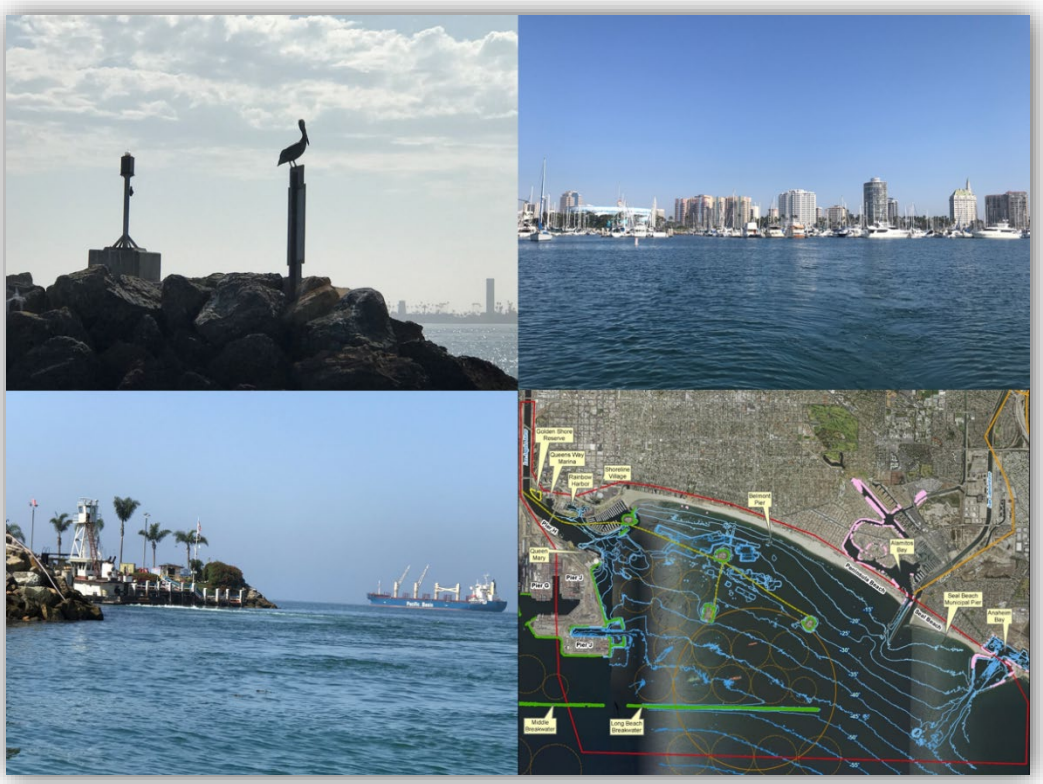
DRAFT INTEGRATED FEASIBILITY REPORT AND ENVIRONMENTAL IMPACT STATEMENT / ENVIRONMENTAL IMPACT REPORT (EIS/EIR)

APPENDIX G: CLEAN WATER ACT SECTION 404(b)(1) EVALUATION

EAST SAN PEDRO BAY
ECOSYSTEM RESTORATION STUDY
Long Beach, California

November 2019



US Army Corps of Engineers ®

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1 CLEAN WATER ACT SECTION 404(B)(1) REGULATORY BACKGROUND

Section 404 of the Clean Water Act (CWA) governs the discharge of dredged or fill material into Waters of the U.S. Although the Corps does not process and issue permits for its own activities, the Corps authorizes its own discharges of dredged or fill material by applying all applicable substantive legal requirements, including application of the Section 404(b)(1) Guidelines, 33 Code of Federal Regulations (C.F.R.) 336.1(a).

Under the Section 404(b)(1) Guidelines, an analysis of practicable alternatives is the primary tool used to determine whether a proposed discharge is prohibited. The Section 404(b)(1) Guidelines prohibit discharges of dredged or fill material into Waters of the U.S. if a practicable alternative to the proposed discharge exists that would have less adverse impacts on the aquatic ecosystem, including wetlands, as long as the alternative does not have other significant adverse environmental impacts (40 C.F.R. 230.10(a)). An alternative is considered practicable if it is available and capable of being implemented after considering cost, existing technology, and logistics in light of overall project purpose (40 C.F.R. 230.10(a)(2)). The Section 404(b)(1) Guidelines follow a sequential approach to project planning that considers mitigation measures only after the project proponent shows no practicable alternatives are available to achieve the overall project purpose with less environmental impacts. Once it is determined that no practicable alternatives are available, the guidelines then require that appropriate and practicable steps be taken to minimize potential adverse effects on the aquatic ecosystem (40 C.F.R. 230.10(d)). Such steps may include actions controlling discharge location, material to be discharged, the fate of material after discharge or method of dispersion, and actions related to technology, plant and animal populations, or human use (40 C.F.R. 230.70-230.77).

Beyond the requirement for demonstrating that no practicable alternatives to the proposed discharge exist, the Section 404(b)(1) Guidelines also require the Corps to compile findings related to the environmental impacts of discharge of dredged or fill material. The Corps must make findings concerning the anticipated changes caused by the discharge to the physical and chemical substrate and to the biological and human use characteristics of the discharge site.

