Merkel & Associates, Inc.
5434 Ruffin Road, San Diego, CA 92123
Tel: 858/560-5465 • Fax: 858/560-7779
e-mail: associates@merkelinc.com

December 18, 2016
M&A #15-048-01

Ms. Coselyn Goodrich
City of San Diego
Public Works, E&CP, AEP Division
525 B Street, Suite 750
Mail Station 908A
San Diego, CA 92101

Biological Resource Letter Report
Mission Bay Navigational Safety Dredging Project

Dear Ms. Goodrich:

Merkel & Associates, Inc. has prepared the following biological resource letter report for the City of San Diego, written in accordance with the current City of San Diego Guidelines for Conducting Biological Surveys (2012).

If you have any questions concerning this biological letter report, please do not hesitate to contact me at (858) 560-5465 or kmerkel@merkelinc.com.

Sincerely,

Keith W. Merkel
Principal Consultant

BIOLOGICAL RESOURCE AND WATER QUALITY LETTER REPORT

MISSION BAY NAVIGATIONAL SAFETY DREDGING PROJECT

December 2016

ABSTRACT

Merkel & Associates, Inc. (M&A) has prepared this biological resource and water quality letter report for the proposed Mission Bay Navigational Safety Dredging. The purpose of this report is to document the existing biological conditions within the project study area; identify potential impacts to biological resources and water quality that could result from implementation of the proposed project; and recommend measures to avoid, minimize, and/or mitigate significant impacts consistent with federal, state, and local rules and regulations, and adopted policy. This document is further intended to address analytical needs under the California Environmental Quality Act (CEQA) and the City of San Diego (City) Multiple Species Conservation Program (MSCP) Subarea Plan (1997) and Biology Guidelines (2012a).

The project location is situated at multiple locations within the waters and public beaches of Mission Bay. These include dredge sites within both the west and east basins of Mission Bay, beach and in-bay reuse areas, and an upland and in-bay staging area on disturbed lands at South Shores and within South Pacific Passage east of Sea World. The work area includes maintenance dredging and reuse of dredged sediments within approximately 76 acres of bay waters and sand beach, and temporary contractor staging within approximately 2.5 acres of bay waters, and 1.5 acres of vacant uplands at South Shores.

The project work is strictly maintenance dredging, replacement of sand back to origin beach areas, and reuse of dredged materials to develop compensatory eelgrass mitigation through backfill of previously dredged deep basins and planting eelgrass back into dredge areas and onto raised bay floor areas within the sediment reuse areas. Maintenance dredging extents are defined by prior bay chart conditions. Section 55.2 of the City of San Diego Charter, provides for a Mission Bay Park Improvement Fund with a purpose of funding projects that restore wetlands, wildlife habitat and other environmental assets within the Mission Bay Park Improvement Zone, and projects that preserve the beneficial uses of Mission Bay Park. The first identified priority stated in the Charter is to restore navigable waters and eliminate navigational hazards within Mission Bay Park. This project would achieve this objective.

The project would not result in significant impacts to upland habitats as the project work is restricted to unvegetated beach areas subject to grooming by the City Parks & Recreation

Department mechanized beach crews and temporary contractor staging within disturbed portions of a vacant pad at the South Shores Launch Ramp. Maintenance activities are limited to areas of waters of the U.S. with all but the narrow high fringe of the beach work areas falling outside of navigable waters. Significant impacts would occur to eelgrass as a result of the maintenance dredging. These impacts are to be mitigated under this project by the restoration of eelgrass to compensate for impacts as established under the California Eelgrass Mitigation Policy (CEMP) (National Marine Fisheries Service [NMFS] 2014). This mitigation policy is the multi-agency accepted policy that replaces the previously utilized Southern California Eelgrass Mitigation Policy (SCEMP) (NMFS 1991). Eelgrass impacts are anticipated to be fully mitigated to a less than significant level through implementation of a compensatory mitigation plan incorporated as a part of this project work. Best management practices for upland staging would eliminate potential adverse impacts associated with sediment discharge to the bay or erosion damage at the staging site.

No impacts to sensitive plant or animal species, including rare, threatened or endangered species are expected to occur as a result of the project implementation. Potential significant impacts to California least terns are to be avoided by completing dredging and filling activities outside of the tern breeding season with work being completed between October and April. Although planting of eelgrass will continue through the summer following completion of dredging, this activity does not result in any disturbance beyond that of normal bay usage and is not expected to result in impacts to terns. The work is not expected to adversely affect marine mammals or sea turtles as the project areas do not receive high use by marine mammals and sea turtles. The work would not alter any nesting or roosting sites and would not disrupt any or migratory or wildlife travel routes. The project would comply with regulatory requirements of the federal Migratory Bird Treaty Act (MBTA) and California Fish and Game Codes §3503 and §3513 by avoidance of disruption of avian nesting activities due to project location and timing.

The project is expected to result in short-term temporary increases in local turbidity levels during dredging and material placement. These impacts are to be mitigated by incorporation of water quality monitoring and turbidity elevation limits requiring the contractor to reduce turbidity generation if elevation exceeds acceptable thresholds. Because of the clean sediment nature of material being dredged and the short-term construction period increase in turbidity levels, with the construction period mitigation measures, project impacts to water quality are expected to be fully mitigated.

In addition to City of San Diego approval, the proposed work requires permit action under section 10 of the Rivers & Harbors Act for work within navigable waters of the U.S. The project also requires authorization under section 404 of the federal Clean Water Act (CWA) for discharge of

dredged materials into waters of the U.S. Through this federal permit requirement, the project is also subject to state water quality certification under section 401 of the CWA, consultation between the Army Corps of Engineers and NMFS under the Magnuson-Stevens Fishery Conservation and Management Act, and a Coastal Consistency Determination under the Coastal Zone Management Act. The project will also require a Coastal Development Permit under the California Coastal Act.

There are not anticipated to be any unmitigated impacts to biological resources or water quality anticipated from this project following full implementation of the identified mitigation measures.

INTRODUCTION

Merkel & Associates Inc. (M&A) was retained by the City of San Diego (City) to review bathymetry and sediment dynamics within Mission Bay, in San Diego, California, and subsequently, to complete a baywide bathymetry and eelgrass (*Zostera marina*) distribution survey. Subsequent to this investigation, M&A was engaged to support the City with identifying boundaries of navigational hazards, conducting sediment characterization, and identification of project impacts and mitigation measures suitable to mitigate project impacts. The project area is located within the waters and minor upland areas around Mission Bay (Figure 1).

Section 55.2 of the City of San Diego Charter, provides for a Mission Bay Park Improvement Fund with a purpose of funding projects that restore wetlands, wildlife habitat and other environmental assets within the Mission Bay Park Improvement Zone, and projects that preserve the beneficial uses of Mission Bay Park. The first identified priority stated in the Charter is to restore navigable waters and eliminate navigational hazards within Mission Bay Park. This project would achieve this objective. The San Diego Fire Department, Lifeguard Services and the Mission Bay Park Improvement Fund Oversight Committee have accepted identification of areas within the bay that currently require maintenance dredging in order to remove shoals that are causing navigational safety hazards. Project engineering plans to implement the project have been prepared by Rick Engineering Company (2016) and are the basis for analyses included in this document.

M&A has prepared this biological resource and water quality letter report for the proposed project. The purpose of this report is to document the existing site conditions in the project study area; identify potential impacts to biological resources and water quality that could result from implementation of the proposed project; and recommend measures to avoid, minimize, and/or mitigate significant impacts consistent with federal, state, and local rules and regulations including the California Environmental Quality Act (CEQA) and City of San Diego (City) Multiple Species Conservation Program (MSCP) Subarea Plan (1997) and Biology Guidelines (2012). This report identifies the expected impacts of project implementation on existing biological resources and bay water quality. It further analyzes the potential effects of the project. Where significant impacts are identified, mitigation measures are identified to address these impacts.

Figure 1. Project Vicinity Map

SITE SETTING

Prior to the 1920's Mission Bay was essentially a tidal mudflat, separated from the Pacific Ocean by a sand spit that is the location of the present day community of Mission Beach. Between 1935 and 1948 the first deeper water was developed within the western basin of Mission Bay and by 1958 much of the shape of present day Mission Bay had been developed except for the southeasterly portion of the Bay which retained marshlands from the San Diego River delta that had been relocated out of Mission Bay by the Army Corps of Engineers channelization of the river mouth between 1948 and 1951. As development progressed the majority of work constructing modern day Mission Bay completed by 1963. Since that time there have been numerous localized maintenance dredging and shoreline activities through to the present.

Major dredging and bay modification projects since 1963 include the dredging of the Tecolote Creek Inlet to remove sediment in approximately 1970, the Army Corps of Engineers dredging of approximately 540,000 cy of sediment from the federal entrance channel in approximately 1983, alteration of the Quivira Basin wave barrier and cutting of a relief weir in the southern jetty of the entrance channel by the Army Corps, both in the mid-1980s. These two actions altered wave environments in the bay and increased the capture of fine sediments by the bay from the San Diego River due to storm flow spill through from the river to the Mission Bay channel. From 1997 to 2007, the bottom of Quivira Basin was identified as the most significant deposition area outside of the Rose Creek delta area. Also in the 1980s, the City implemented the Sail Bay Improvements project that removed private improvements from public lands around the margin of Sail Bay and expanded the usable beach with sand dredged from borrow pits located in central Sail Bay. This dredging was completed in 1985-1986. Eelgrass impacts associated with the beach widening were mitigated by restoration planting of the new beach constructed outward at a shallow slope of 15:1. The nearly 12 acre fill of the bay associated with the beach widening was mitigated by the construction of the South Shores Embayment south of South Pacific Channel and east of Sea World. This was completed in 1994 (Figure 2).

Significant changes in erosion and sedimentation dynamics occurred with the dredging of Fisherman's Channel and replacement of the tight pile supported bridge with a broader span concrete bridge in the late 1980s and the subsequent replacement of the southerly Ingraham Street Bridge with a new broad span concrete bridge. These changes substantially opened up the bay to enhanced circulation improving water quality, but also altering erosion and shoaling patterns due to increased water velocities. Some of the most notable shoaling after bridge construction was seen within the Mission Bay Channel shoals to the west of the new bridge. This shoal was ultimately dredged out as part of the Mission Bay shoreline stabilization project in 1995. Other dredging activities completed in Mission Bay Park include dredging to reconnect the Sea World Dolphin Lagoon back to the Bay in 1991, dredging in 1995 to remove the overwash shoal that had been East Ski Island, dredging and upland earthwork to construct the Crown Point Shores Intertidal Mitigation Areas (now Stribley Marsh), reconfiguration and

Figure 2. Recent dredging project history in Mission Bay

dredging at West Ski Island in 2000, and recent federal channel maintenance dredging by the Corps of Engineers in 2010-2011.

