Technical Appendix C

Jurisdictional Delineation Report Balboa Marina West Expansion
Anchor QEA, LP
December 2013

JURISDICTIONAL DELINEATION REPORT
BALBOA MARINA WEST EXPANSION

Prepared for

CAA Planning, Inc.

65 Enterprise, Suite 130

Aliso Viejo, California 92656

Prepared by

Anchor QEA, L.P.

27201 Puerta Real, Suite 350

Mission Viejo, California 92691

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1 INTRODUCTION

This Jurisdictional Delineation Report presents a delineation of the landward extents of potential wetlands or waters of the United States subject to the regulatory authority of the U.S. Army Corps of Engineers (USACE) and California Coastal Commission (CCC) in the subject area. A jurisdictional delineation was conducted according to the methods defined in:

- *U.S. Army Corps of Engineers Wetland Delineation Manual* (1987)
- *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West* (2008)

This report describes methods used in the field investigation and Anchor QEA, L.P.'s findings. A description of the study area is included in Section 2. Summaries of the findings of the jurisdictional delineation are included in Section 3. A summary of data collected at each sampling plot during the wetland delineation is presented in tables in Appendix A and in the field data forms included in Appendix B. Photographs of the study area are included in Appendix C.

1.1 Review of Existing Information

To identify natural resources in the study area, Anchor QEA ecologists reviewed the following sources of information to support field observations:

- *Natural Resource Conservation Service Web Soil Survey* (USDA 2013a)
- *National Hydric Soil List* (USDA 2013b)
- *USFWS Wetlands Mapper for National Wetlands Inventory Map Information* (USFWS 2013)

2 STUDY AREA DESCRIPTION

The study area is located in Lower Newport Bay in Newport Beach, California (Township 6 South, Range 10 West, Section 27; Figure 1), and includes a parking lot in the uplands fronting the existing Balboa Marina to the south and a beach to the northwest. Pacific Coast Highway traverses east to west immediately north of the study area. Immediately southwest of the parking lot.

The parking lot is enclosed by ornamental landscaped vegetation with access to the water restricted by an approximately 3-foot-high aluminum gate. To the west of the parking lot is the relic dock location of the Newport Beach Riverboat, including the concrete loading platform (see Photograph C-1 in Appendix C). The Newport Beach Riverboat is also known as the Reuben E. Lee (a restaurant located on a barge styled to look like a riverboat) was formerly tied in place from the 1960's through 2007 (Figure 2). The platform is an enclosed bulkhead structure with exposed soil supporting various herbaceous, non-native plant species. Defunct irrigation piping circumscribes the platform. A subsurface utility cabinet was observed within the confines of the concrete platform.

Heterogeneous fill material occurs waterward of the existing concrete bulkhead for approximately 2 to 3 feet and then a riprap embankment leads down to the water. The fill material supports various herbaceous plant species, including hottentot fig (*Carpobrotus edulis*). To the northwest is a sandy beach extending north towards the Pacific Coast Highway bridge and out of the study area. Debris was observed scattered throughout the riprap embankment and beach, including relic and dilapidated wooden piles at various intervals through the western part of the study area (see Photographs C-2 and C-3 in Appendix C).

An eelgrass survey of the study area was completed on June 4th, 2013 (Coastal Resources Management, Inc. 2013; Appendix D). Two small eelgrass beds totaling 515 square feet were mapped within the project area.

The focus of the delineation was the beach area within the northwest quadrant of the study area. As described in previous paragraphs, the remainder of the project area is highly

modified and consists of non-native fill and a concrete bulkhead. Furthermore, the riprap embankment extending from the seawall to the water generally restricted vegetation from establishing and also prevented access to the soil substrate.

2.1 Topography

In 2012, URS Corporation conducted a topographic and bathymetric survey of the study area, revealing slopes from the parking lot to the west. An approximately 3- to 4-foot change in elevation separates the beach from the parking lot.

2.2 Soils

The *Natural Resource Conservation Service Web Soil Survey* (USDA 2013a) identifies two soil series in the location of the study area: Open Water and Beaches. The Beaches soil series is identified as hydric under in the *National Hydric Soil List* (USDA 2013b). Sample plot soil profiles are described in Section 3.2. A summary of soils data collected at the sample plot is presented in the tables in Appendix A and in the field data forms in Appendix B.

2.3 Hydrology

Hydrology at the project site is influenced primarily by precipitation, landscape irrigation, and subject to regular tidal inundation. The USACE has indicated that the limit of its jurisdiction in Newport Bay under Section 404 of the Clean Water Act is 7.1 feet above mean lower low water (MLLW) in addition to any adjacent wetlands (Stephen Estes, pers. comm.).

Sample plot hydrology is described in Section 3.2. A summary of hydrology data collected at the sampling plot is presented in the tables in Appendix A and in the field data forms in Appendix B.

2.4 Plant Communities

The *USFWS Wetlands Mapper for National Wetlands Inventory Map Information* identifies estuarine and marine deepwater wetland habitat within the study area (USFWS 2013). The surface of the existing marina parking lot is largely devoid of vegetation with the exception of ornamental landscaped vegetation planted between parking zones. The beach is devoid of

vegetation with the exception of the transitional slope between the parking lot and the beach that was dominated by non-native vegetation, predominantly hottentot fig.

Vegetation in the study area is described in Sections 3.2. A summary of vegetation data collected in the study area and at the sampling plot is presented in the tables in Appendix A and in the field data forms in Appendix B.

3 WETLAND DELINEATION

On July 8, 2013, from 10:00 AM to 1:00 PM, Anchor QEA ecologists performed a delineation of potential wetlands or waters of the United States as defined by the USACE and CCC in the subject area. Tidal conditions on the day of the delineation include:

- 4:28 am low tide at -0.44 feet
- 10:53 am high tide at 3.89 feet
- 3:40 pm low tide at 2.08 feet
- 9:50 pm high tide at 5.9 feet

For purposes of determining the present extent of USACE and CCC jurisdictions, GPS coordinates were taken using a Garmin GPSmap76Cx at intervals along the beach. Data were then transferred from the field unit to a computer, post-processed, and plotted. A complete description of the delineation results is provided in Section 3.2 and shown on Figure 2. A summary of vegetation, soils, and hydrology data collected at each sampling plot is presented in the tables in Appendix A and in the field data forms in Appendix B.

3.1 Wetland Delineation Methods

The methodology used to perform the wetland delineation, including the review of existing information and field investigation procedures, is consistent with current federal and state agency requirements for performing wetland delineations.

The USACE defines wetlands as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.” (USACE 1987). Similarly, Section 30121 of the California Coastal Act defines wetlands as "lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens." However, a more specific definition is provided in Section 13577 (b)(1) of the California Code of Regulations:

> *... land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentration of salts or other substances in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some during each year and their location within, or adjacent to vegetated wetland or deepwater habitats.*

The method for delineating wetlands is based on the presence of three parameters: hydrophytic vegetation, hydric soils, and wetland hydrology. Hydrophytic vegetation is "the macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or of sufficient duration to exert a controlling influence on the plant species present" (USACE 1987). The National Technical Committee for Hydric Soils defines a hydric soil as a "soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (USDA 1994). Wetland hydrology encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Data collection methods for each of these parameters are described in the following subsections.

One sample plot was sampled along the beach area to determine boundaries of USACE and CCC jurisdictions; additional plots were excavated to confirm uniform profile consistency at various locations and elevations along the beach (Figure 2). Vegetation, soils, and hydrology information were collected at each of the plots and recorded on the field datasheet. A summary of sample plot data is presented in tables in Appendix A and in the field data forms in Appendix B.

3.1.1 Vegetation

No plant species were recorded in the sample plot location. Typically, percent cover is estimated in the plot for each plant species and dominant species determined. At each plot,

trees within a 30-foot radius, shrubs within a 15-foot radius, and emergents within a 3-foot radius from the center of the plot are identified and recorded on a datasheet. A plant indicator status, designated by the U.S. Fish and Wildlife Service (USFWS; Reed 1988; USDA 2013c), is assigned to each species, and a determination made as to whether the vegetation in the plot was hydrophytic. To meet the hydrophytic parameter, more than 50 percent of the dominant species must have an indicator of obligate wetland (OBL), facultative wetland (FACW), or facultative (FAC). Table 1 shows the wetland indicator status categories.