These guidelines also indicate that the level of effort associated with the preparation of the alternatives analysis be commensurate with the significance of the impact and/or discharge activity (40 C.F.R. 230.6(b)).

2 BASIC AND OVERALL PROJECT PURPOSE

The basic project purpose is ecosystem restoration. The overall project purpose of the project is ecosystem restoration of imperiled aquatic habitats within ESPB. The project is water dependent. Thus, the rebuttable presumptions do not apply.

3 JURISDICTIONAL DETERMINATION OF WATERS OF THE U.S.

Jurisdictional determination of waters of the U.S. is based on the 2015 Clean Water Act Rule since the proposed action area is located within California. All discharges of fill associated with the proposed action would occur within the Pacific Ocean at East San Pedro Bay (ESPB). The Pacific Ocean is an (a)(1) Water of the United States under the 2015 Clean Water Act rule.

4 ALTERNATIVES CONSIDERED

Per the 404(b)(1) Guidelines, alternatives analysis required by the National Environmental Policy Act (NEPA) will generally suffice as the alternatives analysis under the Guidelines. On occasion, these NEPA documents may address a broader range of alternatives than required to be considered under Guidelines or may not have considered the alternatives in sufficient detail to respond to the requirements of these Guidelines. In the latter case, it may be necessary to supplement these NEPA documents with this additional information.

The nature of the proposed action would require work within waters of the US. Furthermore, the range of alternatives carried forward under NEPA overlap with the range of alternatives to be considered under the Guidelines. Thus, the range of NEPA alternatives are sufficient for evaluation under the Guidelines.

4.1 DESCRIPTION OF ALTERNATIVES

4.1.1 ALTERNATIVE 2

Alternative 2 would entail restoration of aquatic habitats as shown below. Since the fill areas would be located seaward of the mean high tide line, the entirety of the fill areas are located within waters of US.

Final Array Alternative	Total Fill Area (ac)
ALT 2 Total	**162.26**
Eelgrass	25.01
Kelp	121.38
Nearshore Reef	15.87

The quantity and the type of materials proposed for discharge into waters the US are shown below.

Alternative 2				
Measure	**Material Type**	**Approximate Quantity**	**Unit**	**Representative Size**
Nearshore Reefs	Armor Stone	137,000	tons	1 - 10 tons
	Filter Stone	55,000	tons	~ 1 ton
	Quarry Stone	120,000	tons	~ 10 - 1000 lbs
Kelp Reefs	Quarry Stone	132,000	tons	500 lbs
Eelgrass	Sand	100,000	yd^3	0.2 mm

4.1.2 ALTERNATIVE 4A

Alternative 4A would entail restoration of aquatic habitats as shown below. Since the fill areas would be located seaward of the mean high tide line, the entirety of the fill areas are located within waters of US.

Final Array Alternative	Total Area (ac)
ALT 4A Total	**200.69**
Eelgrass	30.27
Kelp	121.38
Nearshore Reef	19.86
Offshore Reef	29.19

The quantity and the type of materials proposed for discharge into waters the US are shown below.

Alternative 4A				
Measure	**Material Type**	**Approximate Quantity**	**Unit**	**Representative Size**
Open Water Reefs	Armor Stone	440,000	tons	10 tons
Nearshore Reefs	Armor Stone	176,000	tons	1 - 10 tons
	Filter Stone	55,000	tons	~ 1 ton
	Quarry Stone	134,000	tons	~ 10 - 1000 lbs
Kelp Reefs	Quarry Stone	132,000	tons	500 lbs
Eelgrass	Sand	100,000	yd^3	0.2 mm

4.1.3 ALTERNATIVE 8

Alternative 4A would entail restoration of aquatic habitats as shown below. Since the fill areas would be located seaward of the mean high tide line, the entirety of the fill areas are located within waters of US.

Final Array Alternative	Total Area (ac)
ALT 8 Total	**371.86**
Eelgrass	52.31
Emergent Island	23.82
Kelp	121.38
Nearshore Reef	19.86
Offshore Reef	102.15
Oyster Reef	0.27
Tidal Salt Marsh	52.07

The quantity and the type of materials proposed for discharge into waters the US are shown below.

