated Timeline	Project Summary	Source
Non-Federal Maintenance Dredging in San Francisco Bay	Ongoing	More than 100 marinas, ports, and berthing slips are maintenance dredged in the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. Most of the non-Federal maintenance projects are along the shorelines and in the tributaries of the Estuary.	USACE and USEPA, 2009
San Francisco Bay and Delta Sand Mining Project	10-year leases to continue mining sand (until 2022)	The CSLC action is a 10-year General Lease through December 31, 2022. Hanson Marine Operations proposed new, 10-year mineral extraction leases to enable the continuation of dredge mining of construction-grade sand from certain delineated areas of Central San Francisco Bay, Suisun Bay, and the western Sacramento-San Joaquin River Delta Estuary area.	CSLC, 2012; CEQAnet, 2013
San Joaquin - Stockton Deep Water Ship Channel Operations and Maintenance	Ongoing	Maintenance dredging of the Stockton portion of the channel to 35 feet MLLW by USACE San Francisco District.	USACE, 2012b
Suisun Marsh Restoration Plan	Planning phase	The United States Department of the Interior is the project sponsor for tidal restoration targets of 5,000 to 7,000 acres and 44,000 to 46,000 acres of managed wetlands during the 30-year implementation period.	USACE, 2012b
MOTCO Dredging	Planning/Design Phase	MOTCO wharf maintenance dredging project to maintain the authorized navigation approach depth of 35 feet MLLW for MOTCO Wharves 2, 3, 4, Barge Pier, and the proposed boat ramp. Project is anticipated to occur in 2024.	USACE pers. comm. 2022
MOTCO Wharf 4 and Lighter Berth Removal	Planning Phase	MOTCO project to remove the existing Wharf 4 and remove unused lighter berths FY28+ .	MOTCO 2015a, 2017
MOTCO Boat Ramp	Planning/Design Phase	MOTCO project to construct boat ramp in former Navy Tug Basin FY: TBA	MOTCO pers. comm. 2019/20
MOTCO Barge Pier / Small Craft Berthing Facility	Planning phase	MOTCO project to repair piles on the existing Barge Pier, replace floating barge pier used to moor fire boat with small craft berthing facility for fire and security boat mooring in FY: TBA.	USACE pers. comm. 2022
Federal Navigation Channel Dredging	Ongoing	USACE annual dredging of the Federal navigation channels in the San Francisco Bay/Sacramento-San Joaquin Delta Estuary area.	USACE pers. comm. 2019/20

Notes:
CDFW = California Department of Fish and Wildlife
CEQA = California Environmental Quality Act
CSCC = California State Coastal Conservancy
CSLC = California State Lands Commission
EIR = Environmental Impact Report
FY = Fiscal Year
MLLW = mean lower low water
SRDWSC = Sacramento River Deep Water Ship Channel
WETA = San Francisco Bay Area Water Emergency Transportation Authority
USACE = United States Army Corps of Engineers
USCG = United States Coast Guard
USFWS = United States Fish and Wildlife Service

4.4.2 Summary of Cumulative Effects

Water Quality

This section assesses potential cumulative effects for the following sections: Quality - temperature, salinity patterns and other parameters; Turbidity, suspended particulates; Substrate; and Contaminants in dredge or fill material.

In the context of the past and reasonably foreseeable projects discussed above, the Proposed Action is not anticipated to result in significant cumulative water quality effects. It is anticipated that USACE will be conducting the Suisun Bay Channel and MARAD SBRF dredging/placement activities at the same time, it is also possible that MOTCO dredging may take place concurrently. Therefore, dredging and placement activities have the potential to have compounding effects on water quality from simultaneous actions. However, as assessed in the water quality effects section (4.1) above, changes in temperature, salinity, or pH that occur during dredging activities were localized to the immediate dredging area and short in duration, most water quality effects maintain or return to ambient conditions within 10 minutes (e.g. TSS concentrations, turbidity values, and associated water quality depressions) (USACE 1998).

Dredged material resulting from the MARAD SBRF and MOTCO singular-episode projects will be placed at an upland beneficial reuse site that benefits aquatic species, while routine annual in-bay placement of Suisun Bay Channel dredge material will typically occur. Therefore, the Proposed Action is not expected to result in cumulative long term increased material or levels of contaminants (such as DDT and PCB) in the context of past and reasonably foreseeable future placement. 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.

Air Quality

All of the related projects discussed above would cumulatively contribute to emissions of criteria pollutants throughout the region, particularly if projects occur concurrently, which could have a cumulative effect on air quality. It is anticipated that each of these projects would implement separate avoidance and minimization measures, as required by air quality control agencies, to reduce the emissions to below significance levels. Emissions from the MARAD SBRF dredging would be below applicable Federal thresholds, therefore, the project would not cause an impact to air quality.

Climate Change

It is unlikely that any single project by itself could have a significant impact on the environment with respect to GHGs. However, the cumulative effect of human activities has been linked to quantifiable changes in the composition of the atmosphere, which, in turn, have been shown to be the main cause of global climate change (IPCC 2007). Therefore, the analysis of the environmental effects of GHG emissions is inherently a cumulative impact issue. While the emissions of one single project will not cause global climate change, GHG emissions from multiple projects throughout the world have a cumulative effect on global climate change.

It is expected that the primary GHG impacts from present and planned projects in the Suisun Bay would arise from their construction phases. However, on a global scale, the emissions associated with these projects would not significantly contribute to global climate change, when added to the emissions associated with major stationary GHG emitters.

Biological Resources
Similar to the Proposed Action, prior federal dredging episodes and MOTCO dredging actions could have temporary impacts to biological resources during dredging activities. These impacts would be expected to be minor and temporary; and would cease following the conclusion of dredging activities.

It is very likely that MARAD dredging would occur within the same dredging season as Federal dredging (Suisun Bay), and potentially MOTCO as well. Dredging would occur in the same geographic location, therefore, species and habitats would have the potential to experience cumulative effects from multiple individual projects occurring at once. Species and habitats would be expected to recover from temporary effects such as turbidity and benthic disturbance from dredging projects on the order of days to months (SAIC, 2007). These impacts would be expected to be minor and temporary; and would cease following the conclusion of dredging activities. Significant cumulative effects are not anticipated.

The placement of dredged material from the MARAD SBRF and MOTCO singular-episode projects at an upland beneficial reuse site that benefits aquatic species, will provide a cumulative benefit to both terrestrial and aquatic species and habitats.

Recreation
Similar to the Proposed Action, the MOTCO 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 placement of material at an upland beneficial reuse site, Montezuma or Cullinan. Placement at either beneficial reuse site will contribute to the restoration of wetlands, a recognized recreational commodity in the San Francisco Bay Area, and therefore would contribute to a cumulative beneficial effect on recreation with the Proposed Action.

Navigation
There are several possible scenarios for dredging activities to occur. The most likely scenario is as follows: Area 1 and Suisun Bay will be dredged sequentially, with the Pass Channel, Suisun Bay, and MOTCO occurring the following year. While the Proposed Action would occur in the same dredging season as Federal dredging (Suisun Bay) and potentially MOTCO as well, it is unlikely that three dredges would be in operation at the same time.

The MOTCO and MARAD SBRF dredging are single episode activities, 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 MARAD's SBRF facilities. The Proposed Action will provide safe and efficient movement of ships and reliable operations to support of MARAD's mission requirements associated with the DOT's wartime and contingency operations in the Pacific Theater.

Cultural Resources
Similar to the Proposed Action, dredging at MARAD as well as 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 federal channels could potentially have disturbed cultural resources, but such impacts are not

definitively known to have occurred, and there are no shipwrecks or other identified cultural resources in the Proposed Action areas today.

Therefore, additional impacts to cultural resources would not be expected from the Proposed Action and the cumulative effects of the Proposed Action, in the context of past and future dredging episodes, would be less than significant.

5.0 Environmental Compliance

Detailed compliance information, supporting reports, and environmental compliance history (e.g. Biological Assessment, Conformity Analysis, EFH Analysis, SHPO and tribal letters, Combined Dredging Application) for this project can be found in Appendix A - Environmental Compliance.

6.0 Agencies Consulted and Public Notification

The following federal and State agencies were notified of the availability of this Environmental Assessment (EA) for review and comment. A *Public Notice of Availability* of the EA will be provided to other interested agencies, groups, and individuals.

A. Federal agencies:

- U.S. Environmental Protection Agency (EPA Region 9)
- U.S. Coast Guard (USCG)
- U.S. Fish and Wildlife Service (USFWS)
- National Marine Fisheries Service (NMFS)

B. State and local agencies:

- Bay Conservation and Development Commission (BCDC)
- California Coastal Commission (CCC)
- California State Lands Commission (CSLC)
- State Historic Preservation Officer (SHPO)
- Regional Water Quality Control Board Region (RWQCB)
- Bay Area Air Quality Management District (BAAQMD)

7.0 Determinations and Statement of Findings

A Finding of No Significant Impact (FONSI) will be made, if appropriate, after agency and individual comments are received during the public comment period and incorporated into this EA.

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U.S. Department
of Transportation
**Maritime
Administration**

1200 New Jersey Avenue S.E.
Washington, DC 20590

Maritime Administration

Finding of No Significant Impact

For the Suisun Bay Reserve Fleet
Pier and Pass Channel Dredging Project
Benicia, CA

This Finding of No Significant Impact (FONSI) and the accompanying Environmental Assessment (EA) are submitted pursuant to NEPA, 42 U.S.C. § 4321 *et seq*).

The Maritime Administration (MARAD) has determined that this project, will have no significant effect on the human or natural environment, individually or cumulatively, under normal conditions.

The Draft Environmental Assessment (EA), dated September 2022, for the Suisun Bay Reserve Fleet (SBRF) Pier and Pass Channel Dredging Project addresses dredging in Suisun Bay, Contra Costa and Solano Counties, California. The final recommendation is contained in this EA.

The purpose of the Proposed Action is to restore the authorized navigational depths at MARAD's SBRF facilities in order to preserve operational functions at the site. Over the years, siltation and accretion have occurred in the pass channel and around the SBRF facility pier resulting in reduced depths that are impeding navigation and impacting SBRF operations

The Draft EA, incorporated herein by reference, evaluated dredging and subsequent placement of dredged material at a beneficial reuse site as one alternative ('proposed action'), and it also evaluated the 'no action' alternative of no dredging and no placement. The recommended plan is the proposed action.

For all alternatives, the potential effects were evaluated as appropriate. A summary assessment of the potential effects of the proposed action is listed in Table 1.

Resource	Insignificant effects	Insignificant effects as a result of mitigation*	Resource unaffected by action
Aesthetics	☒	☐	☐
Air quality	☒	☐	☐
Aquatic resources/wetlands	☒	☐	☐
Invasive species	☒	☐	☐
Fish and wildlife habitat	☐	☒	☐
Threatened/Endangered species	☐	☒	☐
Historic properties	☐	☐	☒

Other cultural resources	☒	☐	☐
Floodplains	☐	☐	☒
Hazardous, toxic & radioactive waste	☒	☐	☐
Hydrology	☒	☐	☐
Land use	☐	☐	☒
Navigation	☒	☐	☐
Noise levels	☒	☐	☐
Public infrastructure	☐	☐	☒
Socioeconomics	☐	☐	☒
Environmental justice	☐	☐	☒
Soils	☐	☐	☒
Tribal trust resources	☐	☐	☒
Water quality	☒	☐	☐
Climate change	☒	☐	☐
Turbidity, suspended particulates	☒	☐	☐
Substrate	☒	☐	☐
Currents, circulation or drainage patterns	☒	☐	☐
Mixing zone	☐	☐	☒
Erosion and accretion patterns	☒	☐	☐
Aquifer recharge	☐	☐	☒
Base flow	☐	☐	☒
Water supplies, conservation	☐	☐	☒
Aquatic habitat	☐	☒	☐
Terrestrial habitat	☐	☐	☒
Contaminants in dredge or fill material	☒	☐	☐
Mineral resources	☐	☐	☒
Recreation	☒	☐	☐
Land use classification	☐	☐	☒
Transportation and traffic	☐	☐	☒
Prime farmland	☐	☐	☒
Public health and safety	☒	☐	☐
Energy consumption or generation	☒	☐	☐
Growth-inducing impacts	☐	☐	☒
Conflict with land-use plans, policies	☐	☐	☒
Irretrievable commitment of resources	☒	☐	☐

All practicable and appropriate means to avoid or minimize adverse environmental effects were analyzed and incorporated into the recommended plan. Best management practices

(BMPs) and avoidance or minimization measures as detailed in the EA, will be implemented, as appropriate, to minimize these impacts. No compensatory mitigation is required as part of the recommended plan.