Table 1
Wetland Plant Indicator Status Categories

Indicator Status	Description
OBL	Plant species occur almost always in wetlands (estimated probability greater than 99 percent) under natural conditions.
FACW	Plant species usually occur in wetlands (estimated probability 67 to 99 percent) but occasionally found in non-wetlands.
FAC	Plant species are equally likely to occur in wetlands or non-wetlands (estimated probability 34 to 66 percent).
FACU	Plant species usually occur in non-wetlands (estimated probability 67 to 99 percent) but occasionally found in wetlands.
UPL	Plant species occur almost always in non-wetlands (estimated probability greater than 99 percent) under natural conditions.

Notes:
FACU = facultative upland
UPL = obligate upland

3.1.2 Soils

Soils were sampled and evaluated for hydric soil indicators. The soil pit was dug to a depth of 20 inches or greater. Soil colors were classified by their numerical description, as identified on a Munsell Soil Color Chart (Munsell 1994). Hydric soil indicators include low soil matrix chroma, gleying, and redoximorphic or redox features. Redox features are spots of contrasting color occurring within the soil matrix (the predominant soil color). Gleyed soils are predominantly bluish, greenish, or grayish in color. Soils having a chroma of 2

(with redox features) or less (with or without redox features) are positive indicators of hydric soils (USACE 1987, 2008).

3.1.3 Hydrology

Wetland hydrology was evaluated to "provide evidence that the site has a *continuing* wetland hydrologic regime and that hydric soils and hydrophytic vegetation are not relicts of a past hydrologic regime" (USACE 2008). Field observations of saturation and inundation and other indicators of wetland hydrology, such as drift deposits (debris rack lines) and high tide lines in wetlands, were recorded.

3.1.4 Other Data Sources

Reviews of existing information were conducted to identify potential wetlands or site characteristics indicative of wetlands in the study area. Sources of information reviewed to support field observations are identified in Section 1.1.

3.2 Wetland Delineation Results

The landward extents of potential waters of the United States and wetlands as defined by the USACE and CCC were delineated in the study area. As previously described, a single sample plot location was established along the beach area in the northwest corner of the study area. Delineation results are shown on Figure 2. A summary of vegetation, soils, and hydrology data collected at each sample plot is presented in the tables in Appendix A and in the field data forms included in Appendix B.

3.2.1 Vegetation

The sample plot location was completely devoid of vegetation. The slope leading down to the beach, in general, was dominated by non-native vegetation, predominantly hottentot fig. Several planted ornamental species occur within and bordering the existing parking lot.

A single, small specimen of pickleweed (*Salicornia virginca)* was observed within the riprap slope. The pickleweed was not observed in the sample plot and was not present at an elevation where evidence of inundation or soil saturation would support this species. Rather,

it is likely that the pickleweed specimen exists in a concave portion of the riprap where water is pooled during tidal fluctuations. No upland or hydrophytic vegetation was observed in the sample plot, and therefore, vegetation does not satisfying the dominance test and prevalence index requirements.

3.2.2 Soils

One soil pit was excavated in the study area to facilitate delineation of the wetland boundaries. Several additional soil excavations were made to confirm uniform consistency at varying elevations and locations along the beach. Results indicate monotypic light brownish grey coarse sand (10YR 6/2) to 20 inches or deeper. The soil profile included various shell deposits suggesting that the material may be from previously dredged areas of the harbor that was placed on the beach. The variability of shell fragments supports this assumption and included both infaunal and epifaunal mollusc shells within the same stratum.

3.2.3 Hydrology

Hydrology at the site is predominantly dependent on tidal fluctuations, with occasional precipitation and freshwater runoff from the parking lot and upland irrigation. At the time of the survey, the tidal elevation was a moderate high tide of approximately 3 feet. Drift deposits present along the beach and riprap slope defined the limits of the extreme high tide line for that particular day (approximately 6 feet MLLW). In the upland, indicators of wetland hydrology were not observed.

3.2.4 Summary

Data were collected at a single sample plot along the beach (Appendices A and B). The plot did not contain evidence of hydrophytic vegetation or hydric soils but did exhibit hydrology supported by tidal inundation.

4 DISCUSSION

No USACE jurisdictional wetlands are present the study area, and the extent of wetlands as defined by the CCC (requiring the presence of only one parameter) was limited to the high tide line.

The USACE has indicated that in Newport Bay its jurisdiction under Section 404 of the Clean Water Act extends to 7.1 feet above MLLW, and serves in this report as the basis for defining the landward extent of USACE's jurisdiction for determining impacts resulting from the proposed project. No adjacent wetlands as defined by the USACE were observed during the site visit. Additionally, for purposes of this report, the landward extent of wetlands defined by the CCC is assumed to be limited to the USACE jurisdiction at 7.1 feet above MLLW. Because the tidal elevation ranges throughout the day and at various elevations throughout the year, evidence of prolonged inundation cannot be established during a single site visit.

4.1 Impacts

Jurisdictional impacts are being evaluated for planning purposes only and are intended to support development of an environmental document consistent with the requirements of the California Environmental Quality Act (CEQA). Water-side development components of this project include the following:

- A new public transient dock area that will provide 12 public boat slips, including the relocation of 4 existing public slips currently located in the private Balboa Marina.
- Expanding the private dock expansion area will add 24 private boat slips accessible from the existing Balboa Marina and a new private gangway.
- Dredging of 12,500 cubic yards of material plus an additional 2 feet of over-dredge. This will result in a maximum of 15,000 cubic yards of dredging to accommodate the new boat slips.
- Reconstructing the riprap embankment approximately 15 feet landward of the existing riprap embankment, along the western edge of the project to maximize the number of boat slips. A new cap wall will be installed at the top of the riprap slope.

Temporary and permanent impacts could result during construction and implementation of the proposed project. Reconstruction of the riprap embankment will result in a net increase

in waters of the United States. The total areas of anticipated impact by each project activity and per each jurisdiction are presented in Table 2 below and depicted on Figure 3.

Table 2
Temporary and Permanent Impacts

Project Activity	California Coastal Commission	USACE	
		Section 404	Section 10
Public transient dock and private dock expansion	9,272 Square Feet increase in shading	-	9,272 square feet increase in shading
Riprap embankment reconstruction	6,772 square feet increase in waters of the united states	6,772 square feet increase in waters of the United States	-

4.2 Mitigation

With implementation of the project, the new private and public transient docks would result in approximately 9,272 square feet of new overwater coverage; however, the proposed project also includes replacement of the existing riprap embankment that will be reconstructed 15 feet landward of the existing embankment. This replacement will result in removal of existing fill material and an increase of 6,772 square feet of waters of the United States, which includes "all waters which are subject to the ebb and flow of the tide" (40 Code of Federal Regulations 230.3[s]) and protected under the Clean Water Act of 1972 because of their importance to the people, economy, and ecosystems in the United States. The increase in waters of the United States is a project benefit that may be considered sufficient mitigation to offset the increase in overwater cover resulting from the proposed docks. The need for mitigation would be negotiated during the project's regulatory approval process with the USACE, Regional Water Quality Control Board, and CCC.

Impacts resulting from dredging activities are considered temporary and localized in nature and would be minimized through implementation of project-specific best management practices.

An eelgrass survey was conducted on June 4, 2013. The survey indicated presence of 515 square feet of eelgrass that may be impacted as a result of the proposed project. These impacts

will likely be mitigated through one or a combination of mitigation options, including the potential use of available areas of the Balboa Marina Dock Replacement Project eelgrass mitigation site constructed in 2007, or other on- and off-site opportunities and consistent with the Southern California Eelgrass Mitigation Policy (NMFS 1991 as amended). Additional impacts to biological resources are being evaluated separately and potential mitigation would be negotiated during the regulatory approval process with the USACE, Regional Water Quality Control Board, and CCC.