Alternative 8				
Measure	**Material Type**	**Approximate Quantity**	**Unit**	**Representative Size**
Sandy Islands	Armor Stone	336,000	tons	11 tons
	Filter Stone	37,000	tons	~ 1 ton
	Fill Material	1,057,000	yd^3	N/A
	Sand	276,000	yd^3	0.2 mm
Coastal Wetlands [LARE / Pier J]	Quarry Stone	10,000 / 24,000	tons	~ 10 - 1000 lbs
	Armor Stone	3,000 / 24,000	tons	1 - 3 tons
	Concrete	5,000 / 43,000	yd^3	N/A
	Fill Material	34,000 / 1,899,000	yd^3	N/A
	Sand	81,000 / 339,000	yd^3	0.2 mm
Open Water Reefs	Armor Stone	1,540,000	tons	10 tons
Nearshore Reefs	Armor Stone	176,000	tons	1 - 10 tons
	Filter Stone	55,000	tons	~ 1 ton
	Quarry Stone	134,000	tons	~ 10 - 1000 lbs
Kelp Reefs	Quarry Stone	132,000	tons	500 lbs
Eelgrass	Sand	100,000	yd^3	0.2 mm

4.2 NON-NAVIGATIONAL DREDGING

Discharges of fill in waters of the US associated with non-navigation dredging is subject to regulation under Section 404 CWA. Typical discharges of fill associated with dredging are fallback from the dredge bucket and spillover of sediment laden overflow from the dump scow.

Under all action alternatives, approximately 100,000 $yd.^3$ of sand would be dredged from the Surfside/Sunset area for backfilling into areas where eelgrass would be planted. With a cut depth of 5 feet, the non-navigational dredging would affect approximately 12.5 acres of waters of the US.

Under Alternative 8, approximately 4,287,000 cubic yards of sand would be dredged from the Surfside/Sunset area for backfilling into areas where the sandy islands and wetlands would be constructed. With a cut depth of 15 feet, the non-navigational dredging would affect approximately 200 acres of waters of the US.

The benthic environment of the Surfside/Sunset area is composed of a barren sandy environment. There are no special aquatic site such as eelgrass beds or rocky reefs within the dredge area.

Acreage of impacts to waters of the US associated with non-navigation dredging is shown below.

Alternative	Eelgrass Backfill	Sandy Island/Wetland	Total
2	12.5 acres	n/a	12.5 acres
4A	12.5 acres	n/a	12.5 acres
8	12.5 acres	200 acres	212.5 acres

Non-navigational dredging would result in temporary impacts to waters of the US. Physical impacts would include a depression where excavation occurred and disturbance of previously consolidated benthic substrate. Biological impacts would include disturbance and mortality of benthic organisms within the affected substrate. Shoaling and currents are expected to slowly fill in depressions over a period of time. Likewise, disturbed benthic substrate would reconsolidate. Benthic organisms in adjoining areas would recolonize the affected areas.

4.3 OPERATIONS AND MAINTENANCE (O&M)

Under all alternatives, 5-10 years of adaptive management would be implemented subsequent to construction until success criteria are met, as described in Appendix F of the IFR. This may include actions such as additional vegetation or wildlife surveys, eelgrass transplanting, and extension or repair of rocky reefs.

Three aquatic habitats are common to all action alternatives: eelgrass beds, kelp beds and rocky reefs. Furthermore, Alternative 8 has additional aquatic habitats such as the sandy island and coastal wetlands. O&M of eelgrass beds, kelp beds, and coastal wetlands would not result in notable discharges of fill material since O&M activities would consist of replanting and transplants. O&M of the rocky reefs may periodically result in discharges of stone. Typically, O&M would be conducted every 10 years or after a strong storm event that has displaced enough stones to justify the cost of mobilization. Likewise, maintenance of the sandy island Alternative 8 may periodically require discharge of sand after strong storm events have sufficiently displaced enough sand to justify the cost of mobilization.

5 COMPARISON OF IMPACTS TO WATERS OF THE U.S.

Alternative 1, the No Action Alternative, would not result in construction of structural measures and thus would not impact waters of the US. Alternative 2, with the smallest construction footprint would result in the smallest impact area and the smallest discharge volume. Alternative 4A, would result in a slightly larger impact area and larger discharge volume relative to Alternative 2. Alternative 8, with the largest construction footprint would result in the largest impact area and largest amount of fill volume.

	Construction				Fill Volume	
	Temporary Fill (Acres)		Permanent Fill (Acres)			
Measures	Non-SAS* Waters of the US (Acres)	SAS* Waters of the US (Acres)	Non-SAS Waters of the US (Acres)	SAS Waters of the US (Acres)	Rock (Tons)	Sand (cy)
Alternative 1	0	0	0	0	0	0
Alternative 2	12.5	0	162.26	0	444,000	100,000
Alternative 4A	12.5	0	200.69	0	937,000	100,000
Alternative 8	212.5	0	371.86	0	2,192,000	4,287,000
* SAS = special aquatic site						

6 ALTERNATIVES ANALYSIS

6.1 RESTRICTIONS ON DISCHARGE

The 404(b)(1) Guidelines prohibit the discharge of dredged or fill material into waters of the U.S. if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. 40 C.F.R. 230.10(a). To be "practicable," an alternative must be "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." 40 C.F.R. 230.10(a)(2).

6.2 OVERALL PROJECT PURPOSE

With the exception of Alternative 1, the No Action Alternative, all alternatives meet the overall project purpose.

6.3 PRACTICABILITY (TECHNOLOGY)

All alternatives can be constructed with existing technology. All alternatives would utilize conventional construction techniques and conventional construction equipment.