Environmental Compliance Requirements:

Pursuant to section 7 of the Endangered Species Act of 1973, as amended, MARAD, in informal consultation with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS), determined that the recommended plan may affect, but is not likely to adversely affect, the following federally listed species, or its designated critical habitat (where applicable), within the project footprint:

✓ Delta Smelt (*Hypomesus transpacificus)*
✓ Green Sturgeon (*Acipenser medirostris*)
✓ California Coast Steelhead (*O. mykiss*)
✓ Central Valley Steelhead (*O. mykiss*),
✓ Sacramento River winter-run Chinook (*O. tshawytscha*)
✓ Central Valley spring-run Chinook (*O. tshawytscha*)

Requests for consultation documenting these determinations were submitted to USFWS on September1, 2022 (Appendix A), and to NMFS on September 1, 2022 (Appendix X). Pursuant to the Clean Water Act, a Consolidated Dredging Dredged Material Reuse/Disposal Application was submitted to the DMMO, resulting in a CWA section 401 permit, on Date TBD. Pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended, the Maritime Administration determined that the recommended plan has no effect on historic properties.

The Maritime Administration has determined that the EA adequately and accurately discusses the environmental issues and effects of the proposed action and specifies appropriate mitigation measures and standard conditions of approval in order to minimize environmental effects. Therefore, a FONSI is warranted, and preparation of an Environmental Impact Statement, pursuant to the NEPA, is not required.

_____ _____

Office of Environment Reviewer Date

_____ _____

Associate Administrator for Environment and Compliance Date

Appendix A - Environmental Compliance

Table: Summary of Environmental Compliance

Statute	Status of Compliance
National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. § 4321 *et seq*) Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of the NEPA (40 CFR Parts 1500-1508) dated July 1986	This EA has been prepared to disclose impacts and develop mitigation measures (where warranted) associated with the proposed dredging of the Suisun Bay Reserve Fleet Pier and Pass Channel, as discussed in the CEQ regulations on implementing NEPA (40 CFR Parts 1500-1508). All agency and public comments will be considered and evaluated. If appropriate, a Finding of No Significant Impact (FONSI) will be signed with a conclusion of no significant impacts from this proposed action.
Clean Air Act, as amended (42 U.S.C. § 7401 *et seq*)	Although the MARAD SBRF area lies within the Bay Area Air Quality Management District (BAAQMD) it is a purely federal project, and therefore will only conform to federal air quality standards and thresholds, as shown in the below table. An emissions inventory has been completed and the emissions are below the de minimis threshold.
Clean Water Act, as amended (33 U.S.C. § 1251 *et seq*) …… Executive Order 11990, Protection of Wetlands, (42 CFR Parts 26961, 1977) ……..	A Consolidated Dredging Dredged Material Reuse/Disposal Application will be submitted to the DMMO in order to obtain a CWA section 401 permit. No wetlands occur within the proposed project area. Wetlands do occur along the shoreline, more than 200 meters at the closest point from Area 1.
National Oceanic and Atmospheric Administration Federal Consistency Regulation (15 CFR 930) Coastal Zone Management Act of 1972 (16 U.S.C. § 1451 *et seq*) California Coastal Act of 1976	A Consolidated Dredging Dredged Material Reuse/Disposal Application will be submitted to the DMMO in order to obtain CZMA authorization.
Endangered Species Act as amended (16 U.S.C. § 1531 *et seq*)	MARAD is in coordination with the USFWS and NMFS regarding impacts of the proposed dredging on federally listed species and critical habitats. MARAD has determined that the Proposed Action is not likely to adversely affect any federally listed endangered or threatened species, or their critical habitat. Any proposed minimization measures from USFWS and NMFS will be included as requirements of the dredging Contract.
Magnuson-Stevens Fishery Conservation and Management Act - Fishery Conservation Amendments of 1996, (16 U.S.C. § 1801 *et seq*) – Essential Fish Habitat (EFH)	The proposed action area includes EFH for three Fishery Management Plans. In compliance with the MSA, an EFH assessment and consultation with NMFS regarding potential effects to EFH from the Proposed Action have been initiated by MARAD and will be submitted to NMFS in order to obtain EFH conservation recommendations to avoid, minimize, mitigate, or otherwise offset any potential adverse effects to EFH.
Migratory Bird Treaty Act (16 U.S.C. § 703-711)	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.
Marine Mammal Protection Act (16 U.S.C. § 1361 *et seq)*	No significant impacts to marine mammals are expected from the proposed action.

	The proposed action will not take place in or near a national marine sanctuary. This NEPA document evaluated underwater noise and determined that it will not harass marine mammals. Based on the avoidance measures proposed in this EA, no disturbance or harassment of marine mammals is expected from the Proposed Action.
National Marine Sanctuaries Act (16 U.S.C. § 1431 *et seq*)	The proposed action would not take place in or near a national marine sanctuary.
Marine Protection Research and Sanctuaries Act of 1972 (33 U.S.C. § 1401 *et seq*)	The proposed action includes the placement of dredged material at a beneficial reuse site, therefore, the MPRSA Act is not applicable to the project.
National Historic Preservation Act (16 U.S.C. § 470 and 36 CFR Part 800): Protection of Historic Properties …… Executive Order 11593: Protection and Enhancement of the Cultural Environment … Archaeological and Historic Preservation Act of 1974, (16 U.S.C. § 469 *et seq*) …… Abandoned Shipwreck Act of 1987, (43 U.S.C. § 2101 *et seq*) ……..	The Proposed Action constitutes a No Historic Properties Affected undertaking. MARAD has initiated consultation with the SHPO on this finding. See above. See above. See above.
Submerged Lands Act, (Public Law 82-3167; 43 U.S.C. § 1301 *et seq*)	A Consolidated Dredging Dredged Material Reuse/Disposal Application will be submitted to the DMMO in order to comply with the Submerged Lands Act.

Complete and print form online

RESET PRINT

CONSOLIDATED DREDGING-DREDGED MATERIAL REUSE/DISPOSAL APPLICATION

(Please completely follow instructions provided with application)

SECTION I - GENERAL INFORMATION

1. APPLICANT INFORMATION

☐ Individual ☐ Legal Entity ☑ Government ☐ Non-profit

Applicant Name: Joseph A. Pecoraro Title: Fleet Superintendent

Company Name: US DOT Maritime Administration, Suisun Bay RF

Mailing Address: 2595 Lake Herman Road

City: Benicia State: CA Zip: 94510

Phone: Main (707) 747 - 7801 Fax (707) 747 - 7854

Cell (415) 740 - 4934

E-mail joe.pecoraro@dot.gov

Applicant Business Type - Check One If Applicable (See Instructions)

☐ Sole Proprietorship ☐ Partnership ☐ Corporation ☐ Government Agency ☐ Other Association

Description

N/A

2. REPRESENTATIVE INFORMATION

Applicant's authorized agent, point of contact and/or representative ☐ None

Name: Liesel Cardoza Title: Environmental Manager

Organization: USACE

Mailing Address: 450 Golden Gate Ave, 4th Floor

City: San Francisco State: CA Zip: 94101

Phone: Main (415) 503 - 6718 Fax ( ) -

Cell ( ) -

E-mail Liesel.Cardoza@usace.army.mil

I hereby authorize Liesel Cardoza to act as my representative and bind me in all matters concerning this application.

Signature of Applicant | Signature of Representative | Date

Joseph A. Pecoraro | Fleet Superintendent

Name | Title (if different then box 1)

Who should receive correspondence relevant to this application?

☐ Applicant ☐ Representative ☑ Both

"This application shall serve as, and be functionally equivalent to, a Report of Waste Discharge, pursuant to Sections 13260, 13374 and 13377 of Article 4, Chapter 4 of the Porter-Cologne Water Quality Control Act."

SECTION II - PROJECT INFORMATION

3. DREDGING PROJECT

Project Name or Title: Maritime Administration (MARAD) Suisun Bay Reserve Fleet (SBRF) Pier and Pass Channel Dredging

Type of Dredging Project: ☐ Maintenance ☑ New Work (see instructions)

☐ Single Episode ☐ Multi-Episode ☐ Knockdown

Project Description:

The proposed action would involve a single episode of dredging from the facility pier (FY 2023) and pass channel areas (subsequent year based on funding) at the SBRF facility, totalling 248,100 cubic yards of material, and associated transport and placement of suitable dredged material at a beneficial reuse site.

Project Need and/or Purpose:

The SBRF is part of the National Defense Reserve Fleet and consists of a variety of vessels maintained for National defense and emergency sealift purposes. Under the Proposed Action, dredging would be performed to restore navigability in Area 1 and the Pass Channel for operational and mission capacity.

Month and year work is proposed to begin: 08/2023, complete: 08/2033

Estimated total project cost: $12,000,000.00

Project Location:

County: Solano & Contra Costa Nearest City: Benicia Waterway: Suisun Bay

Area 1 Latitude 38°04'37.92"N Longitude 122°05'52.82"W

Area 2 Latitude 38°02'51.43"N Longitude 122°07'00.25"W

Proposed type of equipment to be used:

Mechanical clamshell dredge and scow.

Will the project result in the construction of temporary or permanent structures or other than normal dredging equipment? ☐ Yes ☑ No **If Yes**, describe:

Project depth information: Please refer to table in Attachment D.

Proposed design depth (MLLW) _____ Overdredge depth tolerance (MLLW) _____

Existing depth (MLLW) _____ Proposed total depth (MLLW) _____ (design depth plus overdredge depth)

Volume of material to be dredged: 248,100 cy, area of dredging: 1,291,400sqft acres/sq feet

Volume of material to be knocked down: _____cy

Type(s) of substrate being dredged: ☑ Subtidal Bottom ☐ Intertidal Bottom ☐ Wetlands

☐ Other (explain): _____

Does the project involve activities within the Suisun Marsh Protection Zone? ☑ Yes ☐ No

If Yes, complete Box 7

Please list agency and identification numbers of any previous permits for this activity:

SLC_____RWQCB_____BCDC_____USACE_____

SECTION III - DISPOSAL SITE INFORMATION

4. DIRECTIONS (Please answer all questions)

Does the project involve unconfined aquatic disposal? ☐ Yes ☑ No
If Yes, complete box 5

Does the project involve upland, wetland or reuse disposal? ☑ Yes ☐ No
If Yes, complete box 6

Does the project involve disposal within the Suisun Marsh Protection Zone? ☐ Yes ☑ No
If Yes, complete box 7

5. AQUATIC DISPOSAL

Site	Proposed disposal volume
☐ SF-9 (Carquinez Strait)	_____cy
☐ SF-11 (Alcatraz)	_____cy
☐ SF-10 (San Pablo Bay)	_____cy
☐ SF- DODS (Deep Ocean Disposal Site)	_____cy
☐ Other (Explain): _____	_____cy

☐ Have you completed a Small Dredger Programmatic Alternatives Analysis (SDPAA) form?
☐ Have you completed an Integrated Alternatives Analysis (IAA)?

Note: If you are considering multiple sites or have not yet determined a site, please comment in Box 12 ("Remarks")

6. PROPOSED UPLAND OR WETLAND REUSE/DISPOSAL SITE INFORMATION

Site Name: 1 of 2 sites: Cullinan Ranch Restoration Project (see Attachment D for Montezuma Restoration Project).
Site Description (see instructions):
Upland beneficial reuse site that benefits aquatic species. Area is subsided to between 5 and 6 feet below mean sea level. Less than 1% tidal marsh vegetation cover. Area is open to recreational use.

Site Address: N/A
City: Vallejo State: CA Zip: 94592
Latitude(s): 38°07'44.56"N Longitude(s): 122°19'03.22"W
Owner's Name: San Pablo Bay National Wildlife Refuge
Mailing Address: 7715 Lakeville Highway
City: Petaluma State: CA Zip: 94954
Phone: ( ) _____ - _____

Are there wetlands on the site? ☑ Yes ☐ No
If yes, has a jurisdictional delineation been done by the U.S. Army Corps? ☑ Yes ☐ No
Corps file # SPN-2000-25470

SECTION III - DISPOSAL SITE INFORMATION (CONTINUED)

6. CONTINUED

Is the site an existing site that is permitted to receive dredged material? ☑ Yes ☐ No

Provide the year that the site last received dredged material: 2022

Will the dredged material be sold or used for private purposes? ☐ Yes ☑ No

If Yes, estimated volume of material to be sold or used for private purposes:_____cy

If Yes, annual income received or projected: _____

If projected, please show basis of the projection (see instructions):

_____

_____

Estimated volume of dredged material to be reused (at the site): _____ cy

Volume to go upland: 248,100 cy

Volume to go to wetland: _____cy

Will the disposal result in the construction of temporary or permanent structures or the use of other than normal dredged material disposal equipment? ☐ Yes ☑ No

If Yes, describe:

_____

_____

Will the proposed disposal affect existing public access or public recreational facilities ? ☐ Yes ☑ No

If Yes, describe how impacts would be mitigated:

_____

7. SUISUN MARSH DEVELOPMENT INFORMATION

ID number(s) of any previous local marsh development permit(s) issued for work at this site:

_____ ☑ None

Duck Club number(s) _____ ☑ None

Is the project consistent with the individual management plan for the property certified by the San Francisco Bay Conservation and Development Commission ? ☑ Yes ☐ No

If No, submit an explanation of how the project can be approved despite the inconsistency.