5 WETLAND DELINEATION AND TYPING LIMITATIONS

Wetland identification is an inexact science and differences of professional opinion often occur between trained individuals. Final determinations for wetland boundaries and typing concurrence or adjustment needs are the responsibility of the regulating resource agency. Wetlands are, by definition, transitional areas; their boundaries can be altered by changes in hydrology or land use. In addition, the definition of jurisdictional wetlands may change. If a physical change occurs in the basin or 3 years pass before the proposed project is undertaken, another wetland delineation should be conducted. Results and conclusions expressed in this report represent Anchor QEA's professional judgment based on the information available. No other warranty, expressed or implied, is made.

6 REFERENCES

Coastal Resources Management, Inc. 2013. Marine Biological Impact Assessment for the Balboa Marina West Project Newport Bay, Orange County, California.

Estes, Stephen, 2012. Personal communication between Adam Gale, Anchor QEA, and Stephen Estes, USACE. April 17, 2012

Munsell, 1994. *Munsell Soil Color Charts*. Kollmorgen Corporation: Baltimore, Maryland.

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USDA, 2013c. Wetland Indicator Status. Accessed on July 16, 2013. Available from: http://plants.usda.gov/wetland.html.

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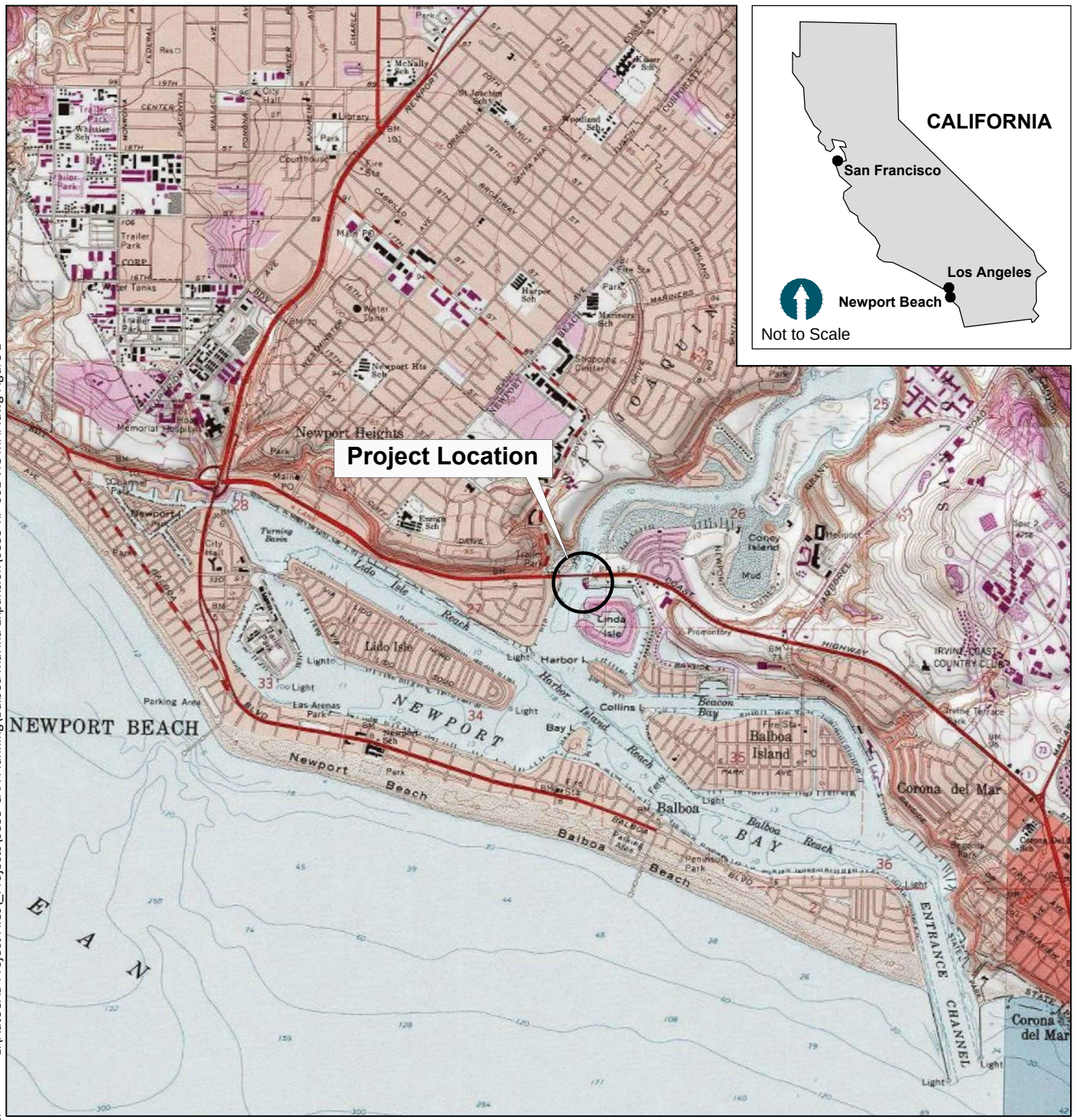
FIGURES



SOURCE: Drawing prepared from USGS data.
HORIZONTAL DATUM: California State Plane, Zone 6, NAD83.

L:\AutoCAD Project Files_Projects\0855-CAA Planning\Balboa Marina Expansion\0855-RP-001 VIC MAP.dwg Figure 1

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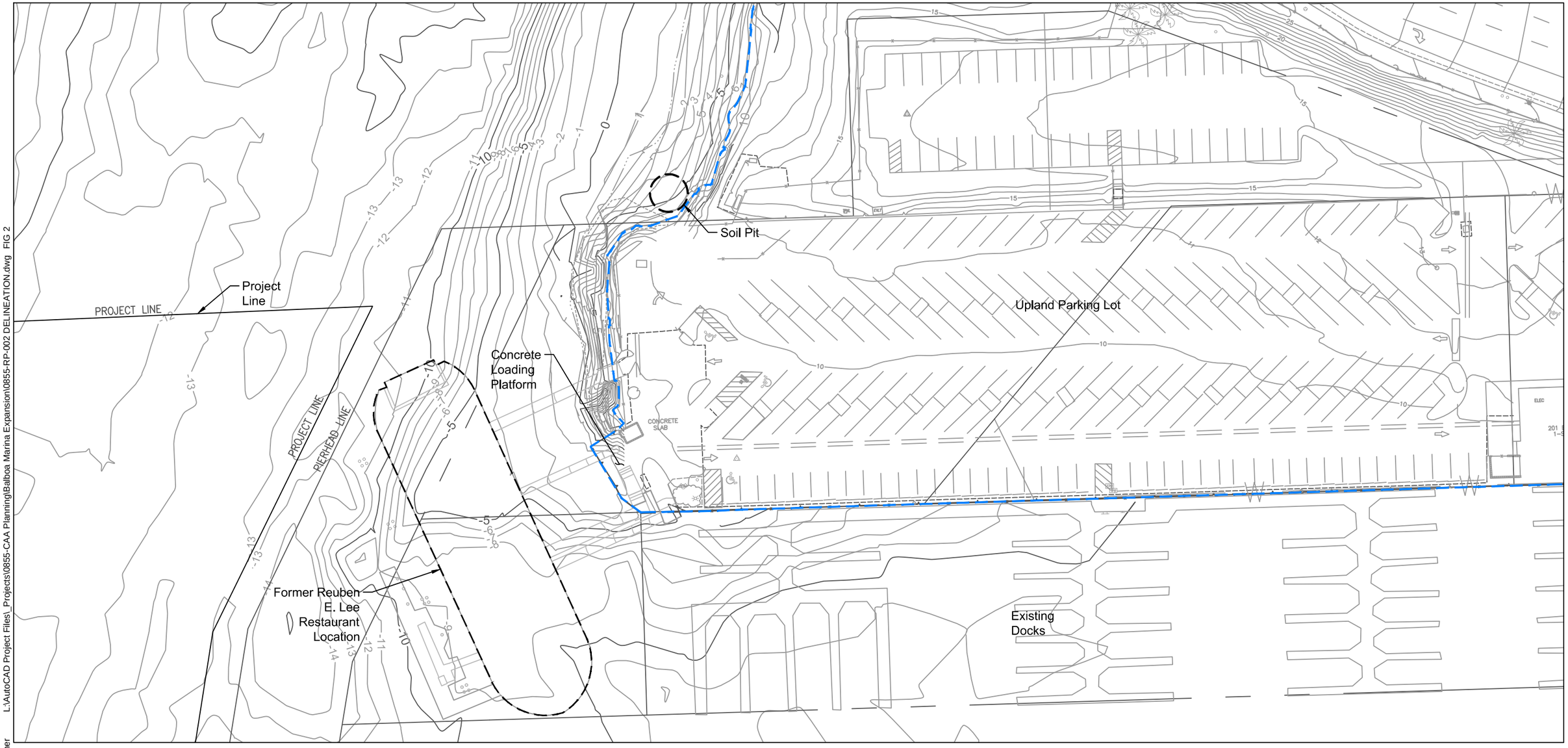
ANCHOR QEA