6.4 PRACTICABILITY (LOGISTICS)

In general, the non-federal sponsor is responsible for acquisition of lands, easements, and rights-of-way required for construction. Furthermore, the non-federal sponsor is fully capable of fulfilling its responsibility. Based on the above, all action alternatives are assumed to be practicable with respect to logistics.

6.5 PRACTICABILITY (COST)

The Corps uses benefit-cost analysis in evaluating practicability with respect to costs. Per Engineer Regulation (ER) 1105-2-100, the Corps is required to identify the National Ecosystem Restoration Plan (NER) for ecosystem restoration projects. The NER is the alternative that reasonably maximizes ecosystem benefits relative to cost. For reasons discussed in Chapter 4 of the IFR, Alternative 4A combines maximum ecosystem benefits in the most cost-effective manner. Thus, Alternative 4A is deemed practicable with respect to costs.

Furthermore, under ER 1105-2-100, the NER is the Tentatively Selected Plan unless a waiver is granted by the ASA(CW) to recommend an alternative plan such as the Locally Preferred Plan.

Alternatives	Practicability Test			Significant Environmental Impacts to Non-Aquatic Resources?	Meets Overall Project Purpose?
	Cost	Logistics	Technology		
Alternative 1	n/a	n/a	n/a	No	No
Alternative 2	No	Yes	Yes	No	Yes
Alternative 4A	Yes	Yes	Yes	Yes	Yes
Alternative 8	No	Yes	Yes	Yes	Yes

7 ENVIRONMENTAL EFFECTS

The purpose of the Section 404(b)(1) Guidelines is to restore and maintain the chemical, physical, and biological integrity of the waters of the US through the control of discharges of dredged or fill material. Except as provided under CWA Section 404(b)(2), no discharge of dredged or fill material will be authorized if there is a practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem, as long as the alternative does not have other significant adverse environmental consequences. In accordance with the Section 404(b)(1) Guidelines, the potential short-term or long-term effects of a proposed discharge of dredged or fill material on the physical, chemical, and biological components of the aquatic environment must be determined.

The following discussion evaluates impacts of all three alternatives on environmental resources identified in Subpart C through Subpart F of the Section 404(b)(1) Guidelines. The discussion is separated into construction and operation impacts. Impacts under "operation" include monitoring and adaptive management activities as well as OMRR&R.

7.1 POTENTIAL DIRECT AND SECONDARY IMPACTS ON PHYSICAL AND CHEMICAL CHARACTERISTICS OF THE AQUATIC ECOSYSTEM (SUBPART C)

7.1.1 SUBSTRATE

Construction (Direct)

Aquatic Habitats. All alternatives would result in discharges of fill for the construction of aquatic habitat. Under all alternatives, the primary fill materials would be sand and rocks. Sand would be procured from the nearby Surfside/Sunset area. Thus, native sand would be discharged atop native sand. Rocks would be procured from upland sources and placed atop the benthic substrate within a marine environment. Furthermore, Alternative 8 would result in the discharge of concrete structures atop the sandy benthic substrate. Though the chemical composition of the upland rocks and concrete may be different from those found in the marine environment with the study area, they would provide the same functions and services as other hard substrates within the marine environment, namely hard substrate to foster establishment of marine vegetation and shelters for aquatic organisms. The fill material would permanently remain atop the benthic substrate. There would be no loss of benthic substrate.

Non-navigation Dredging. Typical discharges of fill associated with dredging are fallback from the dredge bucket and spillover of sediment laden overflow from the dump scow. Thus, native sand would be discharged atop native sand.

Alternative 2, with the smallest construction footprint would result in the smallest impact area and the smallest discharge volume. Alternative 4A, would result in a slightly larger impact area and larger discharge volume relative to Alternative 2. Alternative 8, with the largest construction footprint would result in the largest impact area and largest amount of fill volume.

Construction (Indirect)

There would be no indirect impacts.

Operation (Direct)

O&M activities for eelgrass beds and kelp beds may result in de minimis discharges of native sand for back fill associated with replanting and additional transplants. Likewise, maintenance of the sandy island Alternative 8 may periodically require discharge of sand. Thus, native sand would be discharged atop native sand. O&M of the rocky reefs may periodically result in discharges of stone. Likewise, maintenance of the coastal wetlands under Alternative 8 may periodically require discharge structures. The fill material would permanently remain atop the benthic substrate. There would be no loss of benthic substrate.

Operation (Indirect)

There would be no indirect impacts.

7.1.2 SUSPENDED PARTICULATES AND TURBIDITY

Construction (Direct)

Aquatic Habitats. All alternatives would result in discharges of fill for the construction of aquatic habitat. Under all alternatives, the primary fill materials would be sand and rocks. Alternative 8 would result in the discharge of concrete structures. Rocks and concrete structures would be pushed off the barge by loaders. There would be no turbidity as these structures fall through the water column. However, a temporary increase in turbidity is expected upon impact with the benthic substrate. Impacts would resuspend both sand and fine silts into the water column. Sand is expected to quickly settle out of the water column. Fine silts would remain suspended within the water column for a longer period of time but would eventually resettle onto the seabed.