Mission Bay is currently dynamic low-flux sedimentary environment with sediment transport dominated by tidal and wave action. The main inputs of sediments into the bay are littoral sands entering the bay via the Mission Bay entrance channel, fluvial inputs from Rose Creek and Tecolote Creek as well as the San Diego River, and bay beach erosion resulting from wind, wave, and oceanic swell erosion. Other minor inputs include urban storm drains and atmospheric particulates. The main sediment outputs from the bay include tidal export out of the entrance channel, dredging, and shoal or beach reclamation activities. Patterns of accretion and erosion within Mission Bay are defined by a combination of geography and sediment sources, sediment characteristics, and bay hydrodynamics.

In 2007 a review of Mission Bay bathymetry and sediment dynamics was completed. The 2007 bathymetry survey determined that an estimated 483,880 cubic yards of sediment has accreted in Mission Bay in the ten year period between 1997 and 2007. While sediment has not been deposited evenly throughout the Bay, this volume constitutes an approximate 0.16 inch/year accretion rate over the 2,299-acre Bay. After reviewing all existing data the City determined that there was a need for an updated baywide eelgrass survey also collecting bathymetric data. As a result a survey was conducted in 2013 that collected bathymetric data (Figure 3) concurrent with baywide eelgrass distribution data (Figure 4). Following the processing of eelgrass survey data the new 2013 survey results were combined

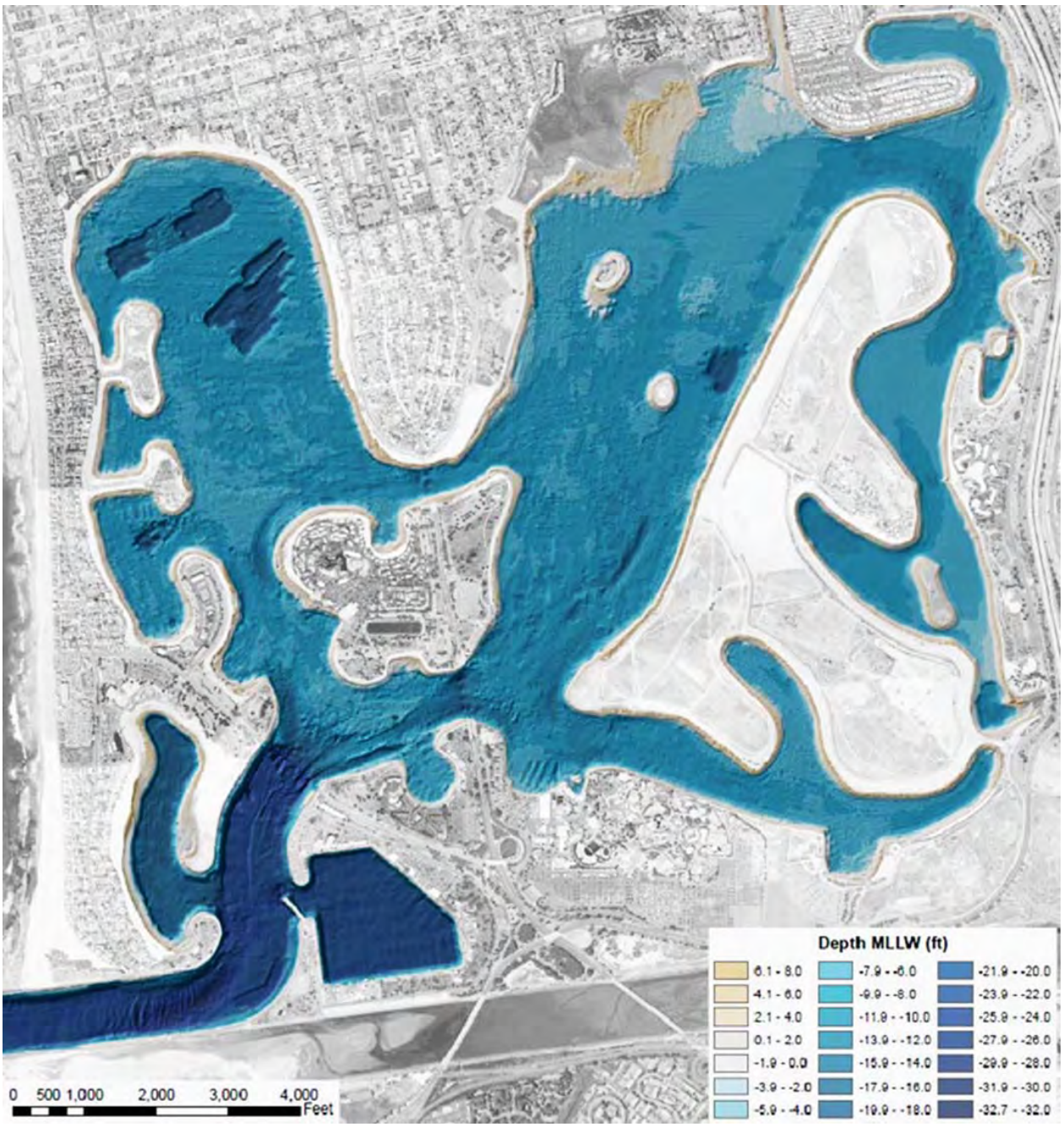


Figure 3. Mission Bay 2013 Condition Bathymetry

Figure 4. Mission Bay Eelgrass Distribution 2013

with prior baywide survey data from surveys conducted in 1988, 1992, 1997, 2003, and 2007 to develop an eelgrass frequency of occurrence map adds the individual survey layers and divides the resulting grid based map by the total number of surveys (Figure 5). This map provides a good indication of the relative stability of eelgrass presence in differing areas of the Bay, but it does not provide information on the extent of vegetated coverage within the areas mapped as eelgrass. As a result the mapping does not

fully present the difference between dense and sparse eelgrass present as a gradient from the west to the east in the bay.

Figure 5. Mission Bay Eelgrass Distribution Frequency of Occurrence 1988-2013

Overlain on the physical environment and eelgrass resources are existing bay navigation areas, speed zones, and water uses that differ as a function of designated land uses and physical barriers to navigation on the bay. Figure 6 identifies major navigational zones on the Bay and other important water use features over a color coded elevation map that illustrates bay depths in a

depth bins showing shallower waters in reds, moderate depths in oranges and yellows and deeper waters in shades of blue.

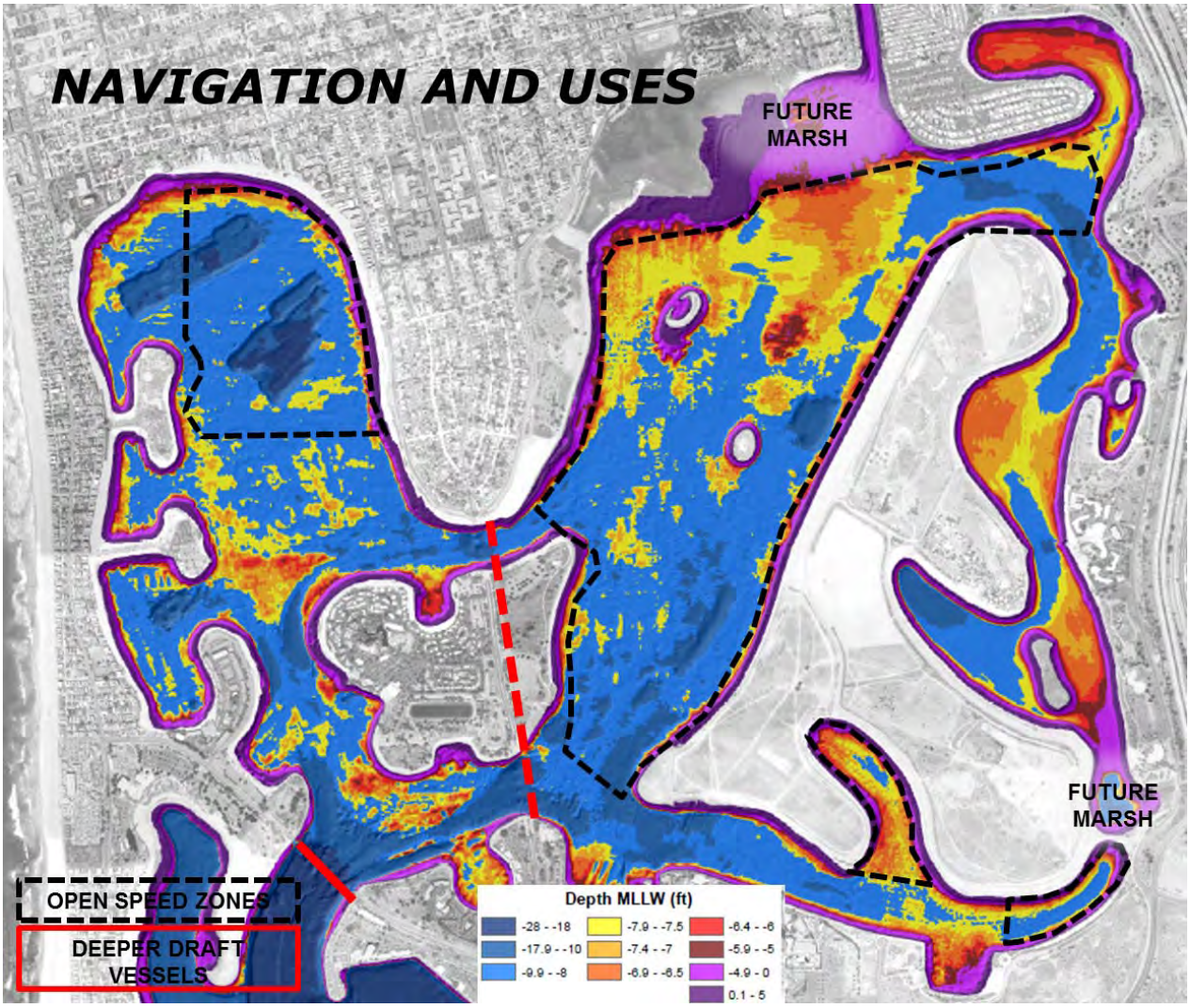


Figure 6. Mission Bay Navigation and Water Uses

Very deep draft vessels are generally restricted by water depths and bridge clearance to areas to the west of the Glenn Rick Bridge supporting West Mission Bay Drive. Deeper waters within Mariner's Basin, Quivira Basin and the entrance channel accommodate larger vessels (Figure 6). Clearance limits under the bridges also restrict sailing vessels with high masts. Between the West Mission Bay Drive Bridge and the Ingraham Street bridges, waters are generally navigable by larger sport vessels, two medium sized dinner cruise barges outfitted a 19th century stern paddlewheel river boats (Bahia Belle and larger William D. Evans), and smaller recreational vessels. The vessels

on the west side of the Ingraham Street bridges generally have deeper drafts than vessels on the east side of the bridges, however speeds are restricted to 5 miles per hour over most of the west side of the bay (Figure 6). Open speed areas are located in northwestern Sail Bay and throughout most of Fiesta Bay. Controlled waters restricted for persona water crafts (PWC) and competition ski boats are found at the east end of South Pacific Passage, while waters to the east of Fiesta Island are generally used most heavily by non-motorized crafts and smaller crafts such as PWCs. Small bay fishing boats often fish the currents through the bridges during changing tides.