Figure 1
Vicinity Map
Balboa Marina West Expansion



SOURCE: Upland topography and bathymetric data provided by URS dated October 10, 2012.
HORIZONTAL DATUM: California State Plane, Zone 6, NAD83, U.S. Feet.
VERTICAL DATUM: Mean Lower Low Water (MLLW).

LEGEND:

USACE Limits of Jurisdiction Under Section 404 of the Clean Water Act (+7.1 Feet Above MLLW)

0 50
Scale in Feet

L:\AutoCAD Project Files_Projects\0855-CAA Planning\Balboa Marina Expansion\0855-RP-002 DELINEATION.dwg FIG 2
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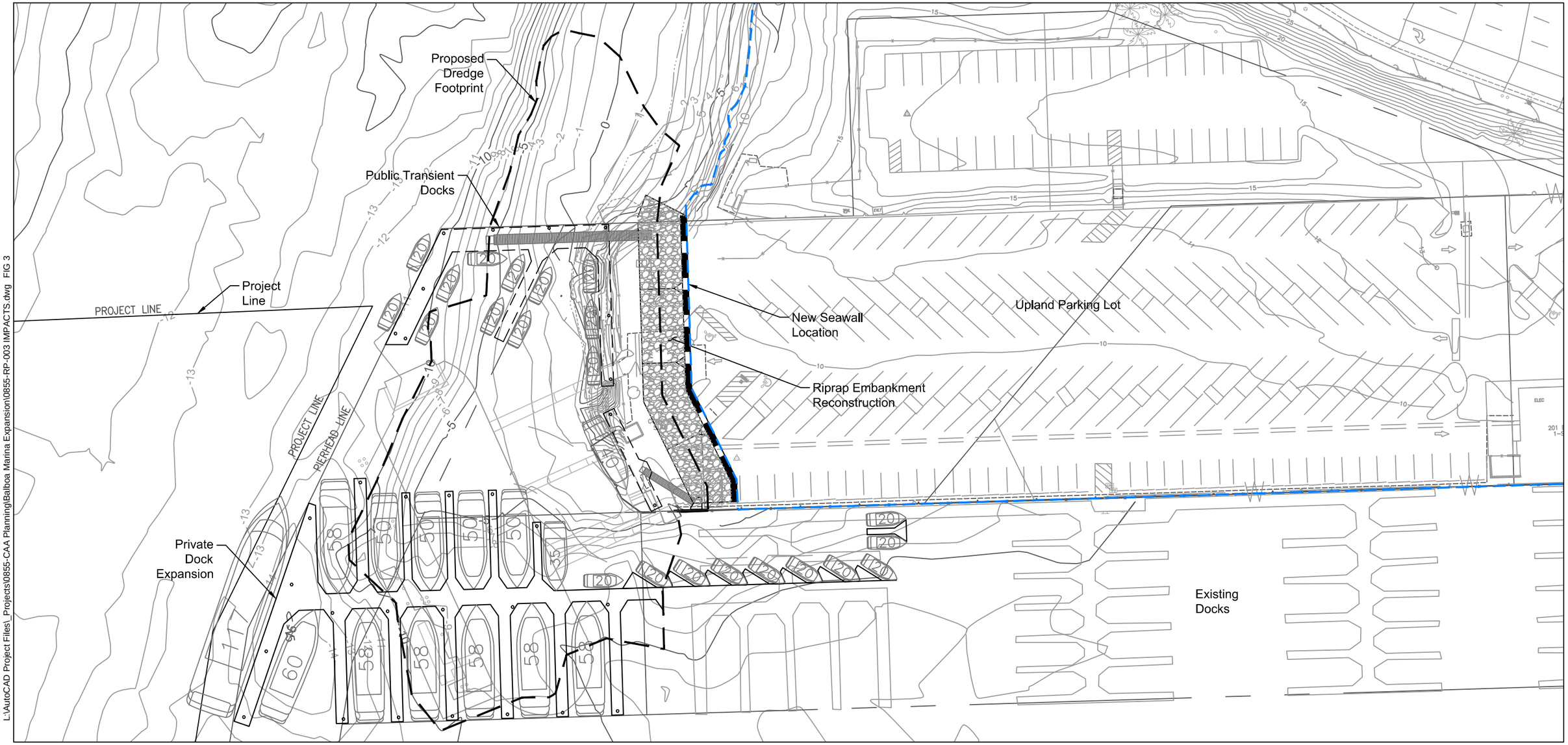
ANCHOR QEA

Figure 2
Jurisdictional Delineation Results
Balboa Marina West Expansion



SOURCE: Upland topography and bathymetric data provided by URS dated October 10, 2012. Proposed dock layout by URS.
HORIZONTAL DATUM: California State Plane, Zone 6, NAD83, U.S. Feet.
VERTICAL DATUM: Mean Lower Low Water (MLLW).

LEGEND:

Proposed USACE Limits of Jurisdiction Under Section 404 of the Clean Water Act (+7.1 Feet Above MLLW)

Proposed Docks

0 50
Scale in Feet

L:\AutoCAD Project Files_Projects\0855-CAA Planning\Balboa Marina Expansion\0855-RP-003 IMPACTS.dwg FIG 3
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Figure 3
Jurisdictional Impacts
Balboa Marina West Expansion

APPENDIX A
SAMPLE PLOT SUMMARY DATA

Table A-1
Plant Species Observed During the Investigation

Scientific Name	Common Name	Indicator Status[1]
Trees		
	Landscape Ornamental	None
Washingtonia robusta	Washington Fan Palm	None
Shrubs		
Plumeria sp.	Plumeria	UPL
Aloe sp.	Aloe	None
Baccharis pilularis	Coyote brush	None
Bougainvillea sp.	Bougainvillea sp.	None
Grass, Herbaceous, and Ferns		
Anagallis arvensis	Scarlet pimpernell	FAC
Malva parviflora	Small-flowered mallow	None
Mesembryanthemum crystallinum	Crystalline ice plant	None

Notes:
1 These categories, referred to as the "wetland indicator status" (from the wettest to driest habitats) are as follows: obligate wetland (OBL) plants, facultative wetland (FACW) plants, facultative (FAC) plants, facultative upland (FACU) plants, and obligate upland (UPL) plants.

Table A-2
Summary of Wetland Sample Plot Vegetation Data

Sample Plot	Scientific Name	Common Name	Indicator Status	Cover (percent)
1	No vegetation was observed in the sample plot.			

Table A-3
Summary of Wetland Sample Plot Hydrology Data

Sample Plot	Hydrology
1	Saturation at surface, standing water at 16 inches.