Discharges of sand from the dump scows would increase turbidity throughout the water column. However, turbidity is expected to be temporary since sand is expected to quickly settle out of the water column.

Non-navigation Dredging. Typical discharges of fill associated with dredging are fallback from the dredge bucket and spillover of sediment laden overflow from the dump scow. Thus, native sand would be discharged atop native sand. Incidental discharges of sand from either the dredged or dump scows would increase turbidity throughout the water column. However, turbidity is expected to be temporary since sand is expected to quickly settle out of the water column.

Construction (Indirect)

There would be no indirect impacts.

Operation (Direct)

O&M activities for eelgrass beds and kelp beds may result in de minimis discharges of native sand for back fill associated with replanting and additional transplants. Likewise, maintenance of the sandy island Alternative 8 may periodically require discharge of sand. Discharges of sand would increase turbidity throughout the water column. However, turbidity is expected to be temporary since sand is expected to quickly settle out of the water column.

O&M of the rocky reefs may periodically result in discharges of stone. Likewise, maintenance of the coastal wetlands under Alternative 8 may periodically require discharge structures. There would be no turbidity as these structures fall through the water column. However, a temporary increase in turbidity is expected upon impact with the benthic substrate. Impacts would resuspend both sand and fine silts into the water column. Sand is expected to quickly settle out of the water column. Fine silts would remain suspended within the water column for a longer period of time but would eventually resettle onto the seabed.

Operation (Indirect)

There would be no indirect impacts.

7.1.3 CONTAMINANTS

Construction (Direct)

Aquatic Habitats. All alternatives would result in discharges of fill for the construction of aquatic habitat. Under all alternatives, the primary fill materials would be sand and rocks. Only sand deemed to be suitable for discharge into the aquatic environment would be procured from the Surfside/Sunset area of San Pedro Bay and discharged into specific locations where eelgrass would be planted. Alternative 8 would result in the discharge of concrete structures. All fill material proposed for discharge are chemically inert and would not leach contaminants into the water column.

Construction (Indirect)

There would be no indirect impacts.

Operation (Direct)

Fill material for O&M activities would be the same as that used for construction. All fill material proposed for discharge are chemically inert and would not leach contaminants into the water column.

Operation (Indirect)

There would be no indirect impacts.

7.1.4 CURRENT PATTERNS, WATER CIRCULATION, AND WATER FLUCTUATION

Construction (Direct)

Aquatic Habitats. All alternatives would result in discharges of fill for the construction of aquatic habitat. Under all alternatives, the primary fill materials would be sand and rocks.

The natural water depth of the ESPB ranges from 20 to 50 feet. The height of the base stone layer for the kelp beds would be approximately 30 in. above the seabed and submerged in approximately 45 feet of water. The height of the nearshore rocky reef and the eelgrass bed would be approximately 10 ft. to 12 ft. above the seabed and submerged in approximately 8 feet of water. Offshore rocky reefs would be placed at heights ranging from 3 ft. to 12 ft. above the seabed. The structures would be entirely submerged in at least 15 ft. of water. The reflected wave height produced by these submerged structures would be on order of 10 percent of the incident wave height. However, rocky reefs, eelgrass beds, and kelp reefs would cover a small portion of the Project Area (ranging from 162.26 to 371.86 acres of the 11,465-acre Project Area). Thus, wave height changes would be minimal and would not likely result in increased coastal erosion potential due to the small area covered and relatively low topographic relief on the ocean floor.

All discharges would not change tidal elevations, which is determined by access to the open ocean.

Non-navigation Dredging. Typical discharges of fill associated with dredging are fallback from the dredge bucket and spillover of sediment laden overflow from the dump scow. Thus, native sand would be discharged atop native sand. Incidental discharges of sand from either the dredged or dump scows would not affect the currents of wave dynamics of the area where dredged material would resettle.

Construction (Indirect)

Eelgrass beds and kelp reefs would locally attenuate larger forces related to coastal erosion and storm water protection by reducing current velocities.

Operation (Direct)

O&M activities for eelgrass beds and kelp beds may result in de minimis discharges of native sand for back fill associated with replanting and additional transplants. Likewise, maintenance of the sandy island Alternative 8 may periodically require discharge of sand. Discharges of fill for O&M activities would not result in impacts to current patterns and water circulation.

Construction (Indirect)

There would be no indirect impacts.

7.2 POTENTIAL DIRECT AND INDIRECT IMPACTS ON BIOLOGICAL CHARACTERISTICS OF THE AQUATIC ECOSYSTEM (SUBPART D)

7.2.1 THREATENED AND ENDANGERED WILDLIFE

Construction (Direct & Indirect)

Aquatic Habitats and Non-navigational Dredging

Green sea turtles are present in Long Beach Harbor and San Pedro Bay. All green turtle populations are listed as either endangered or threatened under the Endangered Species Act (ESA). However, construction activities would not result in the direct loss of habitat for sea turtles that may occur in the project area. Construction activities under all alternatives may result in indirect impacts from noise, turbidity, and barge/equipment travel to and from construction sites within the bay, causing turtles to temporarily avoid the construction areas.