Is the project consistent with the U.S. Army Corps Regional General Permit (RGP) for Suisun Marsh?

☑ Yes ☐ No

SECTION IV - OTHER REQUIRED INFORMATION

8. ENVIRONMENTAL APPROVALS

a) Has an EIR or an EIS been prepared for the project? ☐ Yes ☑ No

b) Has the project been determined to be categorically exempt from the need for any environmental documentation by the lead environmental agency ? ☐ Yes ☑ No

If Yes, attach a statement from the lead agency supporting this categorical exemption

c) Was an EA prepared for previous dredging at this site? ☐ Yes ☑ No

d) If (a) is No, will an EIR or an EIS be prepared? ☐ Yes ☑ No

e) If (d) is No, has a negative declaration been prepared (or is one being prepared)? ☐ Yes ☑ No

f) If (d or e) is Yes, please answer the following:

(1) Who is the lead agency for the EIS, EIR, or negative declaration?

_____

(2) Approximate date of completion: _____

g) Provide a copy of the project environmental documentation with your application

9. OTHER APPROVALS (see instructions)

CA DEPARTMENT OF FISH AND GAME - 1601 & 1603 Approval ☑ None Required

Number	Date of Application	Date of Issuance
_____	_____	_____
_____	_____	_____

LOCAL GOVERNMENT APPROVALS ☑ None Required

Approving Agency	Type of Approval	Date of Approval	Local Contact and Phone
_____	_____	_____	_____
_____	_____	_____	_____

10. DISCLOSURE OF CAMPAIGN CONTRIBUTIONS

Disclose any campaign contributions in excess of $250 to officials of the agencies using this application form: ☑ No such campaign contributions have been made

Contribution Made To:	Contribution Made By:	Date of Contribution:
_____	_____	_____
_____	_____	_____

11. ADJOINING PROPERTY OWNERS

Provide names and addresses of property owners, leases, etc., whose property adjoins the dredging project and disposal site (disposal site information not required for the designated aquatic sites). If there are more adjacent property owners than can be entered here, please attach a supplemental list:

See Attached.

12. REMARKS

13. CHECKLIST OF ADDITIONAL INFORMATION TO BE SUBMITTED

	Complete and Attached	or Expected Submission Date	Not Applicable
Sampling & Analysis Plan (SAP):	✔	_____	☐
Testing Data:	✔	_____	☐
Calculations:	✔	_____	☐
Organizational Document:	☐	_____	✔
Environmental Document:	✔	_____	☐
Drawings and Maps:	✔	_____	☐
Proof of Legal Interest:	☐	Awaiting Information. _____	☐
Statement of Consistency:	✔	_____	☐
BCDC Posting Certification:	☐	_____	☐
SDPAA or IAA :	☐	_____	✔

Fees: Expected submission date to: BCDC / SLC / RWQCB : No Submission. See Attachment D.

14. CERTIFICATION OF ACCURACY OF INFORMATION

I hereby certify under penalty of perjury that to the best of my knowledge the information in this application and all attached exhibits is full, complete, and correct, and I understand that any misstatement or omission of the requested information or of any information subsequently requested shall be grounds for denying the permit, for suspending or revoking a permit issued on the basis of these or subsequent representation, or for the seeking of such other and further relief as may seem proper to the permitting agencies.

Signature of Applicant or Representative	Fleet Superintendent Title	08/10/2022 Date

Joseph A. Pecoraro
Print name

U.S. Department
of Transportation
Maritime
Administration

1200 New Jersey Avenue S.E.
Washington, DC 20590

MARAD SBRF Dredging DMMO Application Attachment August 9, 2022

Box 3:

Year	Area		Dredge Volume (CY) Required Depth -8 MLLW	Required Depth -32 MLLW	Slope	1rst ft Overdepth	Material to be Dredged	Project Area (SQ Ft)	Duration (Rate: 3,000 CY/day)
2023	Area 1	Area 1A	16,593		1,260	2,521	23,500	212,024	24 days
		Area 1B	34,229		2,352	4,318	47,100		
TBD	Pass Channel			127, 499	4,502	33,996	177,500	910,940	60 days
					Overall Total:		**248,100** CY	**1,291,400** Sq Ft	

Table 1: Proposed Dredging for MARAD SBRF

Box 6:

1. **Owner, operator, and discharger:** The Montezuma Wetlands Restoration Project (Project) is owned and operated by Montezuma Wetlands LLC (Discharger).

2. Location and Setting: The areal extent of the Project is approximately 2,400 acres at the eastern edge of the Suisun Marsh near the town of Collinsville, approximately 17 miles southeast of Fairfield (Figure 1). Surface elevations at the site have subsided up to 10 feet since the historical tidal marshes were diked and drained for agricultural use more than 100 years ago. As a result of subsidence and intensive long-term livestock grazing, the site supports primarily ruderal grasslands with some seasonal wetland habitat. Restoration and enhancement of wetlands at the site are taking place via engineered placement of approximately 17.5 million cubic yards (cy) of suitable dredged sediment to raise the subsided site to elevations appropriate for restoration of 1,877 acres of tidal and seasonal wetlands.

Location: 38°05’98.25”N, 121°53’03.22”W

Corps file#: SPN-1992-194050

Box 13:

The Department of Transportation's Maritime Administration is a Federal Government Agency and therefore not subject to fees.

U.S. Department
of Transportation
Maritime
Administration

1200 New Jersey Avenue S.E.
Washington, DC 20590

Box 11: MARAD SBRF Adjoining Property Owners

4101 Industrial Way
CLEAN HARBORS ENVIRON SVS INC
CO % INDUSTRIAL VALUATION SVCS
AUSTIN, TX 78709

4201 Industrial
T & M ENTERPRISES
4201 INDUSTRIAL WAY
BENICIA, CA 94510

4301 Industrial
TULLOCH CONSTRUCTION INC
PO BOX 11046
OAKLAND, CA 94611

4701 Industrial
GONSALVES & SANTUCCI INC
5141 COMMERCIAL CR
CONCORD, CA 94520

4901 Industrial
TULLOCH CORPORATION
2082 OAKLAND AVE
PIEDMONT, CA 94611

4900 Industrial
CYPRESS BASIN INC
4900 INDUSTRIAL WAY
BENICIA, CA 94510

4905 Industrial -No owner address/info

4960 Industrial
LAKE HERMAN ASSOCIATES
CO ROBERT MICHAEL PARKS
PO BOX 1053
BENICIA, CA 94510

4995 Industrial
TULLOCH CORPORATION
2082 OAKLAND AVE
PIEDMONT, CA 94611

5000 Industrial
5000 LLC
68 LEVERONI CT STE 200
NOVATO, CA 94949

5001 Industrial
5001 LLC
CO WEST COAST BEAUTY SUPPLY CO
68 LEVERONI CT STE 200
NOVATO, CA 94949

5145 Industrial
UNDERGROUND CONSTRUCTION CO
5145 INDUSTRIAL WAY
BENICIA , CA 94510

5251 Industrial
RENTAL CENTER PROPERTIES
CO BETH SWANEY
PO BOX 4559
SANTA ROSA, CA 95402

5300 Industrial
TOLAND LEGACY PROPERTIES LLC
5300 INDUSTRIAL WY
BENICIA, CA 94510

5301 Industrial
ICON OWNER POOL 1 SF N-B P LLC
CO RYAN LLC
HOUSTON, TX 77056-8169

5400 Industrial
E & P PROPERTIES INC
5400 INDUSTRIAL WY
BENICIA, CA 9410

5401 Industrial
TULLOCH CONSTRUCTION INC
PO BOX 11046
OAKLAND, CA 94611

6000 Egret Court
DRAKE INDUSTRIAL LLC
1220 DIAMOND WAY STE 100
CONCORD, CA 94520

6001 Egret Court
SIERRA PACIFIC INVEST CO LLC
171 NEW PLACE RD
HILLSBOROUGH, CA 94010

6077 Egret Court
BWIP INTERNATIONAL INC
CO FLOWSERV CORP PMB 512017
2300 EAST VERNON AV
LOS ANGELES, CA 90058-1609

6100 Egret Court
TDDK KERRIGAN PROPERTIES LLC-I
3460 HAWKS BEARD
SONOMA, CA 95476

U.S. Department
of Transportation
Maritime
Administration

1200 New Jersey Avenue S.E.
Washington, DC 20590

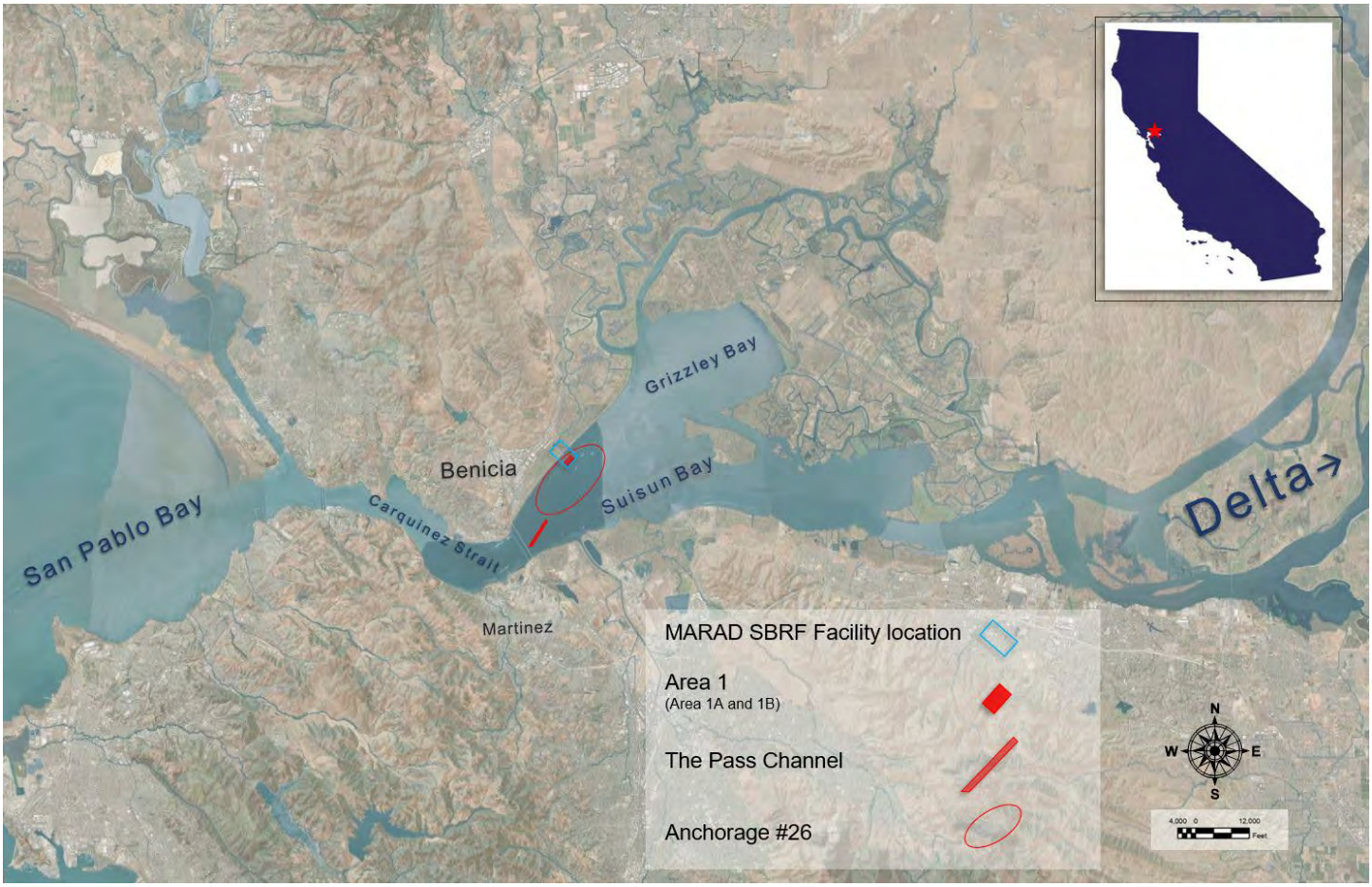

Figure 1: MARAD Project Vicinity and Location Map.

U.S. Department
of Transportation
Maritime
Administration

1200 New Jersey Avenue S.E.
Washington, DC 20590

Figure 2: Area 1 Project Location and Limits .