PROJECT OVERVIEW

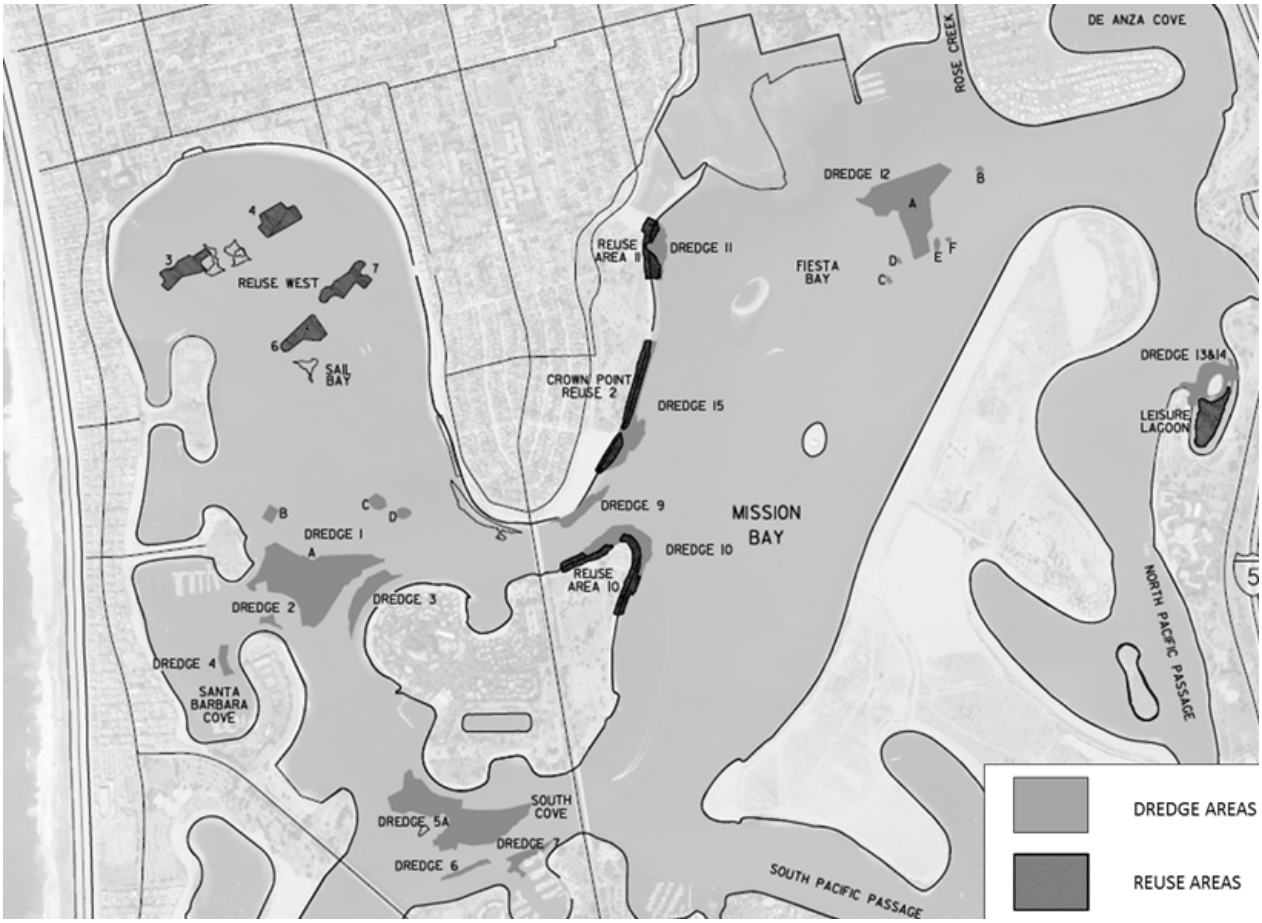
Project Purpose

Bay depth range maps, water uses and speed zones, incident reports and response call history, as well as individual experience with vessel groundings and safety zone adjustments that have been required allowed the City Lifeguard Services to identify areas of the bay that posed navigational safety hazards. Not all areas of the same depth were considered to be of equal concern. Controlled or low speed areas or areas only navigated by shallow draft vessels could support shallower waters than areas in open speed zones or where deeper draft vessels may ground on shoals. As a result, the identification of navigational safety concerns focused on true safety concerns and not on all areas exhibiting some shoaling.

Using the tools available, multiple potential navigation safety areas were identified. Consideration was given to current and future water use plans under the Mission Bay Master Plan. As a result, some areas that have shoaled in to the point of regular low tide vessel groundings such as at the mouth of Rose Creek and Tecolote Creeks have been omitted from consideration for dredging as the master plan calls for a change in the water uses in these areas that would result in restoration of marshlands. As a result, dredging these areas down would be counterproductive to the proximate implementation of the adopted Mission Bay Master Plan.

In total, Lifeguard Services working with the Public Works project team identified a total of 15 areas required to be addressed for navigational safety concerns. These were identified as Dredge Area 1-15 with some areas supporting multiple small satellite dredge areas (Figure 7). Subsequent work resulted in a determination that only 14 of these sites were actually maintenance dredging sites that would result in returning the bay condition to that of the baseline chart. Dredge Area 8, located on the southwest portion of Crown Point along Riviera Shores and not labeled on Figure 7 was determined to not be an infill shoal into the bay from baseline conditions, but rather this site reflects an erosion of the upper beach back towards Crown Point and the pedestrian walkway. As a result, cutting this areas down to remove the shallow hazard would not be maintenance dredging, but rather a modification to the originally constructed bay shoreline. Further, it is unlikely that this

area can be sustained if built back up with existing native beach sand alone. As a result, this site warrants greater consideration and treatment as a shoreline stabilization project. It has been removed from the current project due to the fact that it does not meet project definition.



The results of these recent surveys indicate twelve primary areas within the bay that currently

Figure 7. Mission Bay Navigational Safety Dredging Project Areas and Water Uses

The proposed project is considered to be principally a major maintenance project that integrates mitigation into the project design as a reuse of dredged materials. It is independent of any other projects contemplated in Mission Bay Park and would not hamper or facilitate future projects as the work does not result in material changes to land forms, does not extend any utilities of construct any structures, and does not alter or enhance any land uses or zoning conditions. The proposed work does not alter existing water or beach uses, rather it seeks only to improve safety of existing uses undertaken in Mission Bay.

Project Dredge and Fills

Maintenance dredging at the identified locations would eliminate hazards improving safety along shorelines and in open navigation zones of the Bay. It is anticipated that between 122,000 and 220,850 cubic yards of sediment would be dredged. The broad range in volumes is based on allowable overdepth dredging in generally very shallow dredge cuts. Table 1 summarizes the dredging by individual dredge areas and includes the area, volume of cut, and lower design elevation of the final dredged area. In addition, the table identifies the extent of eelgrass impact anticipated to occur at each dredge area. The extent of dredging and volumes of dredge material generated are derived from the Mission Bay Navigational Safety Dredging project plans (Rick Engineering Company 2016).

Table 1. Dredge Area Summary.

LOCATION	AREA (ACRES)	DREDGE ELEV. (FT NGVD29/MLLW)	CUT VOL (CY)	FILL VOLUME (CY)	1-FT OVERDREDGE (CY)	2-FT OVERDREDGE (CY)	EELGRASS IMPACT (ACRES)
DREDGE AREA							
DREDGE 1A	15.87	-10.5' NGVD /-8.1' MLLW	22,690	-	25,600	-	15.87
DREDGE 1B	0.52	-10.5' NGVD /-8.1' MLLW	590	-	840	-	0.52
DREDGE 1C	0.63	-10.5' NGVD /-8.1' MLLW	720	-	1,020	-	0.63
DREDGE 1D	0.41	-10.5' NGVD /-8.1' MLLW	500	-	660	-	0.41
DREDGE 2	0.41	-10.5' NGVD /-8.1' MLLW	470	-	660	-	0.41
DREDGE 3	2.84	-10.5' NGVD /-8.1' MLLW	5,450	-	4,580	-	2.57
DREDGE 4	0.8	-10.5' NGVD /-8.1' MLLW	610	-	1,290	-	0.64
DREDGE 5A	13.5	-10.5' NGVD /-8.1' MLLW	19,850	-	21,780	-	13.30
DREDGE 5B	NO WORK	NO WORK	NO WORK	-	NO WORK	NO WORK	NO WORK
DREDGE 6	0.67	-10.5' NGVD /-8.1' MLLW	850	-	1,080	-	0.42
DREDGE 7	1.3	-10.5' NGVD /-8.1' MLLW	3,380	-	2,100	-	1.30
DREDGE 8	NO WORK	NO WORK	NO WORK	-	NO WORK	NO WORK	NO WORK
DREDGE 9	1.94	-10	4,770	-	-	-	0.97
DREDGE 10	3.61	-10.5' NGVD /-8.1' MLLW	15,300	8,780	-	-	2.01
DREDGE 11	1.67	-7.0' NGVD /-4.6' MLLW	5,900	5,900	-	-	0.64
DREDGE 12A	11.44	-10.5' NGVD /-8.1' MLLW	22,890	-	-	36,930	0.99
DREDGE 12B	0.13	-10.5' NGVD /-8.1' MLLW	230	-	-	410	0.00
DREDGE 12C	0.11	-10.5' NGVD /-8.1' MLLW	190	-	-	350	0.06
DREDGE 12D	0.07	-10.5' NGVD /-8.1' MLLW	120	-	-	210	0.04
DREDGE 12 E	0.21	-10.5' NGVD /-8.1' MLLW	380	-	-	680	0.04
DREDGE 12F	0.08	-10.5' NGVD /-8.1' MLLW	140	-	-	260	0.00
DREDGE 13 & 14	3.78	-5.0' NGVD /-2.6' MLLW	8,320	8,320	-	-	0.78
DREDGE 15	3.37	-7.0' NGVD /-4.6' MLLW	9,050	9,050	-	-	1.31
TOTAL DREDGE	**63.36**		**122,400**	**32,050**	**59,610**	**38,840**	**42.93**