Table A-4
Summary of Wetland Sample Plot Soils Data

Sample Plot	Soil Horizon (inches)	Matrix Color	Redox Color	Redox Abundance (percent)	Texture
1	0 to 20+	10YR 6/2	None	None	Coarse sand and shell fragments

Table A-5
Summary of Wetland Sample Plot Data and Wetland Determination

Sample Plot	Vegetation	Soils	Hydrology	Determination
1	Non-hydrophytic	Non-hydric	Positive	USACE Upland, CCC Wetland

APPENDIX B
FIELD DATASHEETS

WETLAND DETERMINATION DATA FORM – Arid West Region

Project Site: Balboa Marina West | City/County: Newport Beach/Orange | Sampling Date: July 8, 2013

Applicant/Owner: City of Newport BEach, The Irvine Company | State: CA | Sampling Point: SP-1

Investigator(s): Adam Gale and Jack Malone | Section, Township, Range: 27, 6S, 10W

Landform (hillslope, terrace, etc.): Beach | Local relief (concave, convex, none): none | Slope (%): 2

Subregion (LRR): C | Lat: 33° 36.969' | Long: 117° 54.256' | Datum: MLLW at 0 feet

Soil Map Unit Name: Beach and Open Water | NWI classification: Estuarine and Marine Deepwater

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒		
Hydric Soil Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: **Sample plot located on beach near debris rack line.**

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:30 foot radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
50% = , 20% =		= Total Cover	
Sapling/Shrub Stratum (Plot size:15 foot radius)			
1.			
2.			
3.			
4.			
5.			
50% = , 20% =		= Total Cover	
Herb Stratum (Plot size:3 foot radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
50% = , 20% =		= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
50% = , 20% =		= Total Cover	
% Bare Ground in Herb Stratum 100	% Cover of Biotic Crust		

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: **0** (A/B)

Prevalence Index worksheet:

Total % Cover of :		Multiply by:	
OBL species		x1 =	
FACW species		x2 =	
FAC species		x3 =	
FACU species		x4 =	
UPL species		x5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = 5

Hydrophytic Vegetation Indicators:

- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☐ No ☒**

Remarks: Vegetation not observed in within sample plot.

Project Site: Back Bay

SOIL Sampling Point: SP1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (Moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20+	10YR 6/2	100					Sand	Shell Fragments

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR C)**
- ☐ 2 cm Muck (A10) **(LRR B)**
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (Inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks: Hydraulic dredge materials

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (B2) **(Nonriverine)**
- ☐ Drift Deposits (B3) **(Nonriverine)**
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) **(Riverine)**
- ☐ Sediment Deposits (B2) **(Riverine)**
- ☐ Drift Deposits (B3) **(Riverine)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	☒	No	☐	Depth (inches):
Water Table Present?	Yes	☒	No	☐	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	☒	No	☐	Depth (inches):

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Tidal data provided in report.

Remarks: Tidally influenced.

APPENDIX C
STUDY AREA PHOTOGRAPHS

Photograph C-1. Looking north from top of concrete loading platform. The upland parking lot is to the right, and Pacific Coast Highway is to the north.

Photograph C-2. Looking south from the sandy beach towards the existing bulkhead and riprap embankment. The shovel demarcates the location of the excavated soil pit.

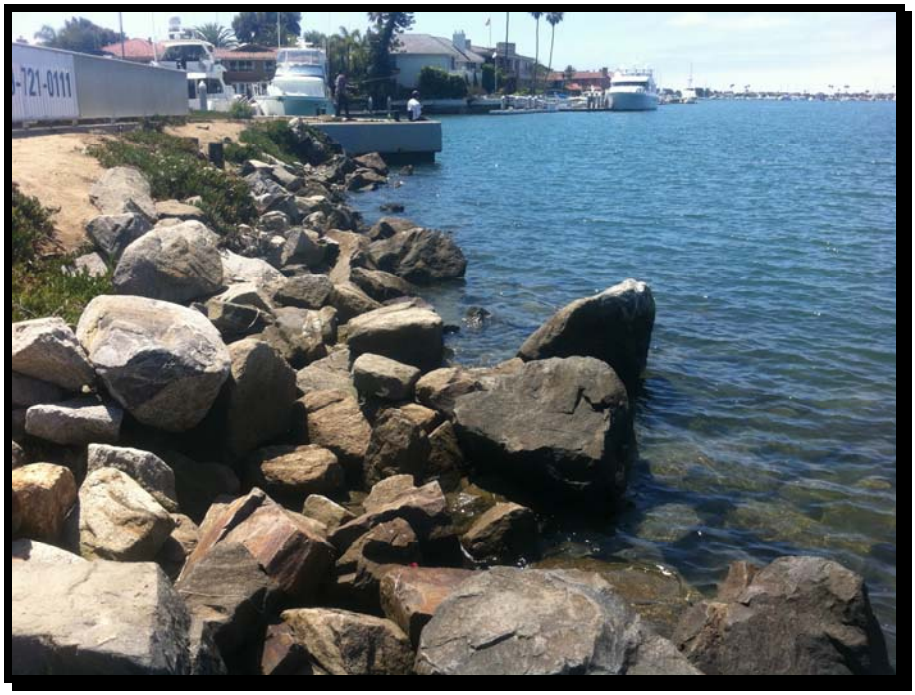
Photograph C-3. Looking south from top of riprap embankment.

Photograph C-4. Excavated soil pit comprised of monotypic coarse sand with shell fragments to 20 inches or deeper.

APPENDIX D
MARINE BIOLOGICAL IMPACT ASSESSMENT

MARINE BIOLOGICAL IMPACT ASSESSMENT FOR THE BALBOA MARINA WEST PROJECT

NEWPORT BAY, ORANGE COUNTY, CALIFORNIA



Prepared for:
CAA Planning, Inc.
65 Enterprise, Suite 130
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(949) 581-2888

Prepared by:
Coastal Resources Management, Inc.
PMB 327, 3334 E. Coast Highway
Corona del Mar, CA 92625
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(949) 412-9446
rware.crm@earthlink.net

Decembe 12th, 2013

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1.0 INTRODUCTION

1.1 PROJECT PURPOSE AND LOCATION

Coastal Resources Management, Inc. (CRM) conducted a marine biological survey at the west end of the Balboa Marina, in Newport Bay, CA on June 4th and July 19th, 2013 for CAA Planning Inc., Aliso Viejo, CA. The purposes of the investigation were to (1) determine the distribution and abundance of eelgrass and other marine life within areas where a marina extension project is being proposed (Balboa Marina West) in front of The Irvine Company's Balboa Marina and (2) use this information to conduct an environmental assessment of the effects of the proposed project on local marine life.

The project location is shown in Figures 1, 2, and 3a-3c. The site of the proposed Balboa Marina West is located along the eastern side of Newport Bay (Newport Harbor) immediately south of the Pacific Coast Highway Bridge. The site coordinates are 33.616° N, 117.905° W. The proposed marina is located at the juncture of the Balboa Marina on the east and the Main Channel of Newport Bay. Linda Isle is located across the channel immediately to the south.