U.S. Department
of Transportation
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1200 New Jersey Avenue S.E.
Washington, DC 20590

Figure 3: Area 2 (The Pass Channel) Project Location and Limits.

U.S. Department
of Transportation
Maritime
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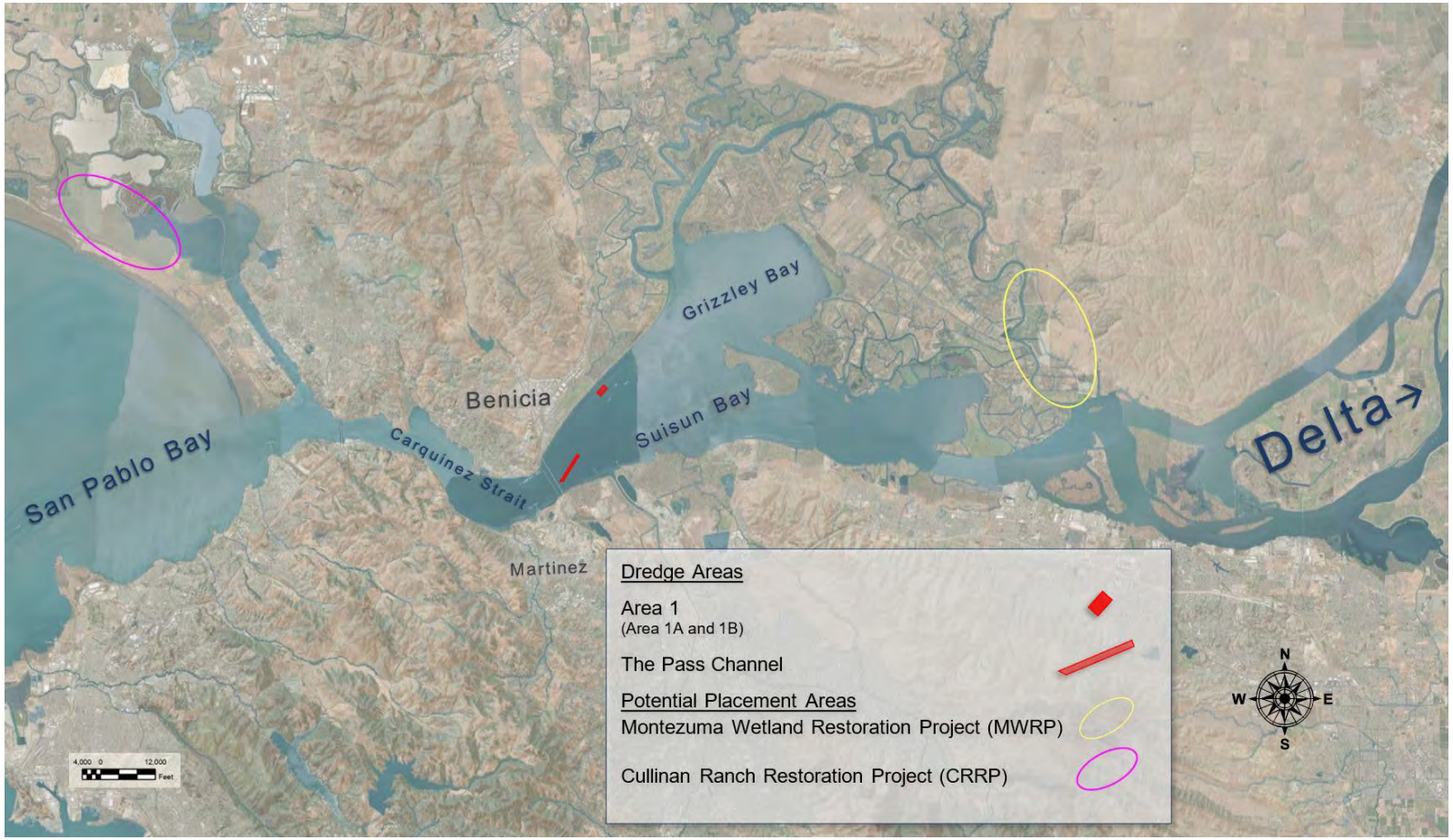
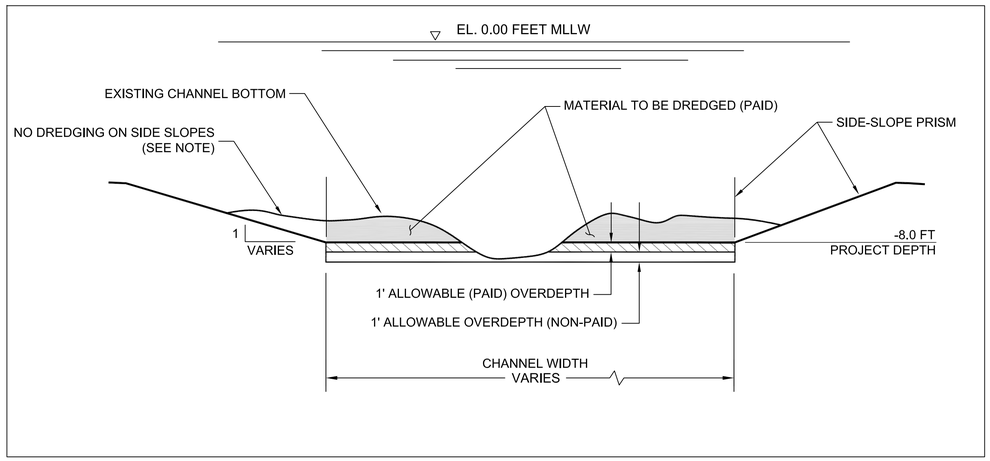
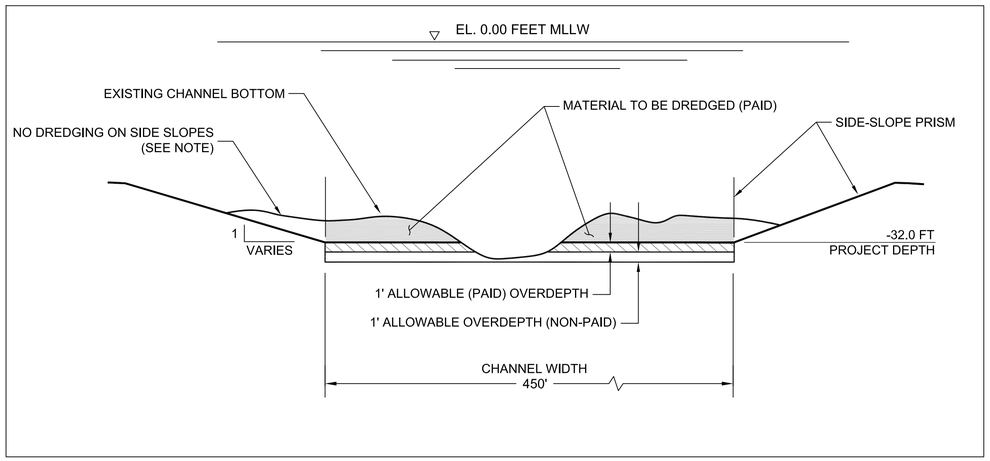
1200 New Jersey Avenue S.E.
Washington, DC 20590





TYPICAL DREDGING SECTION - AREA 1

NOT TO SCALE



TYPICAL DREDGING SECTION - MARAD PASS CHANNEL

NOT TO SCALE

US Army Corps of Engineers®

MARK	DESCRIPTION	DATE

DESIGNED BY: F.CHAN
DRAWN BY:
CHECKED BY:
SUBMITTED BY:
ISSUE DATE:
SOLICITATION NO:
CONTRACT NO:
PROJECT NO:
SIZE:

U.S. ARMY CORPS OF ENGINEERS
SAN FRANCISCO DISTRICT
450 GOLDEN GATE AVE, 41TH FLOOR
SAN FRANCISCO, CA 94102-3404

SOLANO COUNTY, CALIFORNIA
MARITIME ADMINISTRATION (MARAD)
DREDGING PROJECT

TYPICAL CROSS SECTIONS

SHEET ID

C:\Users\L3ECEALK\Documents\Projects\MARAD\DWG\ MARAD-ProposedArea2_Pass.dwg 27 Jul 2022 - 3:39pm

EXHIBIT

U.S. Department
of Transportation
**Maritime
Administration**

1200 New Jersey Avenue S.E.
Washington, DC 20590

1 September, 2022

Subject: Suisun Bay Reserve Fleet Pier and Pass Channel Dredging, Solano & Contra Costa County, California – Request for Concurrence with Endangered Species Act Determination

Jana Affonso
Bay-Delta Fish and Wildlife Office
650 Capitol Mall, 8th Floor
Sacramento, California 95814
c/o Kim Squires, kim_squires@fws.gov

Dear Ms. Affonso:

Pursuant to Section 7(a)(2) of the Endangered Species Act of 1973, as amended (ESA; 50 C.F.R. Part 402), the Department of Transportation Maritime Administration (MARAD) is requesting concurrence from the U.S. Fish and Wildlife Service (USFWS) with our determination that the proposed Suisun Bay Reserve Fleet (SBRF) Pier and Pass Channel Dredging project may affect, but is not likely to adversely affect delta smelt (*Hypomesus transpacificus*) or the designated critical habitat of this species.

Project Description

MARAD's SBRF facility is located in Benicia, Solano County, California along the shoreline of Suisun Bay (see Figure 1). The SBRF is part of the National Defense Reserve Fleet and consists of a variety of vessels maintained for national defense and emergency sealift purposes. Over the years, siltation and accretion have occurred in the pass channel and around the SBRF facility pier anchorage (i.e., Area 1 denoted in Figure 1) resulting in reduced depths that are impeding navigation and impacting SBRF operations. The purpose of the proposed action is to restore the authorized navigational depths at MARAD's SBRF facilities in order to preserve operational functions at the site. The proposed action is necessary for continued operation of SBRF's service craft as well as vessel access into the SBRF anchorage and out to the Federal navigation channel. The proposed action would involve dredging of approximately 250,000 cubic yards (CY) of material from the facility pier and pass channel areas at the SBRF facility and associated transport and placement of suitable dredged material at a beneficial reuse site.

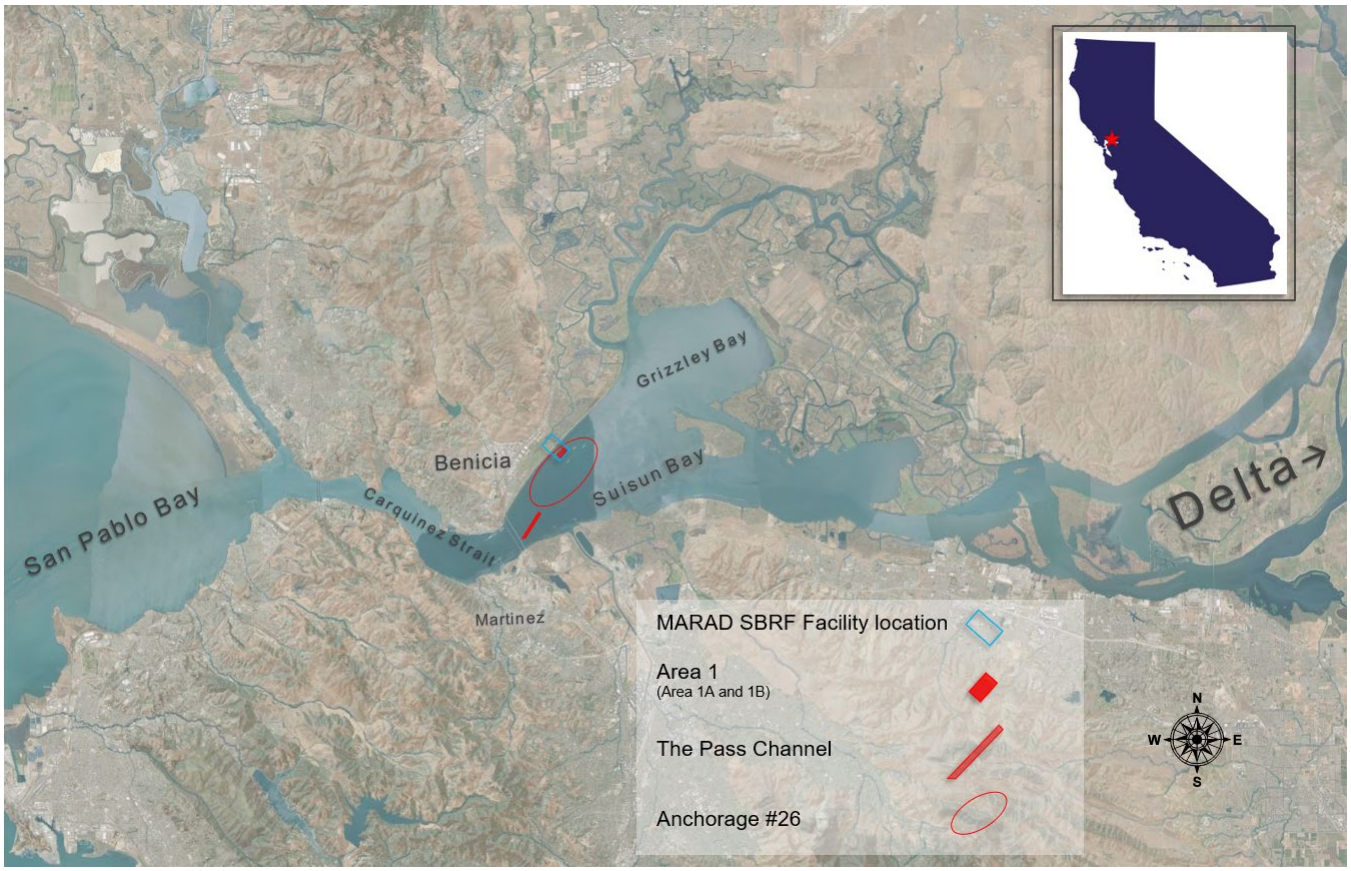


Figure 1. Overhead view of MARAD SBRF facility and project areas.