Dredged material is to be fully reused in the development of eelgrass mitigation areas to offset project impacts and to repair short segments of three beaches that have eroded into the shoals to be dredged. Table 2 outlines the proposed sediment reuse by site as identified in Figure 7. The fill volumes in these reuse areas has been calculated as the maximum volume generated by the project

assuming that full allocated over depth is achieved by the Contractor to ensure that minimum navigation clearances are met. The sediments to be dredged have been determined to be chemically and physically suited to the proposed restoration reuse through collection and testing under the EPA/ACOE-approved SAP (M&A 2015 a and 2015b). The testing program conducted consistent with the Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. (Inland Testing Manual [ITM]) (USEPA/USACE 1998), demonstrated the material to be of similar physical and chemical condition to the sediments native to the reuse sites.

Table 2. Reuse Area Summary.

BENEFICIAL RESUE EELGRASS MITIGATION SITE MITIGATION SITE	AREA (ACRES)	FILL ELEV. (FT NGVD29/MLLW)	FILL VOL (CY)
RESUSE SITES			
RESUSE WEST 3 **	2.51	-10.5' NGVD /-8.1' MLLW	41,270
RESUSE WEST 4 **	2.69	-10.5' NGVD /-8.1' MLLW	50,060
RESUSE WEST 6 **	2.23	-10.5' NGVD /-8.1' MLLW	48,690
RESUSE WEST 7 **	2.50	-10.5' NGVD /-8.1' MLLW	48,780
CROWN POINT REUSE 2	3.35	BEACH	9,050
REUSE AREA 10	3.75	BEACH	8,780
LEISURE LAGOON	2.45	-7.5' NGVD /-5.1' MLLW	8,320
REUSE AREA 11	2.06	BEACH	5,900
TOTAL REUSE	**19.47**		**220,850**

**FILL VOLUME INCLUDES DREDGING CUT VOLUME AND 1-FT AND 2-FT OVER DREDGING VOLUMES

Reuse areas are not proposed to impact eelgrass and will be adjusted spatially as necessary to ensure eelgrass impact avoidance or minimization at the time of construction. Because eelgrass impacts as defined under the CEMP are to be determined through pre-dredging and post-dredging surveys and eelgrass varies somewhat in distribution, it is recognized that some adjustments may be required in the final fill positioning for the reuse areas to best serve their intended mitigation function. In addition, the final fill volumes cannot be known at this time since it is dependent upon the extent of overdredge conducted. This will be accommodated by shifts in fill location, lowering fill elevations, or slight footprint expansions to best meet mitigation needs. In no instance will the reuse areas expand beyond the existing borrow pit boundaries or above the specified elevations.

Project Eelgrass Restoration

As discussed later in this document, the project will result in significant impacts to eelgrass unless mitigated. To accomplish required mitigation, the project has been designed to dredge in a manner that sustains restoration within the dredged areas and to construct suitable planting sites within the subtidal reuse sites. Upon completion of individual sites, planting of the sites with eelgrass will be accomplished commencing upon the beginning of the high growth season in March. Because

eelgrass restoration is principally a mitigation measure, it is only briefly discussed here and described in more detail within the eelgrass mitigation plan.

Project Timing

Project activities are principally considered to be short-term dredging and fill placement is anticipated to be completed over a 5 month period from November through March. Planting of eelgrass would be conducted over a longer period of time but would be much reduced in scale and presence within the Bay. Planting work would be completed from March through September following completion of dredging and reuse site construction with some overlap between the two activities. Upon completion of initial dredging and placement work, visual changes in the bay are expected to be negligible since the majority of the work is subtidal and not visible or perceptible to most bay visitors.

METHODS AND SURVEY LIMITATIONS

Literature and Data Review

Historical and currently available literature and data pertaining to the project area were reviewed prior to initiation of the field investigation. This review included examination of: 1) aerial photography for the bay including those dating back to the late 1920s and progressing through bay construction phases as well as recent photographic histories from custom flights in the 1980s and photographs from 1994 to the present available through on-line photographic databases such as Google Earth and Microsoft Corporation; 2) regional vegetation data for the project vicinity (SanGIS 1995 and 2012); 3) geological substrates and soil types mapped on the project site (USGS 2005 and SanGIS 2002, respectively); 4) federally designated critical habitat for the project vicinity (USFWS 2014a); and 5) California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) and U.S. Fish and Wildlife Service (USFWS) special status species records for the project vicinity (CDFW 2014 and USFWS 2014b, respectively). In addition, M&A reviewed the mapping of eelgrass and bathymetric conditions from 1988 through present including six comprehensive eelgrass surveys of the Bay over the past 28 years.

Survey Date(s), Time(s), and Conditions

Field surveys of the sites have been extensive and have included marine resource surveys and mapping, sediment characterization sampling, upland habitat assessment and jurisdictional waters determinations. Surveys have included general biological survey to map vegetation and identify botanical and wildlife species, as well as a marine habitat survey that included eelgrass (*Zostera marina*) mapping. Table 3 summarizes the survey dates, times, and conditions.

Table 3. Survey Date(s), Time(s), and Conditions

Survey	Date	Time	Conditions (start to end) [1]	Staff
Marine Habitat	Apr 24, 2013	0630-1800	NA	Jordan Volker Shelley Petruccelli
Marine Habitat	Apr 28, 2013	0630-1800	NA	Jordan Volker Shelley Petruccelli
Marine Habitat	Apr 30, 2013	0630-1800	NA	Jordan Volker Shelley Petruccelli
Marine Habitat	Mar. 20, 2015	0630-1800	NA	Jordan Volker Tommy Valencia
Sediment Sampling General Biology	Mar. 19, 2015	0713-1630	NA	Lawrence Honma Mary Tamburro Tommy Valencia Brandon Stidum Brian Riley
Sediment Sampling	Mar. 20, 2015	0630-1800	NA	Mary Tamburro Tommy Valencia Brandon Stidum
Sediment Sampling	Mar. 25, 2015	0700-1700	NA	Mary Tamburro Tommy Valencia Brandon Stidum
Sediment Sampling/ Marine Resources	Apr. 22, 2015	0720-1830	NA	Mary Tamburro Tommy Valencia Brandon Stidum Brian Riley Jordan Volker
Sediment Sampling	May 7, 2015	0640-1600	NA	Mary Tamburro Tommy Valencia Brandon Stidum
General Biology	Apr. 1, 2015	0915-1030	Weather: 20%-15% cc Wind: 0-1 BS Temperature: ~57° F	Brandon Stidum
Marine Resources	Sep. 23, 2016	0730-1520	Weather: 0% cc Wind: 0-1 BS Temperature: ~73° F	Jordan Volker Daniel Kahl
Marine Resources	Oct. 15, 2016	0900-1640	Wind: 0-1 BS Temperature: ~70° F	Jordan Volker Kelsie Burlingame
General Biology	Aug. 9, 2016	0800-0925	Weather: 0% cc Wind: 0-1 BS Temperature: ~62° F	Keith Merkel
General Biology	Nov. 18 2015	1300-1650	Weather: clear Wind: 0-2 BS Temperature: ~62° F	Keith Merkel

[1] cc = cloud cover; BS = Beaufort scale; °F = degrees Fahrenheit

Field Survey Methods

General Biology: Vegetation Mapping and Botanical/Wildlife Survey

M&A conducted a general biological survey of the study area on multiple occasions with the primary focus being on the low intertidal environments and upper tide lines. A focused investigation was made at the proposed South Shores contractor staging area to document vegetation on the site and confirm accessibility from the paved lot to the pad and out to the waters edge. During this investigation, boundaries of disturbed sage scrub vegetation were noted in order to align the constractor yard to stay outside of sage scrub and within disturbed lands. The survey was conducted on foot and included the entire project area.

Existing habitat types were classified according to the Holland (1986) code classification system as modified by Oberbauer et al. (2008), and have been mapped in accordance with the City Biological Guidelines and Guidelines for Conducting Biological Surveys (2012).

The scientific and common names utilized for the floral and faunal resources were noted according to the following nomenclature: flora, Baldwin (2011); butterflies, Klein and San Diego Natural History Museum (2002) and Opler et al. (2010); amphibians and reptiles, Crother et al. (2012); birds, American Ornithologists' Union (1998 and 2014); and mammals, (species level) Wilson and Reeder (2005) and (sub-species level) Hall (1981).

Photographs of the project area were taken to record the biological resources present within the study area (M&A 2016), and data collected from the survey were digitized in Environmental Systems Research Institute (ESRI) Geographical Information System (GIS) software, using ArcGIS® for Desktop.

Marine Habitats and Eelgrass Survey

Intertidal marine habitats were surveyed from shore in conjunction with the general biological survey described above as well as by survey vessel with interferometric sidescan sonar and ROV. In addition, an in-water eelgrass survey was completed of the site by SCUBA diver.

Eelgrass habitat mapping was completed using interferometric sidescan sonar, which provided an image of seafloor backscatter within the entire project area. Interpretation of the backscatter data allowed for an assessment of the distribution of eelgrass. Sidescan backscatter data were acquired at a frequency of 468 kHz, with a scanning range of 31 meters for both the starboard and port channels, resulting in a 62 meter wide swath. All data were collected in latitude and longitude using the North American Datum of 1983 (NAD 83). The survey was conducted by running transects

spaced to allow for overlap between adjoining sidescan swaths. Transect surveys were performed until the entirety of the survey area was captured in the survey record. Following completion of the survey, the data were converted into a geographically registered mosaic through digital post-processing, and plotted on a geo-rectified aerial image of the project area. Marine resources of interest were then digitized to show their distribution within the survey area.