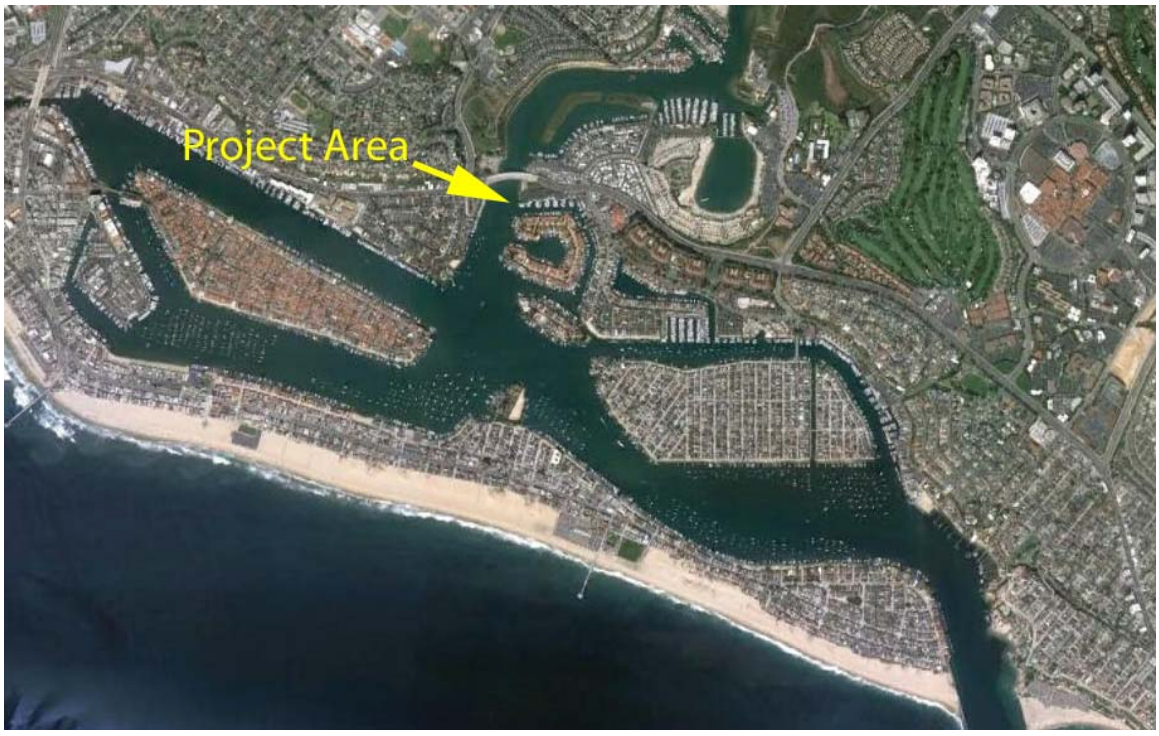

Figure 1. Project Area in Newport Bay, Orange County, California

Figure 2. Balboa Marina West Project Location

Figure 3a. View of Project Area Shoreline Facing North

Figure 3b. View of Project Area Shoreline Facing South

Figure 3c. View of Project Area Facing East to the Balboa Marina

1.2 PROPOSED PROJECT
(Source: CAA Planning)

The City of Newport Beach (City) and Irvine Company propose a joint project known as Balboa Marina West. The project will include the development of a new point of public access in Newport Harbor; a new public transient dock area, and an expansion to the existing private boat slips at the Balboa Marina.

A conceptual plan is provided as Figure 4, with the Public Transient Docks shown as Area A, the Private Dock Expansion shown as Area B. Areas A and B, and will occupy approximately 0.87 acre of water surface owned principally by Irvine Company. The submerged lands at this location are designated State Tidelands administered and under the jurisdiction of the County of Orange. Area A (Public Transient Dock Area) will provide 12 public boat slips, including the relocation of 4 existing public slips currently located in the private Balboa Marina. The public slips will be transient in nature, meaning that there will be no overnight tie ups allowed. There will be no boat launches from this site. It is anticipated that boaters will access the docks from the water-side and use the docks to tie up and access the existing land-side restaurants and commercial uses. There are no public docks in this area of the Harbor; relocating the 4 existing public boat slips and adding 8 new public boat slips will greatly enhance resident and visiting boater's ability to access the land from the water.

Area B (Private Dock Expansion Area) will add 24 private boat slips accessible from the existing Balboa Marina and a new private gangway. The marina expansion will include ten new slips for boats 20-feet in length and 14 new slips for boats 35-feet and longer. The development of Area A and Area B will require dredging of 12,500 cubic yards of material plus an additional 2 feet of over-dredge. This will result in a maximum of 15,000 cubic yards of dredging to accommodate the new boat slips. A riprap embankment will be reconstructed approximately 15 feet landward of the existing riprap embankment, along the western edge of the project in order to maximize the number of boat slips. A new cap wall will be installed at the top of the riprap slope. The relocation of the riprap slope will create new intertidal mudflats (Figure 5).

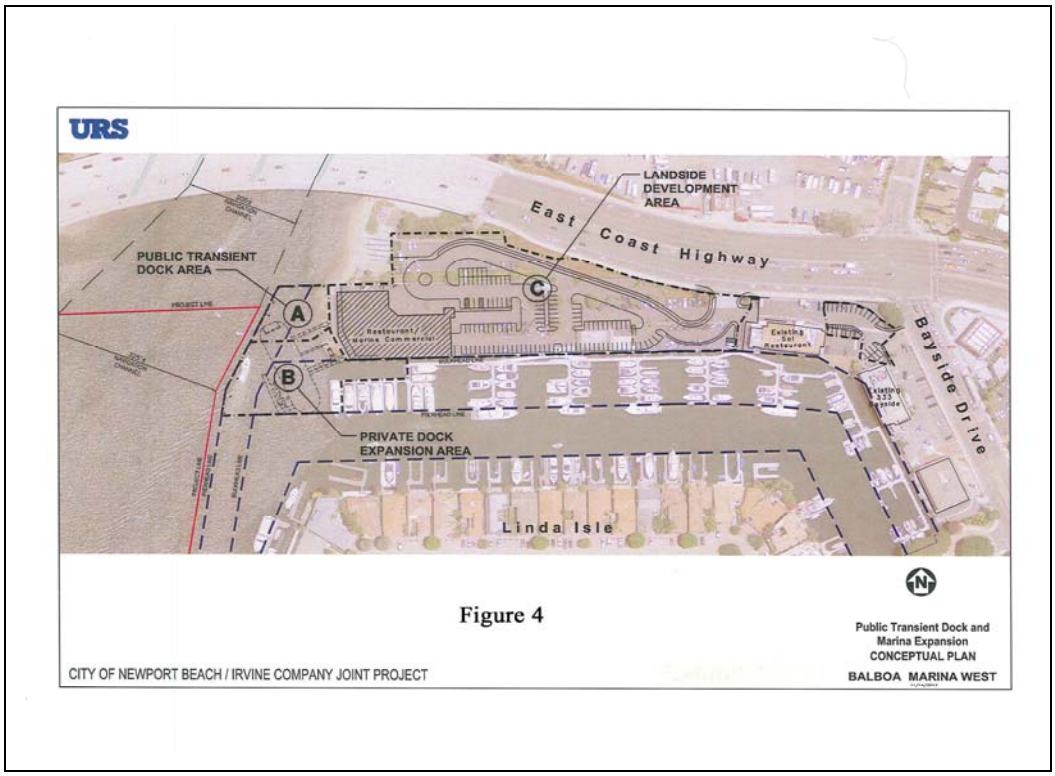

Figure 4. Public Transient Dock and Marina Expansion Conceptual Plan

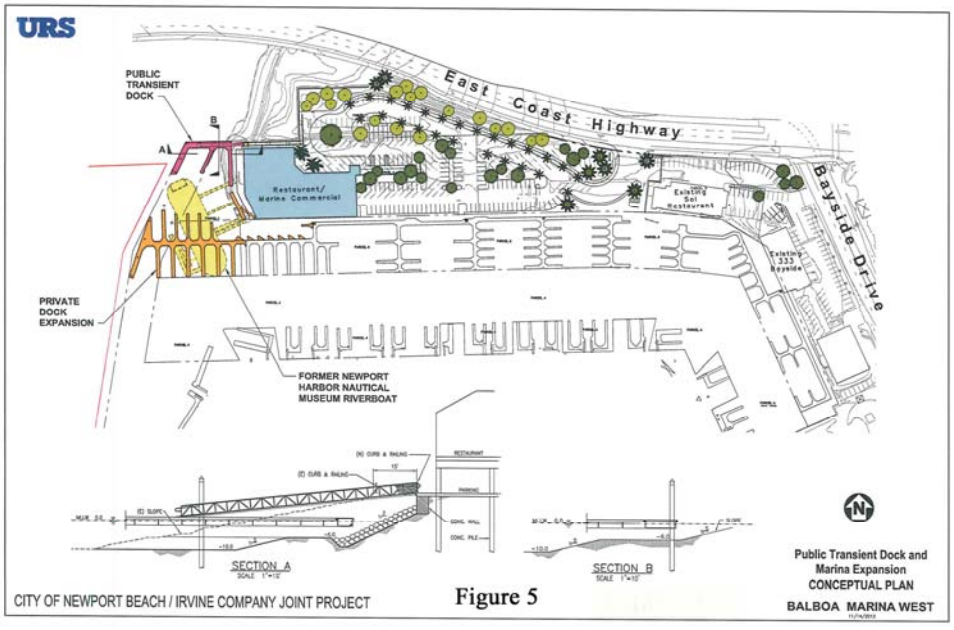

Figure 5. Conceptual Plan Showing Relocation of Rip Rap and Creation of Mudflat Habitat