All dredging would be conducted during the applicable environmental work windows identified by the Long-Term Management Strategy for Placement of Dredge Material for San Francisco Bay (LTMS) to avoid the presence of special status species, unless expanded environmental work windows are approved through the appropriate consultation(s). The applicable window is August 1 through November 30 of any given year for the Suisun Bay region (USACE 2014a, 2015), but to the extent feasible dredging would occur from August 1 through September 30 to better avoid or minimize impacts to delta smelt. Based on an assumed rate of dredging and transport to the placement site of 3,000 CY per day, the duration for dredging of Area 1 is estimated to be 24 days and the duration for dredging of the Pass Channel is estimated to be 60 days in a subsequent year. A total of 70,600 CY of material would be removed from Area 1 which is comprised of shallow water habitat (i.e., less than 4 m (13 ft) mean low lower water (MLLW)) and 177,500 CY from the Pass Channel where present depths range from approximately -32 MLLW and -36 MLLW. Location-specific quantities and detailed imagery of Area 1 and the Pass Channel are provided in the Attachment.

Approximately 26 acres total across both sites would be dredged, with a single episode of dredging at each location (Area 1 and the Pass Channel); although dredging would take place in different years, with Area 1 taking place in 2023 and the Pass Channel taking place in in a subsequent year (i.e., now expected to be 2024 but is contingent upon funding). A mechanical clamshell dredge would be used to collect material, which would then be placed in a bottom-dumping scow.

The project proposes to support beneficial reuse by placing dredged sediment at one of the two existing upland wetland restoration sites in San Francisco Bay that are currently permitted and actively accepting dredge material: Montezuma Wetland Restoration Project (MWRP) or the Cullinan Ranch Restoration Project (CRRP). Sediment sampling and testing was performed to identify the potential suitability of the material to be dredged from Area 1 and the Pass Channel for placement at these sites. Based on the testing results, the material is assumed to be suitable for either MWRP or CRRP as cover material. The MWRP and CRRP are approximately 15 to 20 nautical miles from both SBRF Area locations. Both upland beneficial reuse sites are fully permitted to accept dredge material and conduct wetland restoration activities. The proposed action would conclude with delivery of material to offloading equipment at these upland sites and as such, the sites are not included in the action area associated with the proposed action.

Endangered Species Act Consultation

The proposed project has been reviewed for its potential impacts to threatened or endangered species and designated critical habitats. Primary impacts include entrainment and removal of benthic organisms by the clamshell dredge, increasing turbidity at the dredge location, and disturbance in both shallow water habitat (i.e., less than 4 m (13 ft) MLLW in Area 1 and in deeper habitat in the Pass Channel.

Delta Smelt *Hypomesus transpacificus*

The delta smelt is a euryhaline species (able to tolerate a wide range of salinity) endemic to the San Francisco Bay and Sacramento-San Joaquin River Delta. Its range is confined to the fresh and low salinity waters of the Delta and Suisun Bay; however, periods of high outflow may move fish westward into San Pablo Bay.

Critical habitat includes all areas of water and submerged lands below ordinary high water and the entire water column bounded by and contained in Suisun Bay (including the contiguous Grizzly and Honker bays); the length of Goodyear, Suisun, Cutoff, First Mallard, and Montezuma Sloughs; and the existing contiguous waters contained within the Delta.

Adults begin migrating into the tributaries with slower velocities and salinities of Suisun Bay and the Delta in September and October. Spawning takes place from December through July but the peak is from mid-April to May.

Effects to special status species and habitats

The potential for clamshell dredging to entrain or physically injure or kill delta smelt would be avoided by limiting dredging to the August 1 through November 30 work window established under the LTMS, when the species has a reduced likelihood of being present. To the extent feasible, dredging associated with the proposed action would be attempted earlier in the work window, from August 1 through September 30, before delta smelt begin any upstream spawning migration. Dredging earlier in the work window, when possible, would further minimize the potential effects on migrating delta smelt and migratory critical habitat.

Underwater noise could affect the delta smelt if they were present in the action area during dredging, but the clamshell dredging sound pressure levels (124 dB at 150m from the bucket) are well below established interim criteria for underwater noise impacts to fish from pile driving which suggest a peak sound pressure of 206 dB is injurious to fishes and sound pressure levels of 183-187 dB (depending on fish weight) can cause temporary shifts in hearing, resulting in temporarily decreased fitness (e.g., reduced foraging success and reduced ability to detect and avoid predators; Caltrans 2020). Moreover, the mechanical dredging sound pressure levels are below 150 dB, which is the threshold NMFS has used for triggering behavioral effects (e.g., avoidance) in fish. Therefore, underwater noise from the proposed action would not have significant effects on these species.

Dredging would result in increased turbidity from suspended sediments which could affect delta smelt and critical habitats. Early life stage individuals tend to be more sensitive to turbidity than adults but spawning areas are not present in the proposed dredging footprints or vicinity so eggs or larval life stages would not be present. Large adult and juvenile fish would be mobile enough to avoid areas of high-turbidity plumes caused by dredging. Suspending sediments can also suspend contaminants into the water column, however sampling and testing of the material to be dredged indicated it was suitable for unconfined aquatic placement suggesting its resuspension would not have significant adverse impacts on biota. Moreover, turbidity plumes would be local and quickly disperse.

Based on the analysis above and the proposed avoidance and minimization measure associated with the proposed action, impacts to delta smelt and habitats from the proposed action would be minor, temporary, localized. The Department of Transportation Maritime Administration has determined that the proposed project is not likely to adversely affect delta smelt or the designated critical habitat of this species

We are requesting your written concurrence with the Department of Transportation Maritime Administration's determination that the proposed project may affect, but is not likely to adversely affect the delta smelt, or the designated critical habitat of the species. If you disagree with this determination or require additional information, please contact Joe Pecoraro at Joe.Pecoraro@dot.gov regarding this consultation request.

Sincerely,

Joe Pecoraro
Fleet Superintendent
USDOT Maritime Administration

U.S. Department
of Transportation
Maritime
Administration

1200 New Jersey Avenue S.E.
Washington, DC 20590

Attachment A: SBRF Pier and Pass Channel Dredging Project Overview and Figures

Figure 2. Overhead view of Area 1 (38.077450, -122.097602).

The head of MARAD SBRF's facility pier (Area 1) is located offshore of Lake Herman Road in Benicia (Figure 2). This is the area where SBRF berths its service craft and lands its self-propelled crane barge in order to service the Reserve Fleet. Area 1 is comprised of two dredge sites: Area 1A, located to the west of the pier, and Area 1B which is to the east. The authorized depth in Area 1 is 8 feet.

The "Pass Channel" (Area 2) is the vessel entrance to the SBRF and is situated between Bulls Head Reach and the foot of General Anchorage #26 (Figure 3). This is the area that vessel traffic bound to and from the anchorage must pass through from or to the Bulls Head Reach Channel, located just upstream of the Benicia Martinez highway bridge, both in Solano and Contra Costa Counties. The authorized depth of the Pass Channel is 32 feet.

U.S. Department
of Transportation
**Maritime
Administration**

1200 New Jersey Avenue S.E.
Washington, DC 20590

Figure 3. Overhead view of the Pass Area (38.046661, -122.119791).

Area 1 would be dredged to -8 feet mean low lower water plus up to 2 feet of overdepth and the Pass Channel would be dredged -32 feet MLLW, plus up to 2 feet of overdepth.

Table 2. Dredge quantities and details.

Year	Area		Dredge Volume (CY) Required Depth -8 MLLW	Required Depth -32 MLLW	Slope	1rst ft Overdepth	Material to be Dredged	Project Area (SQ Ft)	Duration (Rate: 3,000 CY/day)
2023	Area 1	Area 1A	16,593		1,260	2,521	23,500	212,024	24 days
		Area 1B	34,229		2,352	4,318	47,100		
TBD	Pass Channel			127, 499	4,502	33,996	177,500	910,940	60 days
					Overall Total:		**248,100** CY	**1,291,400** Sq Ft	

Table 1: Proposed Maintenance Dredging for MARAD SB

U.S. Department
of Transportation
**Maritime
Administration**

1200 New Jersey Avenue S.E.
Washington, DC 20590

1 September, 2022

Subject: Suisun Bay Reserve Fleet Pier and Pass Channel Dredging, Solano & Contra Costa County, California – Request for Concurrence with Endangered Species Act Determination

Mr. Scott Rumsey
Acting Regional Administrator
National Marine Fisheries Service, West Coast Region
c/o Mr. Gary Stern, Gary.Stern@noaa.gov
North Central Coast Regional Office
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404-4731

Dear Mr. Rumsey:

Pursuant to Section 7(a)(2) of the Endangered Species Act of 1973, as amended (ESA; 50 C.F.R. Part 402), the Department of Transportation Maritime Administration (MARAD) is requesting concurrence from the National Marine Fisheries Service (NMFS) with our determination that the proposed Suisun Bay Reserve Fleet (SBRF) Pier and Pass Channel Dredging project may affect, but is not likely to adversely affect: endangered Sacramento River winter-run evolutionarily significant unit (ESU) of Chinook salmon (*O. tshawytscha*), threatened Central Valley spring-run ESU of Chinook salmon (*O. tshawytscha*), threatened Central California Coast (CCC) distinct population segment (DPS) of steelhead (*O. mykiss*), threatened Central Valley DPS of steelhead (*O. mykiss*), threatened southern DPS of North American green sturgeon (*Acipenser medirostris)*, or their designated critical habitats except for that of CCC steelhead. No CCC steelhead designated critical habitat occurs in the project area.

Project Description

MARAD's SBRF facility is located in Benicia, Solano County, California along the shoreline of Suisun Bay (see Figure 1). The SBRF is part of the National Defense Reserve Fleet and consists of a variety of vessels maintained for national defense and emergency sealift purposes. Over the years, siltation and accretion have occurred in the pass channel and around the SBRF facility pier anchorage (i.e., Area 1 denoted in Figure 1) resulting in reduced depths that are impeding navigation and impacting SBRF operations. The purpose of the proposed action is to restore the authorized navigational depths at MARAD's SBRF facilities in order to preserve operational functions at the site. The proposed action is necessary for continued operation of SBRF's service craft as well as vessel access into the SBRF anchorage and out to the Federal navigation channel. The proposed action would involve dredging of approximately 250,000 cubic yards (CY) of material from the facility pier and pass channel areas at the

SBRF facility and associated transport and placement of suitable dredged material at a beneficial reuse site.