Directed Sensitive Species Survey/Assessment

Concurrent with the habitat mapping and botanical/wildlife survey, a directed survey/assessment for special status species, as defined under CEQA, was conducted within the study area. Only the South Shores staging are supported any terrestrial vegetation within work areas and as such, this area was the focus for the rare species investigations. Further, during each field visit, note was made of the absence of marine mammals within or in proximity to the project sites.

State CEQA Guidelines §15380 (Title 14, Chapter 3, Article 20) define "endangered, rare or threatened species" as "species or subspecies of animal or plant or variety of plant" listed under the Code of Federal Regulations, Title 50, Part 17.11 or 17.12 (Volume 1, Chapter I) or California Code of Regulations, Title 14, Sections 670.2 or 670.5 (Division 1, Subdivision 3, Chapter 3), or a species not included in the above listings but that can be shown to be "endangered" meaning "when its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors" or "rare" meaning "although not presently threatened with extinction, the species is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens or the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered 'threatened' as that term is used in the Federal Endangered Species Act". State CEQA guidelines Appendix G, Section IV generally refers to species that fall under the above criteria as "special status species".

Thus, for the purposes of this report, special status species are: 1) federally and state listed species (CDFW 2015c and 2015d); 2) CDFW Species of Special Concern (SSC), Fully Protected (FP), and Watch List (WL) species (CDFW 2015a and 2015b); 3) species designated as Special Plants or Special Animals in the CNDDB, which include all taxa inventoried by the CDFW, regardless of their legal or protection status; and 4) MSCP Narrow Endemic and Covered Species (City 1997).

The potential for sensitive species to occur on the project site was assessed based on the presence of potentially suitable habitat, as well as historical and currently available species data.

Eelgrass Impact Analysis

Results from the baseline eelgrass survey were used to determine the footprint of project impact to eelgrass based on the limits of grading as determined in the Rick Engineering Company project plans (2016). Impact calculations for eelgrass were made by Rick Engineering Company from data provided by M&A from the 2013 baywide eelgrass survey. This baseline survey provides an estimate of the eelgrass impact anticipated from the project. Final impact determinations will be made by comparison of the pre-dredging and post-dredging eelgrass surveys as outlined in the provisions of the CEMP.

Survey Limitations

Biological inventories are generally subject to various survey limitations. Depending on the season and time of day during which field surveys are conducted, some species may not be detected due to temporal species variability. One biological survey was conducted during morning hours of the early spring season; therefore, some species of annual plants, invertebrates, amphibians, reptiles, migratory or nesting birds, and nocturnal wildlife may not have been detected. Based on the biological literature and data review performed, as well as knowledge of species-specific habitat requirements, it is anticipated that any additional species potentially present on the project site can be fairly accurately predicted, and that the survey conducted was sufficient in obtaining a thorough review of the biological resources present on the project site.

Because of the nature of the project and extensive visits made to the project sites, it is not anticipated that any sensitive species or resources were missed in the completion of the field work.

SURVEY RESULTS

Physical Characteristics

The project sites are located in waters and on groomed beaches of Mission Bay. Staging is proposed on a disturbed pad above a revetment shoreline along the bay. Other than the contractor staging area, all o f work sites are located within waters of the U.S. Intertidal beach reuse areas will transition into existing supratidal beaches without altering existing upland environments at these sites. At all beach reuse sites, the uplands consist of developed parklands supporting manicured turf grass. No turf grass is proposed to be removed, rather the replaced material will meet with existing sand near the high tide line.

The elevation within the study area ranges from -22.4 feet NAVD29 (-20 feet MLLW) within the deepest borrow site in Sail Bay to just above the highest high tide line. Soils within the study area

are mapped as "Made Land" as the area was created from material dredged to create Mission Bay as it currently exists. The project areas are not located within the City's MHPA preserve, but the project is within the coastal overlay zone.

Biological Resources - Terrestrial

Terrestrial Habitats

Terrestrial habitat types identified within the project area during the biological survey are urban developed lands (Table 4). At the contractor staging area, these lands include upper portions of revetted shoreline above the highest high tide, concrete trails, and escaped landscape plants consisting of statice (*Limonium perezii*), hottentot-fig (*Carpobrotus edulis*), crown daisy (*Chrysanthemum coronarium*) interspersed with scattered opportunistic species of tree tobacco (*Nicotiana glauca*), telegraph weed (*Heterothica grandiflora*), and coyote bush (*Baccharis pilularis*). Above other beach reuse areas, urban/developed lands consist of turfed parklands and concrete trails transitioning to the groomed sand beach.

Table 4. Terrestrial Habitats/Vegetation Communities

Habitat/Vegetation Community	Holland/ Oberbauer Code	MSCP Tier; Habitat Type	Existing (acres)	City of San Diego *Inside MHPA*	City of San Diego *Outside MHPA*
Urban/Developed –	12000	IV	1.55	0	1.55
Total:			**1.55**	**0**	**1.55**

Urban/Developed – (Oberbauer 12000)

At the contractor staging area, these lands include upper portions of revetted shoreline above the highest high tide, concrete trails, and escaped landscape plants consisting of statice (*Limonium perezii*), hottentot-fig (*Carpobrotus edulis*), crown daisy (*Chrysanthemum coronarium*) interspersed with scattered opportunistic species of tree tobacco (*Nicotiana glauca*), telegraph weed (*Heterothica grandiflora*), and coyote bush (*Baccharis pilularis*). Above other beach reuse areas, urban/developed lands consist of turfed parklands and concrete trails transitioning to the groomed sand beach.

Terrestrial Zoological Resources-Fauna

Wildlife species noted during the biological survey consisted primarily of common urban associated species as well as species commonly found in nearshore coastal bay environments. Avian species

observed included European starling (*Sturnus vulgaris*), mourning dove (*Zenaida macroura*), Anna's hummingbird (*Calypte anna*) and rock pigeon (*Columba livia*).

Terrestrial Rare, Threatened, Endangered, Endemic and/or Sensitive Species or MSCP-Covered Species

No terrestrial special status species were identified within the study area. The project site has limited potential to be utilized by foraging sensitive species during various times of the year; however, these species are typically associated with marine environments. Marine associated birds are discussed in the marine resources section below.

Biological Resources - Marine

Marine Habitats and Zoological Resources

Three marine habitats occur within the study area (Table 5). A narrow, groomed supratidal and intertidal sand beach runs around the shoreline of the bay, transitioning into shallow bay waters, and dense eelgrass beds offshore. The eelgrass beds were mapped in 2013 for this effort (Figure 4). The following text describes marine habitats in detail.

Table 5. Marine Habitats/Vegetation Communities

Habitat/Vegetation Community	Holland/ Oberbauer Code	MSCP Tier; Habitat Type	Existing (acres)	City of San Diego *Inside MHPA*	City of San Diego *Outside MHPA*
Beach	64400	NA	3.12	0	3.12
Shallow Bay - Eelgrass	64123	NA	42.93	0	42.93
Shallow Bay - Unvegetated	64123	NA	29.68	0	29.68
Total:			**75.73**	**0**	**75.73**

Beach (Oberbauer 64400)

A narrow band of sand beach occurs around the shoreline of Mission Bay. The beach is almost always bounded by manicured turf and walking paths. This habitat is heavily utilized for recreational purposes by visitors to Mission Bay. The lower portions of the beach are intertidal habitat providing loafing and foraging area for shorebirds and gulls; however, human disturbance along the shoreline prevents extensive use of this habitat by disturbance sensitive birds in most

areas of the bay. Avian species observed along the sand beach and in shallow bay waters included western gull (*Larus occidentalis*) and California gull *(Larus californicus*) and waterfowl including surf scoter (*Melanitta perspicillata*).

The upper portion of the beach is supratidal recreational beach. This area occurs above the highest high tides and transitions to turf and trail improvements of Mission Bay Park. Typically, this area is distinguished from the intertidal beach by an erosion scarp established by the action of the waves at the scarp toe. The base of the scarp typically shows shoreline erosion at approximately mean sea level as a result of water spending the greatest amount of time oscillating around this tidal stage.

Shallow Bay - Eelgrass (Oberbauer 64123)

Results of the baseline eelgrass survey completed in spring 2013 indicate wide distribution of eelgrass within Mission Bay (Figure 3). Within Mission Bay, the survey documented the presence of 979.1 acres of eelgrass in 2013 (Merkel & Associates 2013).

Eelgrass (*Zostera marina*) in habitat typically found in shallow waters of Mission Bay

Eelgrass vegetated habitats are an essential component of southern California's coastal marine environment. Eelgrass beds function as important habitat for a variety of invertebrate, fish, and avian species.

For many species, eelgrass beds are an essential biological habitat component for at least a portion of their life cycle, providing resting and feeding sites along the Pacific Flyway for avian species, and nursery sites for numerous species of fish. Typical eelgrass associates include pipefish (*Syngnathus* spp.), kelpfish (Family Clinidae), and surfperch (Family Embiotocidae), as well as schooling fish such as topsmelt (*Atherinops affinis*) and anchovy (*Anchoa* spp.).

Shallow Bay - Unvegetated (Oberbauer 64123)

Shallow bay habitat is described by Oberbauer et al. (2008) as having a depth shallow enough for light to penetrate to the seafloor. This habitat within Mission Bay is typically comprised of fine sands and mud, and contains patches of red algae (*Gracilaria* spp., *Ceramium* spp.) and green algae (*Ulva* spp.). Typical invertebrate species include burrowing bivalves (*Chione* spp., *Macoma nasuta*), the amphipod, *Grandidierella japonica,* and bay ghost shrimp (*Callianassa californiensis*). Other invertebrates found in this habitat include the invasive Japanese mussel (*Musculista senhousia*), the opisthobranch, *Navanax inermis*, and California sea hare (*Aplysia californica*). Common fish species include round stingray (*Urobatis halleri*), gobies (Family Gobiidae), barred sand bass (*Paralabrax*

nebulifer), and bottom dwelling diamond turbot (*Hypsopsetta guttulata*) and California halibut (*Paralichthys californicus*).

The shallow bay habitat within the project area that does not contain eelgrass ranges from mud to sand and extends into the borrow pits in Sail Bay and throughout shallower waters within the east basin at the Rose Creek shoal at Dredge Area 12 and within Leisure Lagoon at the far eastern side of the bay.