Construction is unlikely to result in impacts to marine mammals protect under the Marine Mammal Protection Act since noise levels may cause marine mammals to avoid the area within 1,900 feet of dredging and construction operations.

Operation (Direct & Indirect)

O&M activities for eelgrass beds and kelp beds may result in de minimis discharges of native sand for back fill associated with replanting and additional transplants. Likewise, maintenance of the sandy island Alternative 8 may periodically require discharge of sand. Discharges of sand would increase turbidity throughout the water column.

Impacts would be similar to that characterized for construction. However, the potential would be limited given the limited scope of discharges associated with O&M activities.

7.2.2 OTHER WILDLIFE

Construction (Direct)

Aquatic Habitats and Non-navigational Dredging

The proposed discharges of fill would directly impact aquatic organisms with limited mobility such as crustaceans and mollusks through burial. However, impacts would be temporary. Because crustaceans and mollusks are relatively abundant, it is likely that such organisms would quickly recolonize affected areas. Construction would have limited impact to mobile organisms such as fish that can easily move away from the construction through startle response triggered by underwater sound.

The discharges of fill would permanently replace open water habitat with rocky substrate. However, rocky reefs, eelgrass beds, and kelp reefs would cover a small portion of the Project Area (ranging from 162.26 to 371.86 acres of the 11,465-acre Project Area). Thus, loss of water habitat would be minimal.

Construction (Indirect)

The discharges of fill would indirectly benefit aquatic species by providing namely rocky substrate that would foster establishment of marine vegetation and provide shelters.

Operation (Direct & Indirect):

O&M activities for eelgrass beds and kelp beds may result in de minimis discharges of native sand for back fill associated with replanting and additional transplants. Likewise, maintenance of the sandy island Alternative 8 may periodically require discharge of sand.

Impacts would be similar to that characterized for construction. However, the potential would be limited given the limited scope of discharges associated with O&M activities.

7.3 POTENTIAL DIRECT AND INDIRECT IMPACTS ON SPECIAL AQUATIC SITES (SUBPART E)

7.3.1 SANCTUARIES AND REFUGES

Construction (Direct & Indirect)

There are no sanctuaries or refuges designated under state or Federal laws or local ordinances within the footprint of any of the alternatives. Therefore, no alternative would directly or indirectly impact sanctuaries or refuges.

Operation (Direct & Indirect)

There are no sanctuaries or refuges designated under state or Federal laws or local ordinances within the footprint of any of the action alternatives. Operations and maintenance would not directly or indirectly impact sanctuaries or refuges.

7.3.2 WETLANDS

Construction (Direct & Indirect)

There are no wetlands within the footprint of any of the alternatives. Therefore, no alternative would directly or indirectly impact wetlands.

Operation (Direct & Indirect)

There are no wetlands within the footprint of any of the alternatives. Therefore, O&M activities would not directly or indirectly impact wetlands.

7.3.3 MUDFLATS

Construction (Direct & Indirect)

There are no mudflats within the footprint of any of the alternatives. Therefore, no alternative would directly or indirectly impact mudflats.

Operation (Direct & Indirect)

There are no mudflats within the footprint of any of the alternatives. Therefore, O&M activities would not directly or indirectly impact mudflats.

7.3.4 VEGETATED SHALLOWS

Construction (Direct & Indirect)

Vegetated shallows, in the form of eelgrass beds, are located in the Project Area. Impacts would be avoided by conducting pre-construction surveys and placing fill material atop areas that would not impact existing eelgrass beds to the extent feasible.

Operation (Direct & Indirect)

Operations and maintenance activities would not directly or indirectly affect vegetated shallows.

7.3.5 CORAL REEFS

Construction (Direct & Indirect)

There are no coral reefs within the footprint of any of the alternatives. Therefore, no alternative would directly or indirectly impact coral reefs.

Operation (Direct & Indirect)

There are no coral reefs within the footprint of any of the alternatives. Therefore, O&M activities would not directly or indirectly impact coral reefs.

7.3.6 RIFFLE AND POOL COMPLEXES

Construction (Direct & Indirect)

There are no riffle and pool complexes within the footprint of any of the alternatives. Therefore, no alternative would directly or indirectly impact riffle and pool complexes.

Operation (Direct & Indirect)

There are no riffle and pool complexes within the footprint of any of the alternatives. Therefore, O&M activities would not directly or indirectly impact riffle and pool complexes.

7.4 POTENTIAL DIRECT AND INDIRECT EFFECTS ON HUMAN USE CHARACTERISTICS (SUBPART F)

7.4.1 MUNICIPAL AND PRIVATE WATER SUPPLIES

Construction (Direct & Indirect)

The discharge areas are located within an open ocean environment and is not a source for municipal or private water supplies. Thus, discharge of the fill material would not directly or indirectly result in impacts to municipal and private water supplies.