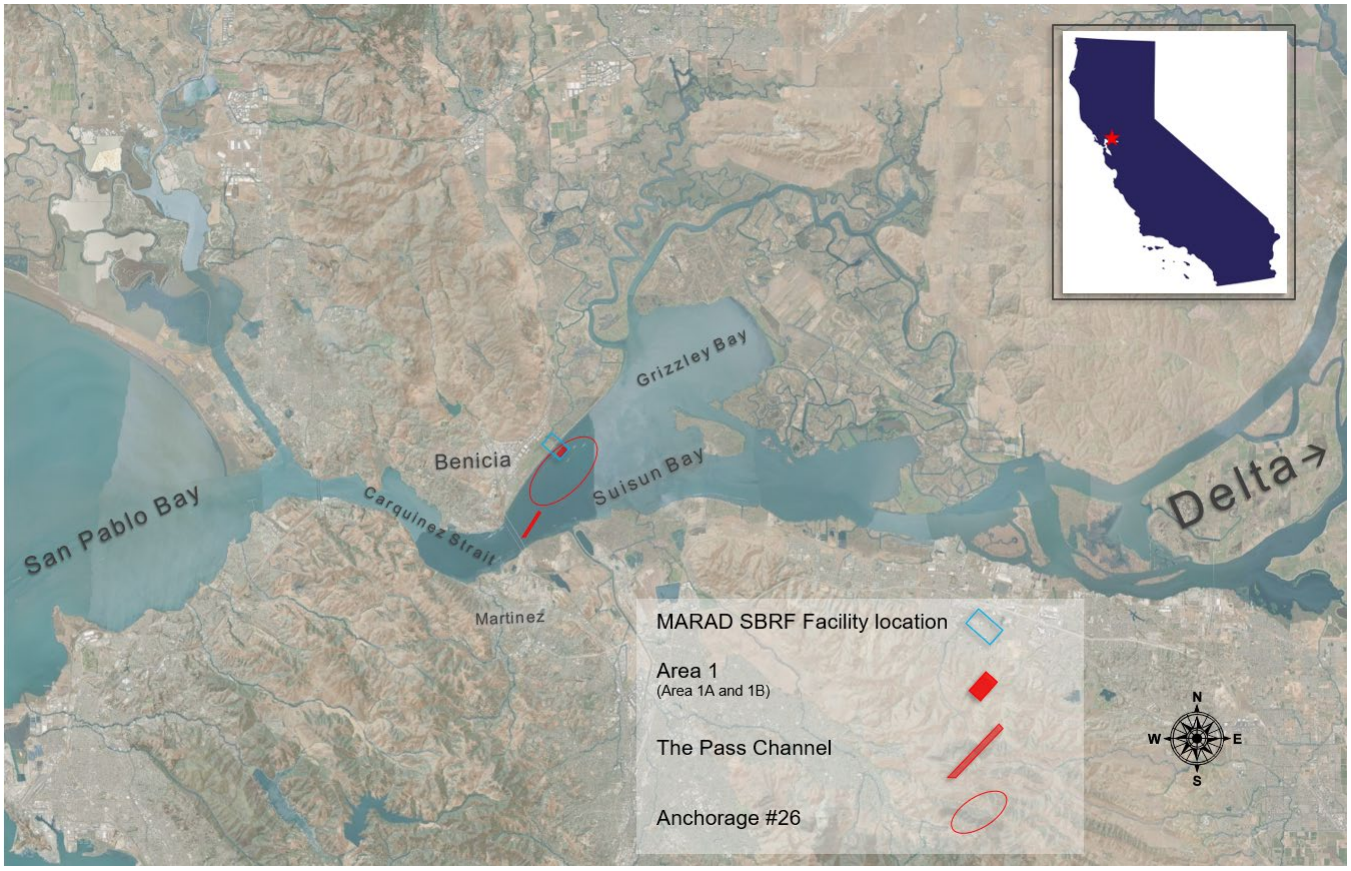


Figure 1. Overhead view of MARAD SBRF facility and project areas.

All dredging would be conducted during the applicable environmental work windows identified by the Long-Term Management Strategy for Placement of Dredge Material for San Francisco Bay (LTMS) to avoid the presence of special status species, unless expanded environmental work windows are approved through the appropriate consultation(s). The applicable window is August 1 through November 30 of any given year for the Suisun Bay region (USACE 2014a, 2015). Based on an assumed rate of dredging and transport to the placement site of 3,000 CY per day, the duration for dredging of Area 1 is estimated to be 24 days and the duration for dredging of the Pass Channel is estimated to be 60 days in a subsequent year. A total of 70,600 CY of material would be removed from Area 1 which is comprised of shallow water habitat (i.e., less than 4 m (13 ft) mean low lower water (MLLW)) and 177,500 CY from the Pass Channel where present depths range from approximately -32 MLLW and -36 MLLW. Location-specific quantities and detailed imagery of Area 1 and the Pass Channel are provided in the Attachment.

Approximately 26 acres total across both sites would be dredged, with a single episode of dredging at each location (Area 1 and the Pass Channel); although dredging would take place in different years, with Area 1 taking place in 2023 and the Pass Channel taking place in in a subsequent year (i.e., now

expected to be 2024 but is contingent upon funding). A mechanical clamshell dredge would be used to collect material, which would then be placed in a bottom-dumping scow.

The project proposes to support beneficial reuse by placing dredged sediment at one of the two existing upland wetland restoration sites in San Francisco Bay that are currently permitted and actively accepting dredge material: Montezuma Wetland Restoration Project (MWRP) or the Cullinan Ranch Restoration Project (CRRP). Sediment sampling and testing was performed to identify the potential suitability of the material to be dredged from Area 1 and the Pass Channel for placement at these sites. Based on the testing results, the material is assumed to be suitable for either MWRP or CRRP as cover material. The MWRP and CRRP are approximately 15 to 20 nautical miles from both SBRF Area locations. Both upland beneficial reuse sites are fully permitted to accept dredge material and conduct wetland restoration activities. The proposed action would conclude with delivery of material to offloading equipment at these upland sites and as such, the sites are not included in the action area associated with the proposed action.

Endangered Species Act Consultation

The proposed project has been reviewed for its potential impacts to threatened or endangered species and designated critical habitats. Primary impacts include entrainment and removal of benthic organisms by the clamshell dredge, increasing turbidity at the dredge location, and disturbance in both shallow water habitat (i.e., less than 4 m (13 ft) MLLW in Area 1 and in deeper habitat in the Pass Channel.

Salmonids:

Adult Sacramento River winter-run Chinook salmon are expected to pass through Suisun Bay from November through May or June on the way to their freshwater spawning grounds (USBR 2008 and references therein). Outmigrating juveniles would be expected to occur in Suisun Bay primarily during rainy months and have been captured at Chipps Island in upper Suisun Bay from September to June, peaking in March and April (USBR 2008 and references therein). Adult spring-run Chinook salmon are expected to migrate through Suisun Bay primarily in January and February, and outmigrating juveniles may be present from January through June (California Department of Fish and Game (CDFG) 1998). McEwan (2001) indicates that migrating Central Valley steelhead adults may occur from November through March, and juvenile outmigrants may be present from January through May. There is uncertainty about the genetics of CCC steelhead that spawn in San Francisco Bay drainages (Busby et al. 1996), but spawning CCC steelhead are present in Sonoma Creek from December through April and juvenile outmigration occurs from March through June (Fukushima and Lesh 1998).

The adherence of the project to the in-water work window of August 1 through November 30 should avoid impacts to essentially all juvenile salmonids as none are expected to be in the project area during that period. Adult winter-run Chinook salmon and adult steelhead may occur in Suisun Bay during November, but they would be expected to remain in deeper water and swim relatively rapidly past the project site as they would be migrating upstream to spawn. Should salmonids actually encounter the project, even juveniles are expected to be able to swim well enough to avoid the clamshell or move away from turbid areas. Impacts to critical habitat, including increases in turbidity and removal of benthic organisms, would be minor, temporary, and localized. Adult salmonids feed little as they migrate, and juveniles feed on pelagic (i.e., midwater) organisms rather than benthic organisms. Only a

small portion of Suisun Bay would be temporarily affected by the proposed project. Turbidity impacts would be limited as no in-bay placement of dredge material will occur. The Department of Transportation Maritime Administration has determined that the proposed project is not likely to adversely affect Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, Central Valley steelhead, or CCC steelhead, or the designated critical habitats of Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, or Central Valley steelhead.

Green Sturgeon: Green sturgeon distribution and habitat use are still largely unknown, but juveniles, subadults, and adults may be presumed present in low densities year-round in Suisun Bay (Israel and Klimley 2008). Should they encounter the clamshell bucket, even juvenile green sturgeon are expected to be mobile enough to avoid it as they should be at least 30 cm in length.

Benthic habitat can provide important foraging areas for special-status fish species, especially for Green Sturgeon, which primarily forage in the benthos at depths up to 33 feet. Steelhead and Chinook Salmon are primarily drift feeders, but also occasionally forage in the benthos, typically in waters less than 30 feet deep. The loss of benthic invertebrates during dredging or other bottom-disturbing activities may decrease the forage value of benthic habitat in the action area. This impact would be minor, temporary, and localized in the context of the forage habitat available in Suisun Bay, and temporary with recolonization and restoration of sediment substrate habitat expected to occur within months to a year.

Dredging would result in increased turbidity from suspended sediments which could affect fish species and critical habitats. Early life stage individuals tend to be more sensitive to turbidity than adults, but spawning areas are not present in the proposed dredging footprints or vicinity, so eggs or larval life stages would not be present. Large adult and juvenile fish would be mobile enough to avoid areas of high-turbidity plumes caused by dredging. Suspending sediments can also suspend contaminants into the water column, however sampling and testing of the material to be dredged indicated it was suitable for unconfined aquatic placement suggesting its resuspension would not have significant adverse impacts on biota. Moreover, turbidity plumes would be local and quickly disperse.

Coastal Pelagic Essential Fish Habitat (EFH) includes all marine and estuarine waters from the shoreline along the coasts of California, Oregon, and Washington; offshore to the limits of the exclusive economic zone; and above the thermocline, where sea surface temperatures range between 10 and 26 degrees Celsius. The entirety of the San Francisco Bay Estuary below mean higher high water is designated as EFH for Coastal Pelagic Species.

The Pacific Coast Salmon Fisheries Management Plan (FMP) guides the management of commercial and recreational salmon fisheries off the coasts of Washington, Oregon, and California, and includes Chinook Salmon (*Oncorhynchus tshawytscha*) and Coho Salmon (*O. kisutch*). Pacific Coast Salmon freshwater EFH includes all rivers or creek currently or historically occupied by Chinook Salmon or Coho Salmon. Estuarine and marine areas such as San Francisco Bay are also included in this essential fish habitat designation. In estuarine and marine areas, Pacific Coast Salmon EFH extends from the nearshore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone offshore of California, north of Point Conception. The FMP also defines five Habitat Areas of Particular Concern for the Pacific Coast Salmon essential fish habitat: complex

channels and floodplain habitats, thermal refugia, spawning habitat, estuaries, and marine and estuarine submerged aquatic vegetation.

Dredging activities may affect EFH. Both open waters and substrates are included as primary components of EFH, thus the potential impacts described above for pelagic and benthic fauna are applicable to EFH as well. Such impacts include entrainment of fish and plankton and the removal of substrates and benthic invertebrates during dredging. However, based on the analysis above and the proposed avoidance and minimization measure associated with the proposed action, impacts to special status species and habitats from the proposed action would be minor, temporary, and localized.

We are requesting your written concurrence with the Department of Transportation Maritime Administration's determination that the proposed project may affect, but is not likely to adversely affect: endangered Sacramento River winter-run evolutionarily significant unit (ESU) of Chinook salmon (*O. tshawytscha*), and threatened Central Valley spring-run ESU of Chinook salmon (*O. tshawytscha*), threatened Central California Coast DPS of steelhead (*O. mykiss*), threatened Central Valley DPS of steelhead (*O. mykiss*), threatened southern distinct population segment (DPS) of North American green sturgeon (*Acipenser medirostris)*, or their designated critical habitats; nor will it adversely affect essential fish habitat. If you disagree with our determination or require additional information, please contact Joe Pecoraro at Joe.Pecoraro@dot.gov regarding this consultation request.

Sincerely,

Joe Pecoraro
Fleet Superintendent
USDOT Maritime Administration

References:

Busby, P., T.C. Wainwright, G.J. Bryant, L.J. Lierheimer, R.S. Waples, F.W. Waknitz, and I.V. Lagomarsino. 1996. Status Review of west coast steelhead from Washington, Idaho, Oregon, and California. U.S. Department of Commerce, NOAA. NMFS-NWFSC-27. 261 pages

CDFG. 1998. A status review of the spring-run Chinook salmon (Oncorhynchus tshawytscha) in the Sacramento River drainage. Report to the Fish and Game Commission. Candidate Species Status Report 98-01. 249 pages plus appendices.

Fukushima, L., and E.W. Lesh. 1998. Adult and juvenile anadromous salmonid migration timing in the California streams. California Department of Fish and Game 84(3):133-145.
McEwan, D. 2001. Central Valley steelhead. Pages 1-43 *in* Randall L. Brown, editor. Contributions to the Biology of Central Valley Salmonids, Volume 1. California Department of Fish and Game, Fish Bulletin 179.USBR. 2008. Biological assessment on the continued long-term operations of the Central Valley Project and the State Water Project. 1089 pages plus appendices.

Israel, J. and A.P. Klimley. 2008. Life History Conceptual Model for North American Green Sturgeon (Acipenser medirostris).
https://nrm.dfg.ca.gov/documents/ContextDocs.aspx?sub=DRERIP_Documents_Models. [Google Scholar]

Attachment A: SBRF Pier and Pass Channel Dredging Project Overview and Figures

Figure 2. Overhead view of Area 1.