1.3 IMPORTANCE OF EELGRASS

Eelgrass (Figure 6) is a marine flowering plant that grows in soft sediments in coastal bays and estuaries, and occasionally offshore to depths of 50 ft. Eelgrass canopy (consisting of shoots and leaves approximately two to three feet long) attracts many marine invertebrates and fishes and the added vegetation and the vertical relief it provides enhances the abundance and the diversity of the marine life compared to areas where the sediments are barren. The vegetation also serves a nursery function for many juvenile fishes, including species of commercial and/or sports fish value (California halibut and barred sand bass). A diverse community of bottom-dwelling invertebrates (i.e., clams, crabs, and worms) live within the soft sediments that cover the root and rhizome mass system. Eelgrass meadows are critical foraging centers for seabirds (such as the endangered California least tern) that seek out baitfish (i.e., juvenile topsmelt) attracted to the eelgrass cover. Lastly, eelgrass is an important contributor to the detrital (decaying organic) food web of bays as the decaying plant material is consumed by many benthic invertebrates (such as polychaete worms) and reduced to primary nutrients by bacteria.

Figure 6. Eelgrass, *Zostera marina* (Source; CRM, Inc.)

Because of the high ecological value of eelgrass meadows, it is important to document the location and amount of eelgrass in areas of proposed waterside developments in Newport Bay and to mitigate any losses by avoiding, reducing, or compensating for adverse effects on eelgrass habitats and communities.

1.4 NOXIOUS ALGAE (*CAULERPA TAXIFOLIA*)

Caulerpa (Figure 7) has a potential to cause ecosystem-level impacts on California's bays and nearshore systems due to its extreme ability to out-compete other algae and seagrasses. *Caulerpa taxifolia* grows as a dense smothering blanket, covering and killing

all native aquatic vegetation in its path when introduced in a non-native marine habitat. Fish, invertebrates, marine mammals, and sea birds that are dependent on native marine vegetation are displaced or die off from the areas where they once thrived. It is a tropical-subtropical species that is used in aquariums. It was introduced into southern California in 2000 (Agua Hedionda Lagoon and Huntington Harbour) by way of individuals likely dumping their aquaria waters into storm drains, or directly into the lagoons. While outbreaks have been contained, the Water Resources Board, through the National Marine Fisheries Service and the California Department of Fish and Game require that projects that have potential to spread this species through dredging, and bottom-disturbing activities conduct pre-construction surveys to determine if this species is present using standard agency-approved protocols and by National Marine Fisheries Service/California Department of Fish and Game Certified Field Surveyors. It has not been found in Newport Bay.

Figure 7. The Invasive Algae, *Caulerpa taxifolia*. Source: NOAA/NMFS

2.0 SURVEY METHODS

A marine biological survey was conducted by CRM biologists Rick Ware and Tom Gerlinger on June 4th and July 19th, 2013. The purpose was to determine the presence or absence of eelgrass, invasive algae, and other marine life. Diver transects using SCUBA were employed to first determine the extent of eelgrass in the project and to conduct an invasive algae survey. The survey was conducted using Wide Area Augmentation System (WAAS), GPS (Global Positioning System) technology and a Thales Mobile Mapper GPS/GIS Unit to map eelgrass areas. A biologist in a kayak equipped with the GPS followed a SCUBA-diving biologist who towed a surface buoy to mark the perimeter of the eelgrass vegetation. To assist in the mapping process, an Ocean Technology Systems (OTS) surface-to-diver communications system was used by the team. The estimated

error of the Thales Mobile Mapper GPS unit with post-processing correction was less than 1 meter. GPS data were initially entered into the Mobile Mapper Software and then transferred into GPS TRACKER and ARCVIEW GIS software. The amount of eelgrass habitat in the project area was calculated using ArcGIS 10.1 and Mobile Mapper Software. Turions are functional eelgrass units consisting of the above-ground live, green "shoot" and associated eelgrass leaves [blades] that sprout from the shoots. Eelgrass turion density counts were taken throughout the shallow, mid, and deep portions of the eelgrass bed. The counts were then converted to per-square-meter units.

Field survey depth data were standardized to feet Mean Lower Low Water (ft, MLLW) based upon data for the Newport Bay NOAA tide station.

3.0 RESULTS

3.1 PHYSICAL HABITAT AND CONDITIONS

The study area shoreline interface included a cement bulkhead and rock rip-rap within the project area, and a sandy beach that continued north to the Coast Highway Bridge (Figures 3a-3c). Rock rip rap extended several meters seaward into the low intertidal/shallow subtidal (Figure 8). Beyond the rip rap the bayfloor consisted of silts, sands, and shell debris in the Main Channel. The southern corner and bulkheaded portion fronting the Balboa Marina consisted of finer, silty sediments. Water temperature during the survey was 73 degrees Fahrenheit. Horizontal bottom water visibility was four feet (1.2 meters).

Figure 8. Rip-Rap Along the Shoreline Extending into the Shallow Subtidal Zone

3.2 EELGRASS AREAL COVER AND TURION DENSITY

3.2.1 Eelgrass Distribution and Areal Cover

Two small eelgrass beds were mapped within the project area (Figure 9) totaling 515 square feet (sq ft) or 12.6 square meters (sq m). Of this total, 379.3 sq ft (73.7%) was mapped at the southern edge of the sandy beach and 26.3.% was mapped near the juncture of the Balboa Marina.

Areal cover of eelgrass in this section of Newport Harbor has fluctuated over time (Coastal Resources Management, Inc. 2005, 2010, and 2011). In 2004, three small beds were present between the southern limit of the project area north to the PCH Bridge totaling 851 sq ft (79.1 sq m). Of these, one bed (131 sq ft) was located in the area of the proposed Balboa Marina West. The beds disappeared between late 2004 and 2006 (Coastal Resources Management, Inc. 2010 and 2011).

3.2.2 Eelgrass Turion Density

The eelgrass beds are considered low turion density beds. Turion density was 60.0 +/- 19.3 turions per square meter (n=16).

3.3 OTHER MARINE LIFE OBSERVED IN THE PROJECT AREA

Marine communities in the project area consist of: (1) benthic infauna (organisms living within the sediments) and benthic epifauna (organisms living on the sediment surface); (2) a "fouling" community of plants and invertebrates which colonize the intertidal and subtidal hard substrate of rock rip-rap, pilings, docks, and cement bulkheads; and (3) the water column nekton (fishes).

Benthic Communities. The bottom sediments in the project area support a benthic infaunal community which is typically dominated by polychaete worms, crustaceans, and mollusks (Daugherty, 1978; Marine Biological Consultants and Southern California Coastal Water Research Project, 1980), and bottom-associated species of fish (Allen, 1976). No core samples were taken, but the feeding apparatus (branchia) of several terrebellid or cirratulid polychaetes were visible projecting above the sediment. Few epibenthic organisms were observed diving the June/July 2013 dive survey although indirect evidence of bottom-dwelling organisms was seen, such as worm tubes and burrows of either cerianthid anemones or clams. The organisms on the soft bottom sediments included predatory sea slugs (*Navanax inermis*) the bubble snail (*Bulla gouldiana*) and octopus (*Octopus bimaculoides*). Sargassum weed (*Sargassum muticum*), solitary ascidians (*Styela plicata* , oysters (*Crassostrea gigas*), mussels (*Mytilus galloprovincialis*), slipper limpets (*Crepidula onyx*), and limpets (Lottia *limatula*) colonized either the rip rap or the bulkhead habitats.