Operation (Direct & Indirect)

The discharge areas are located within an open ocean environment and is not a source for municipal or private water supplies. Thus, discharge of the fill material associated with O&M activities would not directly or indirectly result in impacts to municipal and private water supplies.

7.4.2 RECREATIONAL AND COMMERCIAL FISHERIES

Construction (Direct & Indirect)

Recreational fishing does occur within ESPB. However, the area does not support commercial fisheries. Short-term, minor adverse impacts to recreational fishing could occur during construction while barges, tugboats, and other equipment are operating within the ESPB Project Area, causing avoidance of construction areas and equipment. The construction area in the open ocean would be limited size. Areas outside of the construction zone would remain open for recreational fishing.

Furthermore, under Alternative 8, construction of the near shore wetlands near Pier J would likely result in short- and long-term loss of recreational fishing within a portion of the Pier J Fishing Spot. During construction, access would be limited to the waterfront near Pier J and would be opened once construction is completed, causing short-term impacts to recreational fishing in the area. However, construction of the near shore wetlands would result in a permanent loss of a portion of the fishing area. Thus, compared to Alternatives 2 and 4A, Alternative 8 would result in more impacts to recreational fishing.

Operation (Direct & Indirect)

Impacts would be similar to that characterized for construction. However, the potential for impacts would be limited given the limited scope of discharges associated with O&M activities.

7.4.3 WATER-RELATED RECREATION

Construction (Direct)

Construction activities related to the nearshore eelgrass and associated rocky reefs may result in a short-term, localized disruption of recreational activities. Once construction activities are completed, the presence of nearshore rocky reefs may result in minor disruption of near beach activities in those immediate areas, such as swimming, wadding, or surfing due to the change in elevation (from stones and eelgrass beds) in shallow areas, however, minimal changes to elevation in shallow areas are anticipated. Construction of the offshore rocky reefs and kelp reefs may also result in short-term, localized, adverse impacts to recreationists such as sailors, paddle boarders, or other recreational boaters due to the need to avoid and navigate around large equipment.

Construction (Indirect)

Eelgrass beds, along with nearshore and offshore rocky reefs, would enhance the biological productivity of ESPB and likely result in beneficial impacts due to increased interest from scuba divers in particular, possibly other recreationists such as paddle boarders and sailors. The offshore rocky reefs and kelp reefs may result in localized, adverse impacts to recreationists such as sailors, paddle boarders, or other recreational boaters due to the need to avoid and navigate around the restoration features.

Operation (Direct & Indirect)

Impacts would be similar to that characterized for construction. However, the potential for impacts would be limited given the limited scope of discharges associated with O&M activities.

7.4.4 AESTHETICS

Construction (Direct & Indirect)

Construction equipment would be visible from the beaches, residential areas, public open space areas (such as parks and other recreation areas), nearby roadways, and watercraft within the ESPB Project Area. Residents and visitors, especially those immediately adjacent to the shoreline, would have open foreground views of the Project Area. Construction activities would introduce new and different activities and equipment, and are expected to result in short-term adverse impacts to the aesthetics and visual quality of the Project Area and scenic vistas of nearby areas. Once construction is completed, all equipment would be removed and the post-construction visual character would return to that characterized by the existing conditions.

Operation (Direct & Indirect)

Impacts would be similar to that characterized for construction. However, the potential for impacts would be limited given the limited scope of discharges associated with O&M activities.

7.4.5 PARKS, NATIONAL AND HISTORICAL MONUMENTS, NATIONAL SEASHORES, WILDERNESS AREAS, AND RESEARCH SITES

These preserves consist of areas designated under Federal and State laws or local ordinances to be managed for their aesthetic, educational, historical, recreational, or scientific value. 40 CFR 230.54.

There are no national and historical monuments or national seashores in the ESPB.

8 EVALUATION AND TESTING (SUBPART G)

All alternatives would result in discharges of sand, rock, and concrete within waters of the US. Rock and concrete would be chemically inert and would not leach contaminants into the water column. Per 40 C.F.R 230.60(a), testing is not required for rock and concrete fill. Sand from the Surfside/Sunset area of ESPB would be tested per 40 C.F.R. 230.60(b). Only sand deemed suitable for discharge into the marine environment would be used for backfill on the constructed habitat.

9 MEASURES TO MINIMIZE ADVERSE IMPACTS (SUBPART H)

The following measures would been incorporated as part of the proposed action as environmental commitments to minimize adverse Impacts.

WQ-1 Water quality monitoring will be conducted during dredging or sandy island/wetland construction or any activities that would result in turbidity plumes. Monitoring parameters will include percent light transmissivity, dissolved oxygen, water temperature, salinity, and pH.