Marine Rare, Threatened, Endangered, Endemic and/or Sensitive Species or MSCP-Covered Species

Species identified as protected, rare, sensitive, threatened or endangered by the USFWS, National NMFS, or CDFW that may be expected in the project area at various times include three bird species, and two marine mammals (Table 6). All of these are marine species, and none were observed during the current survey effort. California brown pelican (*Pelecanus occidentalis californicus*) and double crested cormorant (*Phalacrocorax auritus*) are protected at nesting locations and communal roosts, neither of which is present within the project area. Individual brown pelican and double crested cormorant occasionally forage within the nearshore waters or loaf on sand beaches adjacent to the bay. However, these species are opportunistic in their loafing and foraging activities are not dependent upon the project area for essential biological activities. Further the project areas generally lack high utility for these species which tend to aggregate on the rock breakwaters near Quivira Basin and are much less common elsewhere in the bay. California least terns (*Sternula antillarum browni*) do forage within the project area during summer months. The nearest least tern nesting colonies to project dredging areas are located at Mariner's Point, and the FAA Island approximately 0.45 and 0.36 miles from the nearest dredging areas. This species makes opportunistic use of the bay shallows to forage for small fish.

Table 6. Special Status Species Observed or Expected to Occur within the Study Area

Common Name	Scientific Name	Status	Occurrence at Project Site
California Brown Pelican	*Pelecanus occidentalis californicus*	CDFG FP	Uncommon
Double-crested Cormorant	*Phalacrocorax auritus*	CDFG WL	Uncommon
California Least Tern	*Sternula antillarum browni*	SE, FE	Regular seasonal
Harbor Seal	*Phoca vitulina*	MMPA	Uncommon
California Sea Lion	*Zalophus californianus*	MMPA	Uncommon

SE – State Endangered; **FE**- Federally Endangered; **FT** – Federally Threatened; **CDFW SSC**- CDFW Species of Special Concern; **CDFW-FP** – CDFW Fully Protected Species; **CDFW-WL**- CDFW Watch List; **MMPA** – species protected by the Marine Mammal Protection Act

*Least terns are a migratory species found in the area from after April 1 through prior to September 1 of each year.

Other special status species that have a low to moderate potential to occur on the study area, based on the presence of suitable habitat, include marine mammals, specifically California sea lion (*Zalophus californianus*) and harbor seal (*Phoca vitulina*). Disturbance of these species is prohibited under the Marine Mammal Protection Act (MMPA). No breeding, haul out, or loafing areas for these marine mammals occur within the project area. California sea lion and harbor seal forage throughout Mission Bay, but are mainly observed near the entrance to the bay and adjacent to fishing docks and landings (such as Quivira Basin and less commonly along Dana Landing). As such, they are considered to be uncommon visitors to the project area.

Jurisdictional Wetland and Waterways

No wetlands were identified within the project study area. Mission Bay is considered a traditionally navigable water under the Rivers & Harbors Act (R&HA) and waters of the U.S. under the Clean Water Act (CWA). Under these acts, the U.S. Army Corps of Engineers (USACE) has jurisdiction of activities within navigable waters, including placement of structures under Section 10 of the R&HA and for placement of fill into waters of the U.S under the Clean Water Act. Jurisdiction under the R&HA is defined as the mean high tide line (+2.59 ft NGVD29 [+5.01 ft MLLW]), while the jurisdiction under the CWA is the highest annual high tide (+5.37 ft NGVD29 [+7.79 ft MLLW]).

Wildlife Movement and Nursery Sites

The project sites within Mission Bay ae not considered to be wildlife movement areas. While migratory birds make use of Mission Bay as part of their migration, the majority of the bird use by migratory birds is within areas around the Northern Wildlife Preserve at the north end of the bay and the Southern Wildlife Preserve in the San Diego River Flood Control Channel where animals are able to rest and forage with less harassment pressure than within the recreational areas of the bay where the project sites are centered.

Eelgrass is considered to be an important nursery habitat for several fish species and is considered to be Essential Fish Habitat (EFH) and a Habitat Area of Particular Concern (HAPC) under the Magnuson-Stevens Fisheries Conservation and Management Act, as well as a Special Aquatic Site under the Clean Water Act. While eelgrass habitat is considered to provide important nursery functions, there are no specifically unique nursery functions believed to be associated with the eelgrass to be impacted over other eelgrass habitat. This nursery function is one aspect of eelgrass

beds that lead to the determination that impacts to eelgrass habitat are significant without mitigation.

Water Quality

Terrestrial Project Areas

The upland contractor staging area is a low gradient pad comprised of hydraulically placed fill sand that was discharged into containment cells to construct uplands and the South Pacific Passage. This pad is generally a well-drained site that percolates precipitation rapidly into the sediment rather than running off to the bay. There are no developed sumps or stormwater conveyances present on the disturbed pad. Drainage under the unimproved site conditions does not appear to have developed any rilling or erosion features from this site. Other than precipitation, no other water sources exist within the upland staging area.

Bay and Beach Project Areas

Mission Bay receives water from atmospheric precipitation, fluvial inputs from creeks and drains, and tidal flushing from the open coast. Within the project areas, water quality at all sites is considered to be chemically high quality under most circumstances. However, storm drainage into Leisure Lagoon can result in increasing nutrient and sediment loads temporarily lowering salinities within the lagoon, and stimulating bacterial growth. At Rose Creek, the project areas receive pulses of elevated turbidity and accumulate fine sediment from the watershed that is often associated with nutrient loading. The intermittent pulses of freshwater from Rose Creek generally results in short-term depression of water quality, however slower nutrient release from winter deposited fine sediments during spring months can add to both macrophytic and less commonly microalgal blooms in north Fiesta Bay. Sail Bay is susceptible to intermittent and irregular discharges of raw sewage due to breaks or overflows in the municipal sewer system within the bay watersheds. While these events are unpredictable, in location and size, they do occur on a semi-regular basis and lead to short-term contact recreational closures of various areas of the bay.

The beach areas within and adjacent to project activities receive storm water inputs from drains that service local watersheds. In general these watersheds are built out and relatively stabilized with respect to sediment generation. As a result pulses of water general carry limited turbidity and normal urban loads of dissolved constituents such as residential pesticides, total petroleum hydrocarbons, and metals from roadway sources such as unburned fuel, brakes, and other automobile and asphalt sources. The storm drain discharge water quality character is not expected to be different from typical urban discharge sources.

While urban pollutants discharged down the storm drains are not anticipated to be different from other discharge conditions within the urbanized environment, the effects of the storm water discharge through these culverts on beach erosion can be severe. Because the drains discharge at the upper edges of sand beaches, coincident occurrence of low tides and storm water discharge can result in substantial sand transport from the beach littoral cell to the bay where it is unrecoverable by the City's beach maintenance crews. This discharge is one of the principal sources of hazardous shoal development along Crown Point Shores at Dredge Areas 11 and 15.

PROJECT IMPACT ANALYSIS

Thresholds of Significance

State CEQA Guidelines §15065 (a) (Title 14, Chapter 3, Article 5) states, "A project may have a significant effect on the environment" if:

- "The project has the potential to substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; substantially reduce the number or restrict the range of an endangered, rare or threatened species; or eliminate important examples of the major periods of California history or prehistory."

- "The project has possible environmental effects which are individually limited but cumulatively considerable."

The following analysis identifies potential impacts to biological resources that could result from implementation of the proposed project and addresses the significance of these impacts pursuant to CEQA, in accordance with the issues listed under CEQA Guidelines Appendix G, Section IV. In addition, the City has developed Significance Determination Thresholds (2011) and Biology Guidelines (2012a) under CEQA; therefore, mitigation measures for significant project impacts are recommended in accordance with these City guidelines, as well as the City MSCP Subarea Plan (1997).

Impact Definitions

Project impacts are categorized pursuant to CEQA as direct, indirect, or cumulative impacts.

- CEQA Guidelines §15358 (a) (1) and (b) (Title 14, Chapter 3, Article 20) defines a "direct impact or primary effect" as "effects which are caused by the project and occur at the same time and place" and relate to a "physical change" in the environment.

- CEQA Guidelines §15358 (a) (2) and (b) (Title 14, Chapter 3, Article 20) defines an "indirect impact or secondary effect" as "effects which are caused by the project and are later in time or farther removed in distance, but are still reasonably foreseeable" and relate to a "physical change" in the environment.

- CEQA Guidelines §15355 (Title 14, Chapter 3, Article 20) defines "cumulative impacts" as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts."

Direct, indirect, and cumulative impacts can be described as either permanent or temporary. Permanent impacts are defined as effects that would result in an irreversible loss of biological resources; temporary impacts can be defined as effects that could be restored, thus providing habitat and wildlife functions and values effectively equal to the functions and values that existed before the area was impacted.

Project Impacts, Significance, and Recommended Mitigation

Potential project impacts were evaluated based on examination of the proposed project plans (Rick Engineering Company 2016) within the context of the biological resources and water quality conditions documented during the field surveys, through research, and as described above. Direct impacts were determined by overlaying the project plans on the mapped vegetation communities/habitats in Autodesk software platforms. Indirect impacts were determined based on the design, intended use, and location of the proposed project elements relative to biological and water quality resources.

Terrestrial Habitats/Vegetation Communities

The proposed project would result in direct impacts to urban/developed lands (Tier IV habitat types) as a result of contractor staging. Depending upon the selection contractor's selected dredging equipment the contractor may disturb all or none of the 1.55 acre disturbed lands staging area at the provided site (Table 7). For the purposes of this analysis, all habitats inside of the allocated staging area have been considered to be impacted. This would include several large patches of hottentot-fig and scattered invasive and escaped ornamental species and a few opportunistic native shrubs. Impacts to urban/developed lands (Tier IV habitats) would be considered less than significant under CEQA since these habitats are not regionally considered to

have high conservation value requiring mitigation. Other minor impacts to developed lands (grass turf) may occur as equipment is tracked to the beach for access. However, as these beaches are regularly accessed through the same routes by City mechanized beach maintenance crews, no substantial impact is expected and these impacts would be considered to be less than significant, though the contractor would be required contractually to repair any improvements damage by the work conducted.

Table 7. Terrestrial Habitats/Vegetation Communities, Impacts, and Mitigation

Habitat/Vegetation Community	MSCP Tier; Habitat Type	Total in Study Area (acres)	Impacts inside MHPA (acres)	Impacts outside MHPA (acres)	Mitigation Ratio[1]	Mitigation Required (acres)
Urban/Developed – Ornamental Trees	Tier IV; Upland	1.55	0	1.55	0:1	0
	Total:	**1.55**	**0**	**1.55**	**-**	**0**

[1]Mitigation ratios for upland habitats are based on the City's Biology Guidelines (City 2012a).