The head of MARAD SBRF's facility pier (Area 1) is located offshore of Lake Herman Road in Benicia (Figure 2) at (38.077450, -122.097602). This is the area where SBRF berths its service craft and lands its self- propelled crane barge in order to service the Reserve Fleet. Area 1 is comprised of two dredge sites: Area 1A, located to the west of the pier, and Area 1B which is to the east. The authorized depth in Area 1 is 8 feet.

The "Pass Channel" (Area 2) is the vessel entrance to the SBRF and is situated between Bulls Head Reach and the foot of General Anchorage #26 (Figure 3) at (38.046661, -122.119791). This is the area that vessel traffic bound to and from the anchorage must pass through from or to the Bulls Head Reach Channel, located just upstream of the Benicia Martinez highway bridge, both in Solano and Contra Costa Counties. The authorized depth of the Pass Channel is 32 feet.

Figure 3. Overhead view of the Pass Area.

Area 1 would be dredged to -8 feet mean low lower water plus up to 2 feet of overdepth and the Pass Channel would be dredged -32 feet MLLW, plus up to 2 feet of overdepth.

Table 2. Dredge quantities and details.

Year	Area		Dredge Volume (CY) Required Depth -8 MLLW	Required Depth -32 MLLW	Slope	1rst ft Overdepth	Material to be Dredged	Project Area (SQ Ft)	Duration (Rate: 3,000 CY/day)
2023	Area 1	Area 1A	16,593		1,260	2,521	23,500	212,024	24 days
		Area 1B	34,229		2,352	4,318	47,100		
TBD	Pass Channel			127, 499	4,502	33,996	177,500	910,940	60 days
					Overall Total:		**248,100** CY	**1,291,400** Sq Ft	

Table 1: Proposed Maintenance Dredging for MARAD SBRF

U.S. Department
of Transportation

**Maritime
Administration**

1200 New Jersey Avenue, SE
Washington, DC 20590

August 2, 2022

Ms. Julianne Polanco
State Historic Preservation Officer
California Department of Parks and Recreation
Office of Historic Preservation
1416 9th Street, Room 1442-7
Sacramento, California 94296-0001

Subject: Section 106 Determination of Effects for the MARAD SBRF and Pass Channel Dredging in Solano & Contra Costa Counties, CA

Dear Ms. Polanco:

The U.S. Department of Transportation (DOT) Maritime Administration (MARAD) has engaged the U.S. Army Corps of Engineers (USACE) to dredge in and adjacent to MARAD's Suisun Bay Reserve Fleet's (SBRF's) facility pier and Pass Channel. MARAD's SBRF is located in Benicia, Solano County, California along the shoreline of Suisun Bay (Figure 1). The SBRF is part of MARAD's National Defense Reserve Fleet (NDRF) and consists of a variety of vessels maintained for National defense and emergency sealift. The proposed action would involve dredging of approximately 250,000 cubic yards (CY) of material from the facility pier and pass channel areas at the SBRF facility and associated transport and placement of suitable dredged material at a beneficial reuse site.

As the proposed action constitutes an undertaking, pursuant to Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. § 306108), and it's implementing regulations (36 C.F.R. pt. 800), MARAD is initiating consultation with your office regarding this project.

The purpose of the proposed action is to restore the authorized navigational depths at MARAD's SBRF facilities to preserve operational functions at the site. Over the years, siltation and accretion have occurred in the Pass Channel and around the SBRF facility pier resulting in reduced depths that are impeding navigation and impacting SBRF operations.

Project Description and Defining the Area of Potential Effects

The project APE has two components: (1) the existing Pier and (2) the Pass Channel.

The head of SBRF's facility pier (Area 1) is located offshore of Lake Herman Road in Benicia (Figure 2). This is the area where SBRF berths its service craft and lands its self- propelled crane barge in order to service the Reserve Fleet. Area 1 is comprised of two sections: Area 1A, located to the west of the pier, and Area 1B which is to the east (Figure 2). The total area for the pier is approximately 2500 square feet. The authorized depth in Area 1 is eight feet, which is the extant of the vertical APE for Area 1.

The "Pass Channel" is the vessel entrance to the SBRF and is situated between Bulls Head Reach and the foot of General Anchorage #26 (Figure 3). This is the area that vessel traffic bound to and from the anchorage must pass through from or to the Bulls Head Reach Channel, located just upstream of

the Benicia Martinez highway bridge, both in Solano and Contra Costa Counties. The width of the Pass Channel is 450 feet, and the authorized depth of the Pass Channel is 32 feet, which is the extent of the horizontal and vertical APE for the Pass Channel.

Dredging would be performed to these depths to restore navigability (Figure 4), removing sediment that has accumulated since the extension of the SBRF Facility Pier in 1994, and that has accumulated in the Pass Channel area. Dredging for this project would take place in different years, with Area 1 expected to be dredged in 2023 and the Pass Channel dredging in a subsequent year.

Dredging associated with the Proposed Action would directly remove and physically disturb sediment substrate in the dredging footprints of Area 1 and the Pass Channel. Approximately 250,000 CY of sediment substrate covering an area of 26 acres would be disturbed total across both these sites. The sediment will be beneficially reused for restoration projects at the Montezuma Wetlands or the Cullinan Ranch Restoration Project (Figure 5). Agreement documents for the management of historic properties during restoration work at Montezuma Wetlands and Cullinan Ranch were executed in consultation with SHPO and other signatories. MARAD is not proposing to create wetlands as part of the project. It will only utilize existing wetland restoration sites for beneficial reuse disposal. Therefore, including either Montezuma Wetlands or Cullinan Ranch in the APE is unnecessary, and ultimately duplicative of existing agreements and consultation.

Identification Efforts

A qualified USACE archaeologist conducted an in-house records and literature search of USACE and MARAD environmental projects, cultural resource studies, dredging surveys, and permits to identify submerged cultural resources within the APE. Records were also reviewed online for results from California State Lands Commission's searchable database, underwater surveys at NOAA's Automated Wreck and Obstruction Information System (AWOIS), in addition to T-Charts from the U.S. Coast Survey located at https://historicalcharts.noaa.gov/. The California State Lands Commission's searchable database generated a list of nine vessels lost in Solano County. All the vessels were situated north of Suisun Bay and outside the APE.

A survey of the files and records at the Northwest Information Center (NWIC) of the California Historical Resources Information System (CHRIS), and in-house records, resulted in the identification of six archaeological surveys in Benicia and Suisun Bays. Two surveys overlap the APE for the current project: one completed for the Benicia- Martinez Bridge System Improvement Project in 2002 and another remote sensing survey completed in 2007 for PG&E's submerged Transbay Utility Cable (Figure 6). Four additional archaeological surveys were conducted within one mile of the APE (Cartier 1980, Cupples 1979, Ecumene Associates 1980, and Napton 1985). The results of the desktop review identified one precontact archaeological site (CA-SOL-22), and two historic archaeological sites lie within one mile of the APE (CA-CCO-745H and CA-CCO-746H), both of which are the remains of piers associated with the Mountain Copper Company. In addition, a submerged portion of a World War II floating boom was discovered close to the bridge but outside the APE and recorded as an isolated cultural resource (P-48-000536). No historic properties were identified within the APE (Figure 7).

U.S. Department
of Transportation

1200 New Jersey Avenue, SE
Washington, DC 20590

**Maritime
Administration**

Native American Consultation

Consultation was initiated with the Native American Heritage Council (NAHC) and letters were sent to the following federally recognized Tribes:

- Scotts Valley Band of Pomo Indians, California
- California Valley Miwok Tribe, California
- Tule River Indian Tribe of the Tule River Reservation, California

Determination of Effect

No cultural resources eligible for the National Register of Historic Places (NRHP) were identified in the APE for either the Pier or the Pass Channel. Deposition has filled Area 1 with at least eight feet of sediment over the last approximately 20 years. The Pier causeway was constructed from the shoreline out to the 15-foot MLLW depth. The pier now sits on mud at the high tide. The removal of eight feet of bay mud will bring the depth of the pier back to its navigable water level needed for the transportation boats to access and maintain the reserve fleet. Based upon the above discussion regarding the greatly modified conditions in the existing project channels, including bridge improvement and buried utility lines, the Proposed Action constitutes a No Historic Properties Affected undertaking. Therefore, pursuant to 36 CFR 800.4(d)(1) MARAD seeks concurrence by your office with this finding.

Please accept my sincere thanks for the assistance you have rendered MARAD throughout this and past consultation processes. If you have any questions, please do not hesitate to contact me at (202) 366-0866 or at Barbara.Voulgaris@dot.gov.

Sincerely,

Barbara Voulgaris
Federal Preservation Officer

Figure 1: MARAD project vicinity and location map.
Figure 2: Area 1 APE.
Figure 3: The Pass Channel APE.
Figure 4: Image of MARAD boats submerged in mud at low tide.
Figure 5: Beneficial Reuse Disposal Sites.
Figure 6: Survey area for the Transbay Utility Cable, which overlaps the Pass Channel APE.
Figure 7: Location of project in relation to previous surveys, utility lines, and cultural resources.

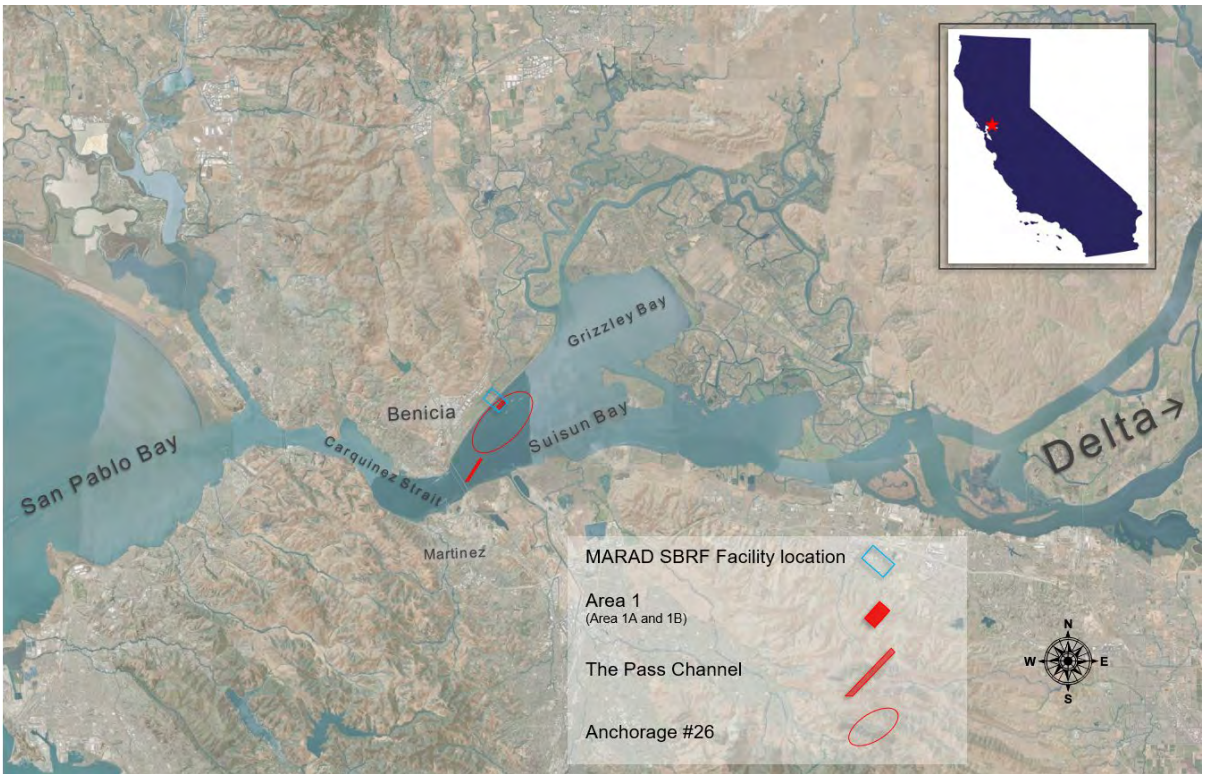


Figure 1: MARAD Project Vicinity and Location Map.

Figure 2: Area 1 APE.

Figure 3: The Pass Channel APE.

Figure 4: Suitable Beneficial Reuse Placement Sites.

Figure 5: Image of MARAD boats submerged in mud at low tide.

Figure 6: Survey area for the Transbay Utility Cable, which overlaps the Pass Channel APE.