WQ-2 For dredging activities, standard water quality monitoring would be conducted during construction. This consists of weekly monitoring of water quality parameters (salinity, pH, dissolved oxygen, temperature, and percent light transmissivity) with an instrument package at four stations. The four stations are sited relative to the dredge and will be 100 feet upcurrent of the dredge, 100 feet downcurrent of the dredge, 300 feet downcurrent of the dredge, and a control station located outside of any dredge plume. Twice monthly water samples will be taken from the station 300 feet downcurrent of the dredge for analysis of total suspended solids and TRPH. Similar monitoring would be conducted at the sandy island site during sediment placement activities at that location.

WQ-3 Corps Engineering Manual EM-1110-2-2302 provides minimal stone quality requirements. Guidance from this manual will be followed. Quarry materials will also meet the following:

- The materials shall be clean and free of any contaminants, especially those that could dissolve in seawater (e.g., asphalt, paint, oil, or oil stains).
- All stone used for the project must follow:
    - Purity: The materials shall be free of contamination and foreign materials.
    - Specific gravity: Shall be greater than 2.2.
    - Durability: Rocks used must remain unchanged after 30 years of submersion in seawater.

WQ-4 During construction and operation activities, all local, state and federal regulations would be complied with regarding to the transportation, handling, and storage of hazardous substances.

WQ-5 At each work area involving the operation of heavy equipment and handling and storage of hazardous substances, a Hazardous Material Spill Prevention Plan would be prepared. The Hazardous Material Spill Prevention Plan shall contain contingency plans in the event of an accidental release into the environment.

MH-1 A pre-construction survey would be performed to document eelgrass extent in the areas of nearshore reef placement. If eelgrass is present, alternative locations of rocky reef and sand placement would be considered as much as feasible during the detailed design phase as well as during construction to avoid impacts to all existing eelgrass habitat.

MH-2 During the creation of eelgrass habitats, no more than 10 percent of the plants from eelgrass donor beds would be harvested to minimize potential impacts to existing eelgrass beds.

SP-1 Potential adverse impacts to existing marine habitats would be minimized by selection of dredging equipment and methods, turbidity control measures for dredging and disposal operations, and monitoring protocols outlined in the Los Angeles Contaminated Sediments Task Force Long-Term Management Strategy (2005) and the Los Angeles Regional Dredged Material Management Plan (2009)

SP-2 An Environmental Protection Plan would be implemented, including a Green Sea Turtle Monitoring and Avoidance Plan, Marine Mammal Monitoring and Avoidance Plan, and employee training. The monitoring plan shall be prepared by a qualified marine biologist. The plan would include the following:

- Procedures for monitoring marine mammals and sea turtles, and specifications for Marine Wildlife Observers.
- Methods for communicating with contractors to stop work if there is a risk that any marine mammals or sea turtles active in the area may move closer to construction sites.
- Procedures for Marine Wildlife Observer monitoring of barge transport, if necessary.
- Methods for communicating with ship captains if there is a risk of collision with a marine mammal or sea turtle.
- Limitations that work occur only during daylight hours when visual monitoring of marine mammals and sea turtles can be conducted.

INV-1 Pursuant to the Caulerpa Control Protocol established by NOAA Fisheries and California Department of Fish and Wildlife, prior to construction activities that disturb Caulerpa, a Surveillance Level survey of the Area of Potential Effect (APE) will be performed. In Caulerpa-free habitats, this requires 20 percent of the APE to be surveyed for the presence of Caulerpa. In the event Caulerpa is found, disturbing activities would be delayed until the infestation is isolated, treated, or the risk of spread is eliminated and sightings would be reported immediately to CDFW or NMFS. Construction shall not begin until cleared to do so by the NMFS.

10 COMPENSATORY MITIGATION FOR LOSSES OF AQUATIC RESOURCES (SUBPART J)

All alternatives would result in the permanent discharge of sand, rock, and concrete within waters of the US. The discharges of fill would temporarily increase turbidity during initial placement of the fill material. However, turbidity levels would return to pre-project levels soon after discharge has occurred. The discharges would permanently replace open water habitat within waters of the US with hard substrates or a matrix of rock and sand. However, rocky reefs, eelgrass beds, and kelp reefs would cover a small portion of the Project Area (ranging from 162.26 to 371.86 acres of the 11,465-acre Project Area). Thus, most open water habitat within the Project Area would remain unaffected. Furthermore, there would be no permanent loss of waters of the US.

However, the proposed discharges would aid in the restoration and support of imperiled habitats such as kelp, rocky reef, coastal wetlands, and other types historically present in San Pedro Bay of sufficient quality and quantity to support diverse resident and migratory species. The expected benefits are:

- Increase the extent (total area) of complex aquatic habitats within the Proposed Project Area.
- Increase the diversity and spatial heterogeneity of complex aquatic habitat types within the Proposed Project Area.
- Increase the overall connectivity of complex aquatic habitat types within the Proposed Project Area by restoring habitat areas in a way to facilitate the movement of species between habitat nodes to support and enhance existing food webs.

Based on the above, the proposed discharges would retain existing functions and services of waters of the US and aid in the restoration of others. Thus, compensatory mitigation is not proposed.

The final 404(b)(1) evaluation and Findings of Compliance will be included with the Record of Decision for this project.