Marine Habitats/Vegetation Communities

The project would also result in direct impacts to eelgrass habitat as a result of maintenance dredging to lower shoals that constitute and navigational safety hazard (Table 8). Eelgrass is considered a high value habitat afforded special consideration under state and federal regulatory programs. Project construction would result in impacts to an estimated 42.93 acres of eelgrass as a result of direct dredging impact. According to the California Eelgrass Mitigation Policy (CEMP) (NMFS 2014) that has superseded the Southern California Eelgrass Mitigation Policy (NMFS 1991, revision 11) impacts would require mitigation established mitigation ratios. For mitigation projects that are implemented concurrent with or immediately following project impacts, mitigation ratios require successful establishment of 1.2 acres of eelgrass for each acre of eelgrass lost. This 1.2:1 mitigation ratio is outlined in the CEMP along with scaled increases in mitigation for mitigation delay. While the requirements for successful implementation of eelgrass mitigation are outlined in the CEMP, the CEMP also includes a requirement for a minimum planting effort above the final mitigation need. In southern California this minimum planting effort is 1.38 acres for each acre impacted. The minimum targeted acreage is based on variable regional success rates and is intended to offset failure risks. The minimum planting rate of 1.38:1 does not alter the overall success requirement of 1.2: 1 outlined under the CEMP (NMFS 2014). Mitigation that is fully installed and functional prior to impact may be applied in compensation under the CEMP at a 1:1

ratio. Under the CEMP, final impact area is to be determined based on the completion of pre-dredging and post-dredging surveys that document the explicit impacts associated with the project.

Eelgrass impacts are considered to be significant and requiring of mitigation. A detailed mitigation plan has been prepared for the project and is referenced herein. With the implementation of the mitigation plan, impacts to eelgrass will be fully mitigated.

Unvegetated bay and beach areas are expected to be temporarily disturbed in association with the dredging project, however thee areas are expected to rapidly recover following the completion of dredging. In a focused investigation conducted for NMFS, the three major southern California Ports and the Navy, benthic infauna recovered within 5 months following dredging with respect to density and biomass, but examination of community indices indicated that full recovery of community structure may have taken 17 to 24 months. Epibenthic invertebrates recovered within 29 to 35 months in terms of density and biomass (M&A 2010 and 2009). These recovery rates would indicate that even with large scale harbor deepening dredging recovery of benthic fauna may be relatively rapid with impacts being of a short-term nature. As a result, these impacts are considered to be adverse but less than significant.

Table 8. Marine Habitats/Vegetation Communities, Impacts, and Mitigation

Habitat/Vegetation Community	Total in Study Area (acres)	Impacts	Mitigation Ratio[1]	Mitigation Required (acres)
Beach	3.12	3.12	0:1	0
Shallow Bay - Eelgrass	42.93	42.93	1.2:1*	51.51*
Shallow Bay - Unvegetated	29.68	29.68	0:1	0
Total:	**75.73**	**75.73**	**-**	**51.51**

* Mitigation ratios for eelgrass habitat is based on the California Eelgrass Mitigation Policy (NMFS 2014) for mitigation implemented coincident with project impacts. Initial planting requirements for eelgrass in Southern California are 1.38:1 with a requirement that 1.2:1 be successful. Early implementation may be conducted reducing the mitigation ratio. A detailed summary of project mitigation standards is outlined in the CEMP and within the project eelgrass mitigation plan (M& A 2016).

Special Status Species

There were no sensitive species observed within the project sites during the field surveys. The project sites are expected to be seasonally used by sensitive species as identified in Table 6.

Sensitive bird species that occasionally occur in the project site are the California brown pelican, double-crested cormorant, and California least tern. As discussed above, no nesting sites or communal roosts for California brown pelican or double-crested cormorant occur within or adjacent to the project area. These two species are only occasional visitors to the project area. However, both species are fish foragers (California brown pelican forages from the air, and double-crested cormorant dives from the water). Work is expected to be short-term and localized, although mobile as work progresses. Work would affect only a small area of the bay at any given time. As a result, and based on these factors, impacts of the proposed project on California brown pelican and double-crested cormorant are not considered to be significant.

California least tern nests within Mission Bay (with the closest nesting sites being less than 0.5 miles from dredge locations. Temporary turbidity during dredging will occur locally around the dredge. However, dredging will be completed prior to the arrival of least terns and thus work would be temporally separated from tern presence. This scheduling separation will protect terns from disturbance associated with the work. Even if dredging were to occur concurrent with tern presence, the scale of turbidity around the dredge is expected to be very small due to the predominantly sandy nature of dredge material to be removed late in the project schedule. As such, only a small portion of the bay (0.9 percent) would be affected if the turbidity plume were not allowed to extend beyond 500 feet from the dredge. Under such conditions, this amount of turbid environment would similarly not be considered significant with turbidity restrictions as specified.

Harbor seals and California sea lions are observed commonly in Mission Bay adjacent to the entrance channel and near bait barges and fishing docks and landings. These mammals are less common in central and inner portions of Mission Bay and are expected to occur infrequently within the project area. There are no established haul-out, foraging, or breeding areas used by these or other marine mammals within the project area or vicinity. Dredging and material reuse would be of a short duration and low impact level with regard to increasing localized. Marine mammals would be expected to not respond to the anticipated dredging and filling activities due to slow movement of the dredge, low incident noise generation in the water, and general limited occurrence of marine mammals within proximity to the proposed dredging and filling locations.

Jurisdictional Wetlands

All of the in-water and beach work occurs within waters of the U.S. The proposed work would not reduce regulated waters of the U.S. but rather would alter slopes over portions of the shoreline within waters. The altered slope would be expected to have improved dissipative properties and be more stable against erosion than the present variable slope shorelines where beaches have eroded downward and produced scarps. Dredging activities are all being conducted in waters of the U.S. with excavation and filling occurring in the same area. While the work does affect regulated water and would require federal and state permit, the impacts are not considered to be significant as the project would not result in a loss or long-term degradation of habitat quality.

Wildlife Movement and Nursery Sites

Impacts to eelgrass habitat are described above. No other nursery or wildlife corridors occur within the project area.

Local Policies, Ordinances, and Adopted Plans

The following federal/state laws/regulations and local ordinances/plans are applicable to the proposed project, and are evaluated for consistency purposes. The regulatory requirements anticipated for the proposed project are discussed following the summary of applicable regulations.

Federal Regulations

Clean Water Act

The federal Water Pollution Control Act Amendments of 1972 (33 United States Code [USC] 1251–1376), as amended by the Water Quality Act of 1987, and better known as the CWA, is the major federal legislation governing water quality. The purpose of the federal CWA is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." Waters of the United States include: 1) all navigable waters (including all waters subject to the ebb and flow of the tide); 2) all interstate waters and wetlands; 3) all other waters, such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sand flats, wetlands, sloughs, or natural ponds; 4) all impoundments of waters mentioned above; 5) all tributaries to waters mentioned above; 6) the territorial seas; and 7) all wetlands adjacent to waters mentioned above.

Discharges of fills into waters of the United States are regulated under CWA Section 404. Section 404 provides for issuance of dredge/fill permits by the USACE. Permits typically include conditions to minimize impacts on water quality. Section 401 requires an applicant for any federal permit that

proposes an activity that may result in a discharge to waters to obtain certification from the State that the discharge will protect waters of the State. Certification is provided by the State Water Resources Control Board (SWRCB) or as delegated to the respective RWQCB. A Section 401 permit from the San Diego RWQCB would be required for the Proposed Project if a Section 404 permit is required. A CWA section 404 permit and section 401 certification will be required for this project.

Rivers and Harbors Appropriation Act

The Rivers and Harbors Appropriation Act of 1899 (33 USC 403), commonly known as the Rivers and Harbors Act (R&HA), prohibits the construction of any bridge, dam, dike, or causeway over or in navigable waterways of the United States without congressional approval. Under R&H Section 10, the USACE is authorized to permit structures in navigable waters. Building or modifying wharves, piers, jetties, and other structures in or over the waters of the San Diego coastline requires USACE approval through the Section 10 permit process. A R&HA section 10 permit will be required for this project.

Endangered Species Act

The ESA protects plants and wildlife that are listed as endangered or threatened by the USFWS and NMFS. ESA Section 9 prohibits the taking of endangered wildlife, where taking is defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct" (50 Code of Federal Regulations [CFR] 17.3). For plants, this statute governs removing, possessing, maliciously damaging, or destroying any endangered plant on federal land, as well as removing, cutting, digging up, damaging, or destroying any endangered plant on non-federal land in knowing violation of state law. Under ESA Section 7, agencies are required to consult with the USFWS or NMFS if the agency determines that its action may affect an endangered or threatened species or its designated critical habitat. Through consultation and the issuance of a biological opinion, the USFWS or NMFS may issue an incidental take statement allowing take of the species that is incidental to another authorized activity, provided the action will not jeopardize the continued existence of the species. In cases where the federal agency determines its action may affect, but would be unlikely to adversely affect, a federally listed species, the agency may informally consult with the USFWS and/or NMFS. This informal consultation typically involves incorporating measures intended to ensure effects would not be adverse. Concurrence from the USFWS and/or NMFS concludes the informal process. Without such concurrence, the federal agency formally consults to ensure full compliance with the ESA. No ESA consultation is anticipated to be required for this project.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (M-SA) of 1976 was established to promote domestic and commercial fishing under sound conservation and management principles. NMFS, as a branch of the National Oceanic and Atmospheric Administration (NOAA), implements the act via eight regional fisheries management councils (FMCs). The FMCs in turn prepares and implements fishery management plans (FMPs) in accordance with local conditions. The Pacific FMC is responsible for the Pacific region, in which the Project site is located. The FMPs also establish EFH for the species they manage and require consultation with NMFS for actions that may adversely affect EFH. Consultation between the Corps of Engineers and NMFS is required under the M-SA.

Marine Mammal Protection Act

The MMPA of 1972 prohibits, with certain exceptions, the take of marine mammals in United States waters and by United States citizens on the high seas, and the importation of marine mammals and marine mammal products into the United States. The USFWS and NMFS administer the MMPA. No MMPA take authorization is anticipated to be required for this project.