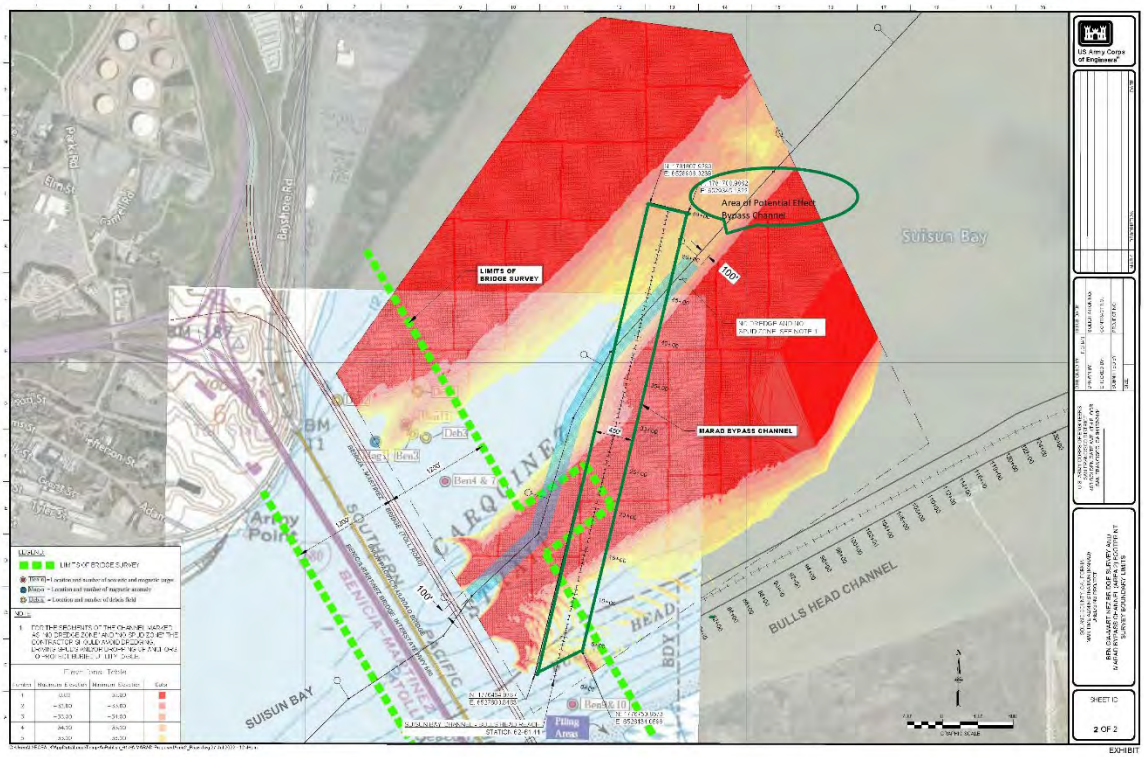


Figure 7: Location of APE in relation to previous surveys, utility lines, and identified cultural resources outside of the APE.

Appendix B:

Air Quality Analysis and Greenhouse Gases

Current Conditions

Suisun Bay is classified as warm and temperate, with an average temperature of 56.4 degrees F and 22.9 inches of annual average rainfall. The winters are rainier than the summers and the least amount of rainfall occurs in July, while the greatest amount of precipitation occurs in February, with an average of 4.6 inches. Temperatures are highest on average in September, at around 62.7 degrees F, with the lowest average temperatures in the year occurring in January when it is around 49.2 degrees F (Climate-data.org, 2022).

Air Quality Analysis

Based on the Federal emissions thresholds established by EPA using NAAQS, an emissions inventory and air quality analysis was performed using the steps below to determine if project emissions would exceed de minimus thresholds and therefore require a general conformity analysis.

Step 1 (Emissions Inventory)

Calculate the total emissions across all of the construction equipment for each day for each criteria air pollutant, to calculate the daily emissions expected. For this step, emissions factor data will be needed, such as those available through the EPA Port Emissions Inventory Guidance (EPA 2022).

Step 2 (Emissions Inventory)

Sum the results of step one for each criteria air pollutant and multiply by the number of working days over the total construction schedule for each calendar year and convert to tons to calculate the total emissions expected to be released for the project, to calculate the yearly emissions expected.

Step 3 (Air Quality Analysis)

Compare the results of step one and two with the applicable threshold from the EPA to ensure project emissions are below the thresholds for each individual criteria air pollutant.

The results of the air quality analysis for the Proposed Action alternative are presented below in Table 4-2. Based on this process for the emissions inventory and air quality analysis, it was determined that the emissions associated with the alternative are below applicable Federal de minimus thresholds, and thus, the project would not cause a significant impact to air quality nor a general conformity analysis.

Table 4-2. Air Quality Analysis Results

	ROG	CO	NOx	SOx	PM10	PM2.5
Peak Daily Emissions Total (lbs/day)	30.32	27.16	169.70	46.73	18.64	16.14
Yearly Project Emissions Totals (tons/year)	1.27	1.14	7.13	1.96	0.78	0.68
EPA NAAQS Yearly Significance Thresholds (tons/year)	100.00	100.00	100.00	100.00	100.00	100.00
Project Emissions Exceed Federal Yearly Threshold?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

Emissions Inventory and Air Quality Analysis: All Equipment Combined

Emissions Inventory

Emission Source Data							Pollutant Emission Factors for Specific Construction Equipment (lbs/hr)(lbs/Hp-hr)(lbs/1,000 Gal)[1,2,3]						Daily Equipment Emissions from Construction Activities (lbs/day)					
Construction Activity/Equipment Type	Power Rating (Hp)	Power Rating (kW)	Load Factor	# Active	Hrs per Day[1]	Fuel Use	ROG	CO	NOx	SOx	PM10	PM2.5	ROG	CO	NOx	SOx	PM10	PM2.5
Clamshell Dredge	N/A	N/A	N/A	1	22	N/A	1.10	0.30	1.10	1.00	0.70	0.60	24.200	6.600	24.200	22.000	15.400	13.200
Tug Boat (Idling)	800	596.56	0.2	1	8.2	65.6	18.20	57.00	419.00	75.00	9.00	8.10	1.194	3.739	27.486	4.920	0.590	0.531
Tug Boat (Towing/Shifting Sediment Barge-Loaded)	800	596.56	0.2	1	10	200	18.20	57.00	419.00	75.00	9.00	8.10	3.640	11.400	83.800	15.000	1.800	1.620
Tug Boat (Towing Sediment Barge-Unloaded)	800	596.56	0.2	1	3.8	60.8	18.20	57.00	419.00	75.00	9.00	8.10	1.107	3.466	25.475	4.560	0.547	0.492
Crew Boat (Tier 2)	300	223.71	0.45	1	4	N/A	0.000232	0.003288	0.013694	0.000010	0.000508	0.000492	0.125	1.776	7.395	0.006	0.274	0.266

Air Quality Analysis

	ROG	CO	NOx	SOx	PM10	PM2.5
Peak Daily Emissions Totals (lbs/day)	30.27	26.98	168.36	46.49	18.61	16.11
Yearly Project Emissions Totals (tons/year)	1.41	1.25	7.83	2.16	0.87	0.75
EPA NAAQS Yearly Significance Thresholds (tons/year)	100	100	100	100	100	100
Project Emissions Exceed Federal Yearly Thresholds?	NO	NO	NO	NO	NO	NO

Tug speed loaded - 6 knots, 2.5 hours delivery time to Montezuma Site from Dredge Site, twice per day

Tug speed unloaded - 8 knots, 1.9 hours Return trip to Dredge Site from Montezuma Site, twice per day

Tug fuel use - 8 gallons per hour idling, 16 gallons per hour towing unloaded barge, 20 gallons per hour towing loaded barge

Based on a production rate of 3,000 cy per day and 93 days of dredging for a total of 280,000 CY.

Clamshell dredge has 2 hours downtime per day for refueling and shift change

1. Emissions factors for tugboat maintenance dredging taken from the Port of Los Angeles Channel Deepening Project Final Supplemental Environmental Impact Statement/Environmental Impact Report, September 2000.

2. Emissions factors for Maintenance Dredging for the Clamshell Dredge provided by Justice and Associates for a Manson clamshell dredge.

3. Emission factors for Crew Boat taken from Table H, EPA Ports Emissions Inventory Guidance, converted to lbs/Hp-hr

Tug Emissions = $A * EF * T *$ F

Where:
A = # of units Active = the number of machines in use for each type
EF = Emission Factor = lbs per 1000 gallons of fuel combusted contributing emissions for each pollutant
T = Time = daily operating time (hours)

Note: must divide emission factor by 1000 to convert to lbs/gal

Dredge Emissions = $A * EF * T$

Where:
A = # of units Active = the number of machines in use for each type
EF = Emission Factor = fraction of emissions for each pollutant in lbs per hour
T = Time = daily operating time (hours)

Crew Boat Emissions = $A * EF * T *$ LF * HP

Where:
A = # of units Active = the number of machines in use for each type
EF = Emission Factor = fraction of emissions for each pollutant in lbs per hour
T = Time = daily operating time (hours)
LF = load factor = ratio of propulsion power used to total power of engine
HP = horsepower = power rating of engine

Greenhouse Gas Emissions Inventory

Emission Source Data							GHG Emission Factors for Specific Construction Equipment (lbs/hr)(lbs/Hp-hr)(lbs/1,000 Gal)[1,2,3]				Daily Equipment Emissions from Construction Activities (lbs/day)				
Construction Activity/Equipment Type	Power Rating (Hp)	Power Rating (kW)	Load Factor	# Active	Hrs per Day[1]	Fuel Use	CO	CO_2	CH_4	NOx	CO	CO_2	CH_4	NOx	CO2eq
Clamshell Dredge	2000	1491.4	0.2	1	22	N/A	0.30	1.25	0.000004	1.10	6.600	11019.595	0.039	24.200	11642.835
Tug Boat (Idling)	800	596.56	0.2	1	8.2	65.6	57.00	1.12	0.000004	419.00	3.739	1472.266	0.006	27.486	2164.900
Tug Boat (Towing/Shifting Sediment Barge-Loaded)	800	596.56	0.2	1	10	200	57.00	1.12	0.000004	419.00	11.400	1795.446	0.007	83.800	3903.963
Tug Boat (Towing Sediment Barge-Unloaded)	800	596.56	0.2	1	3.8	60.8	57.00	1.12	0.000004	419.00	3.466	682.270	0.003	25.475	1323.419
Crew Boat (Tier 2)	300	223.71	0.45	1	4	N/A	0.003288	0.165347	0.000004	0.013694	1.776	89.287	0.002	7.395	276.652

Greenhouse Gas Inventory Results

Total CO2eq (lbs/day)	19311.77
Total Project CO2eq (Tons)	675.91
Council on Environmental Quality Yearly GHG Threshold (CO2eq) (Tons)	None
Project Exceeds Council on Environmental Quality Yearly GHG Threshold?	No

Tug speed loaded - 6 knots, 2.5 hours delivery time to Montezuma Site from Dredge Site, twice per day

Tug speed unloaded - 8 knots, 1.9 hours Return trip to Dredge Site from Montezuma Site, twice per day

Tug fuel use - 8 gallons per hour idling, 16 gallons per hour towing unloaded barge, 20 gallons per hour towing loaded barge

Based on a production rate of 4,000 cy per day and 70 days of dredging

Clamshell dredge has 2 hours downtime per day for refueling and shift change

1. Emissions factors for tugboat maintenance dredging taken from the Port of Los Angeles Channel Deepening Project Final Supplemental Environmental Impact Statement/Environmental Impact Report, September 2000.

2. Emissions factors for Maintenance Dredging for the Clamshell Dredge provided by Justice and Associates for a Manson clamshell dredge.

3. Emission factors for Crew Boat, CO_2, CH_4 from Table H, EPA Ports Emissions Inventory Guidance, converted to lbs/Hp-hr

$CO2eq = CO2 + X*CO + Y*NOx + Z*CH4$

Where X = 100 Year Global Warming Potential for Carbon Monoxide = 1

Where Y = 100 Year Global Warming Potential for Oxides of Nitrogen = 298

Where Z = 100 Year Global Warming Potential for Methane = 25

CFR Title 40 Chapter I Sub-chapter C Part 98: Table A-1 Global Warming Potentials

Tug Emissions = $A * EF * T *$ F

Where:
A = # of units Active = the number of machines in use for each type
EF = Emission Factor = lbs per 1000 gallons of fuel combusted contributing emissions for each pollutant
T = Time = daily operating time (hours)

Dredge Emissions = $A * EF * T$

Where:
A = # of units Active = the number of machines in use for each type
EF = Emission Factor = fraction of emissions for each pollutant in lbs per hour
T = Time = daily operating time (hours)

Crew Boat Emissions = $A * EF * T *$ LF * HP

Where:
A = # of units Active = the number of machines in use for each type
EF = Emission Factor = fraction of emissions for each pollutant in lbs per hour
T = Time = daily operating time (hours)
LF = load factor = ratio of propulsion power used to total power of engine
HP = horsepower = power rating of engine

Note: must divide emission factor by 1000 to convert to lbs/gal

Appendix C – Preparers and Reviewers

For Further information regarding this document, contact:

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