Migratory Bird Treaty Act

The MBTA (16 U.S.C. 703-712) was enacted in 1918. Its purpose is to prohibit the kill or transport of native migratory birds, or any part, nest, or egg of any such bird unless allowed by another regulation adopted in accordance with the MBTA. Under the MBTA of 1918 (16 U.S.C. section 703-712; Ch. 128; July 3, 1918; 40 Stat. 755; as amended 1936, 1956, 1960, 1968, 1969, 1974, 1978, 1986 and 1998), it is unlawful, except as permitted by the USFWS, to "take, possess, transport, sell, purchase, barter, import, or export all species of birds protected by the MBTA, as well as their feathers, parts, nests, or eggs (USFWS 2003). Take means to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect (50 CFR 10.12). Birds protected by the MBTA include all birds covered by the treaties for the protection of migratory birds between the United States and Great Britain (on behalf of Canada, 1916), Mexico (1936), Japan (1972), and Russia (1976), and subsequent amendments." The project is not expected to require any permit under the MBTA and no take under the MBTA is anticipated.

It is important to note that since the MBTA addresses migratory birds by family rather than at a lower taxonomic level, most bird species are protected by the MBTA because most taxonomic families include migratory members. In addition, "take" as defined under the federal MBTA is not synonymous with "take" as defined under the federal ESA. The MBTA definition of "take" lacks a "harm and harassment" clause comparable to "take" under the ESA; thus, the MBTA authority does not extend to activities beyond the nests, eggs, feathers, or specific bird parts (i.e., activities or

habitat modification in the vicinity of nesting birds that do not result in "take" as defined under the MBTA are not prohibited). Further, "a permit is not required to dislodge or destroy migratory bird nests that are not occupied by juveniles or eggs; however, any such destruction that results in take of any migratory bird is a violation of the MBTA (i.e., where juveniles still depend on the nest for survival) (USFWS 2003)." The project is not expected to require any permit under the MBTA and no take under the MBTA is anticipated.

State Regulations

California Coastal Act

The California Coastal Act (CCA) is intended to provide protection of the unique nature and public interest values of the state's coastal fringe. The CCA is implemented by the California Coastal Commission (CCC). The CCA recognizes California ports and harbors as primary economic elements of the national maritime industry. Within the port, the Port administers the CCA under an adopted Master Plan and updates to the Master Plan that require concurrence from the CCC. Land and waters outside of the Port's Master Plan are administered by the CCC or by local jurisdictions operating under adopted Local Coastal Programs that have been approved by the CCC. For the proposed work, the Port administers the Coastal Act compliance. A Coastal Development Permit is required for the proposed project.

California Endangered Species Act

The California Endangered Species Act (CESA) authorizes the California Fish and Game Commission (CDFC) to designate endangered, threatened, and rare species and to regulate the taking of these species (California Fish and Game Code [FGC] Sections 2050–2098). The CESA defines endangered species as those whose continued existence in California is jeopardized. State-listed threatened species are those not presently facing extinction, but that may become endangered in the foreseeable future. FGC Section 2080 prohibits the taking of state-listed plants and animals. The CDFW also designates fully protected or protected species as those that may not be taken or possessed without a permit from the CDFC and/or CDFW. Species designated as fully protected or protected may or may not be listed as endangered or threatened.

When a species is both state- and federally listed, an expedited request for consistency with the USFWS biological opinion may be issued through a request for Section 2080.1 consistency determination. No permitting or consistency determination is anticipated to be required under this project.

California Fish and Game Code

The FGC is implemented by the CFGC, as authorized by Article IV, Section 20, of the Constitution of the State of California. FGC Sections 3503, 3503.5, 3505, 3800, and 3801.6 protect all native birds, birds of prey, and nongame birds, including their eggs and nests, that are not already listed as fully protected and that occur naturally within the state. The CDFW is the state agency that manages native fish, wildlife, plant species, and natural communities for their ecological value and their benefits to people.

Sections 3503, 3503.5, and 3513 of the CFG prohibit the "take, possession, or destruction of bird nests or eggs." Section 3503 states: "It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto." Section 3503.5 provides a refined and greater protection for birds-of-prey and states: "It is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." The distinctions made for birds-of-prey are the inclusion of such birds themselves to the protections and the elimination of the term "needlessly" from the language of §3503. Section 3513 states: "It is unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Bird Treaty Act."

The definition of "take" under the FGC is not distinct from the definition of "take" under California Endangered Species Act (CESA) (FGC §86) and thus, activities or habitat modification in the vicinity of nesting birds that do not result in "take" as defined under the FGC/CESA are not prohibited. No take authorization is anticipated to be required under the CFGC. However, at the time of eelgrass restoration authorizations for harvest and planting of eelgrass must be obtained from the CDFW.

Local Plans

Several plans provide guidelines for land- and waterside uses within Mission Bay.

City of San Diego MSCP Subarea Plan

The City of San Diego MSCP identifies sensitive biological resources and biologically valuable areas within the City municipal boundaries or City-owned land in unincorporated areas to be included in the MHPA, a hard-line preserve. The MHPA delineates core biological resource areas and corridors targeted for conservation present at the time that the MSCP was adopted (i.e., 1997). The City of San Diego Biology Guidelines defines the MHPA as "areas [that] have been determined to provide

the necessary habitat quantity, quality, and connectivity to support the future viability of San Diego's unique biodiversity…" (City of San Diego, 2012, page 5). Within the MHPA, a limited amount of development is allowed within areas of lower quality habitat and/or areas that do not provide long-term viability. The Biology Guidelines provide mitigation measures for impacts inside and outside of MHPA boundaries.

Mission Bay Park Master Plan (and updates)

The Mission Bay Park Master Plan was adopted in 1994 and has been amended several times, most recently in 2002. The stated goal of the Master Plan "is to identify new recreational demands and chart a course for the continuing development of the Park which will sustain the diversity and quality of recreation and protect and enhance the Bay's environment for future." The Plan seeks to balance public recreation with management and stewardship of environmental resources, and operation of economically successful commercial leisure enterprises.

The Mission Bay Park Master Plan includes as an appendix the Mission Bay Park Natural Resource Management Plan, which documents the natural resources of the Park, and provides guidelines and programs for the protection, enhancement, and management of these resources. These include guidelines for development and mitigation such as methods for dredging and in-water work, buffer areas, seasonal restrictions for construction, and mitigation ratios for impacted habitats.

Regulatory Requirements for Proposed Project

The proposed project will comply with CEMP as administered by the NMFS (NMFS 2014). In addition, the proposed project will comply with the *Caulerpa* Control Protocol (CCP), which calls for performance of a survey for *Caulerpa* prior to any bottom-disturbing activities

The project will require a Coastal Development Permit (CDP) from the CCC for re-development of the Bahia Resort Hotel and facilities within the Coastal Zone. The project will also comply with the USACE Section 404 of the Clean Water Act (CWA), and Section 10 of the Rivers and Harbors Act, and with the requirements of Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act. An EFH Assessment will be required for this project.

Cumulative Impacts

The MSCP was designed to compensate for the loss of biological resources throughout the program's region; therefore, per the City's Guidelines for Conducting Biological Surveys (2002), projects that conform to the MSCP would not result in cumulatively considerable impacts for those biological resources adequately covered by the program. The project site does not support regionally sensitive terrestrial vegetation, has been designed to avoid impacts to regionally sensitive

biological resources including migratory birds. The project would mitigate potential impacts to eelgrass resources in conformance with the City of San Diego MSCP Subarea Plan and Biology Guidelines as well as the CEMP, and the Mission Bay Park Master Plan as described below. Thus the project would not result in cumulatively significant impacts.

MITIGATION AND MONITORING REQUIREMENTS

Mitigation Definitions

CEQA Guidelines §15370 (Title 14, Chapter 3, Article 20) defines "mitigation" as:

- "Avoiding the impact altogether by not taking a certain action or parts of an action."
- "Minimizing impacts by limiting the degree or magnitude of the action and its implementation."
- "Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment."
- "Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action."
- "Compensating for the impact by replacing or providing substitute resources or environments."

The following mitigation is recommended for the proposed project:

Eelgrass

To mitigate potential impacts to eelgrass to a less than significant level the following measures would apply:

1. The project shall conform to the requirements of the California Eelgrass Mitigation Policy (CEMP) (NMFS 2014). Through the implementation of a consistent eelgrass mitigation plan. This plan has been prepared for the project and is provided as Eelgrass Mitigation and Monitoring Plan in Support of the Mission Bay Park Navigational Safety Dredging Project, Mission Bay, San Diego, CA (Merkel & Associates 2016).

The proposed mitigation would be expected to result in full offset of eelgrass impacts through eelgrass restoration in accordance with the CEMP. The mitigation program outlines site preparation, planting, monitoring, and success standards. It also outlines the use of City developed

eelgrass habitat as a means to reduce overall mitigation needs and ratios and to enhance the likelihood of mitigation success.

Water Quality

1. The proposed work has the potential to result in short-term increases in localized turbidity in the area of project dredging and material placement for beneficial reuse. In order to minimize the potential for adverse effects of increased turbidity measures shall be taken to control turbidity generation around the dredge to an extent of not more than 500 feet of a visible turbidity plume from the dredge. Because work is needed in areas of high current flow, it is anticipated that the local turbidity plume may elongate rather than spreading radially around the dredge or fill location. Should this occur, the contractor shall be held to a comparable plume area as a radial plume of 500 foot radius, but may measure the plume as an elongated feature using the long and short axis to calculate the area of the plume as an ellipse.

2. Should water quality limits be exceeded, the contractor shall be required to stop dredging or placing, slow the rate of work, move to a new location to work until a tidal change, or take other corrective actions to get the turbidity levels back in check.

3. The upland staging area shall be stabilized with appropriate BMPs including a stabilized entrance, silt curtains on the staging area perimeter, and fiber rolls as appropriate to the use. Upon vacating the site the staging area will be stabilized in accordance with the project WPCP.

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PREPARER(S) AND PERSONS/ORGANIZATIONS CONTACTED

Merkel & Associates, Inc.

Holly D. Henderson, Senior Biologist, Primary Report Author

Lawrence O. Honma, Senior Biologist, Sediment Characterization Manager

Brandon L. Stidum, Associate Biologist, Field Biologist

Jordon D. Volker, Marine Field Manager, Marine Survey Lead

Thomas P. Valencia, Associate Biologist, Field Biologist

Lee Y. Murai, GIS Specialist, Graphics Preparation and Numeric Analyses

Keith W. Merkel, Principal Consultant,