Figure 9. Location of Eelgrass in the Project Area and Vicinity. June/July 2013

Fouling Community. The pilings in the Balboa Marina are colonized by common marine plants and invertebrates which are characteristic of the "fouling" community which attach to hard substrate such as pier pilings, boat floats, and riprap.

Higher intertidal species present on the pilings included barnacles (*Balanus glandula*) and limpets (*MacClintokia scabra*) while the mid-intertidal community was characterized by infrequent patches of mussels *(Mytilus galloprovincialis*), scattered solitary tunicates (*Styela plicata and S. montereyensis)*, slipper limpets (*Crepidula onyx*), and limpets (*Lottia limatula*). The organisms on the piling were less diverse and constituted less cover compared to the fouling organisms which were present on the cement bulkheads west of the project area.

Fishes. Two species of bottom-dwelling fish were observed-the round sting ray (*Urobatis halleri*) and barred sand bass (*Paralabrax nebulifer*). There were also other observations of unidentified bottom fish, recognized only by a plume of sediment as they moved away from the divers. Other species of bottom-associated fishes in the area include halibut, diamond turbot, blennies, and gobies. Mullet (*Mugil cephalus*) and topsmelt (*Atherinops affinis)* also were seen in the main channel.

Other fishes likely to be present in the vicinity include black perch (*Embiotoca jacksoni*), shiner perch (*Cymatogaster aggregata*), walleye surfperch (*Hyperprosopon argenteum*), and white surfperch (*Phanerodon furcatus*). Marinas and boat docks structures provide habitat that attract a variety of fishes, and may exhibit a greater diversity of fishes than channel and mudflat habitats alone because both soft bottom channel fishes and rock-associated fishes inhabit these environments. Hard substrate offers cover, protection, or sources of food for fishes such as pile perch (*Damalichthys vacc*a), pipefish (*Sygnathus* spp.), opaleye (*Girella nigricans*), spotted sand bass (*Paralabrax maculatofasciatus*), and kelp bass (*Paralabrax clathratus*). These species, in association with open water column species, such as queenfish (*Seriphus politus*), topsmelt, anchovy, and white croaker (*Genyonemus lineatus*), and bottom fishes, such are often found in the region, Upper Newport Bay, and in Lower Newport Bay (Allen, 1976; Marine Biological Consultants and Southern California Coastal Water Research Project, 1980; MEC Analytical Systems, 1997) .

3.4 PROTECTED SPECIES AND HABITATS

Table 1 lists potential federal and/or state endangered, rare, or non-listed sensitive species and that could be present within or nearby the project area during construction. Species of particular concern and relevance to this project are discussed in detail below.

3.4.1 Sensitive Habitats

Newport Harbor and Upper Newport Bay shorelines and waters are defined as wetland habitats under both the California Coastal Act and the National Environmental Policy Act. Consequently this water body is considered sensitive habitat and is afforded protection to conserve and protect the resource.

Table 1
Special Status Species

Scientific Name	Common Name	USFWS Status or NMFS Status	CDFG Status	Habitat	Potential to Occur in the Project Area
Plants					
Phyllospadix torreyi	surfgrass	Habitat Area of Particular Concern (HAPC) for Fisheries Management Plan (FMP) Species under the Magnuson-Stevens Fishery Conservation and Management Act	–	Nearshore rocky intertidal/rocky subtidal	None
Zostera marina	eelgrass	Habitat Area of Particular Concern (HAPC) for Fisheries Management Plan (FMP) Species under the Magnuson-Stevens Fishery Conservation and Management Act	–	Bays, harbors, shallow nearshore water sediments	High potential; observed on site
Invertebrates					
Haliotis cracherodii	black abalone	FE	-	Nearshore rocky intertidal/rocky subtidal	None
Fishes					
Eucyclogobius newberryi	Tidewater goby	FE	–	Shallow marine waters, lower reaches of streams	None; extirpated from Orange County
Leuresthes tenuis	California grunion	–	–	Spawns on local open coastal beaches	Very low potential on site; may spawn on beaches near the Harbor Entrance

Scientific Name	Common Name	USFWS Status or NMFS Status	CDFG Status	Habitat	Potential to Occur
Hypsypops rubicundus	California garibaldi	Protected under commercial and sport fish regulations	California State Marine Fish , Assembly Bill AB77, 1995	Subtidal rocky reef habitat; resident and territorial species in shallow subtidal rocky habitats	Very low or will not be present. Occurs near the Harbor Entrance Channel
Paralichthys californicus	California halibut	–	–	Shallow coastal waters, open ocean	High potential
Reptiles					
Chelonia mydas	Green turtle	FE	–	Nearshore and open ocean waters	Rare visitor; not expected to be present in the project area
Eretmochelys imbricata	Hawksbill sea turtle	FE	–	Nearshore and open ocean waters	Rare visitor; not expected to be present in the project area
Birds					
Pelecanus occidentalis	Brown pelican	FE; proposed for delisting	CE; proposed for delisting; fully protected species	Bays, estuaries, nearshore waters	Forages and rests in project area
Sterna antillarum browni	California least tern	FE	CE	Nests on sparsely vegetated flat substrates, forages in nearby waters	Nesting habitat occurs in Upper Newport Bay and the Santa Ana River mouth; least terns will forage on juvenile baitfish in the nearshore waters, Newport Harbor and Upper Bay channels, usually within 5 mi of nesting sites .
Charadrius alexandrinus nivosus	Western snowy plover	FT	SSC	Nests on sandy beaches and shores	No nesting habitat present onsite, or for individuals to occur on site
Mammals					
Zalophus californianus	California sea lion	MMA		Nearshore and open ocean waters	Not abundant, but individuals are present in Newport Harbor
Tursiops truncatus	Bottlenose dolphin	MMA		Nearshore and open ocean waters	Rare visitor to Newport Harbor
Eschrichtius robustus	California gray whale	MMA		Nearshore and open ocean waters	Rare visitor to Newport Harbor

FE – Federal Endangered; FT – Federal Threatened; MMA – Protected under Marine Mammal Act
California Department of Fish and Game
CE – California Endangered
SSC – Species of Special Concern
HAPC are subsets of Essential Fish Habitat (EFH) which are rare, particularly susceptible to human induced degradation, especially ecologically important, or located in an environmentally stressed area. Designated HAPC are not afforded any additional regulatory protection under the Magnuson Stevens Fishery Conservation and Management Act (MSA); however, federally permitted projects with potential adverse impacts to HAPC will be more carefully scrutinized during the consultation process (NMFS 2008a)

3.4.2 Plants-Eelgrass Habitat

The project area occurs within the vicinity of estuarine and eelgrass habitats, which are considered habitat areas of particular concern (HAPC) for various federally managed fish species within the Pacific Groundfish FMP, (i.e., rockfishes). HAPC are described in the regulations as subsets of EFH which are rare, particularly susceptible to human induced degradation, especially ecologically important, or located in an environmentally stressed area. Designated HAPC are not afforded any additional regulatory protection under the Magnuson-Stevens Fishery Conservation and Management Act (1997). However, federally permitted projects with potential adverse impacts to HAPC will be more carefully scrutinized during the consultation process (National Marine Fisheries Service, 2008).

3.4.3 Invertebrates. In 1998, the National Oceanographic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) added black abalone (*Haliotis cracherodii*) to the candidate species list for possible listing under the federal ESA, and on January 14th, 2009, NMFS listed black abalone as an endangered species (Federal Register / Vol. 74, No. 9 / Wednesday, January 14th, 2009 /Rules and Regulations). Black abalones usually inhabit surf-battered rocks and crevices from the intertidal zone to shallow subtidal zone down to 20 ft (6 m). It is a long-lived species, attaining an age of 25 years or more. Now a rare species, the black abalone was abundant in California until the mid-1980's. It once occurred in such high concentrations that individuals were observed stacked on top of one another. No abalones were observed during the CRM survey, nor will they occur in Newport Harbor.

3.4.4 Fishes

California Grunion ***(Leuresthes tenuis).*** The California grunion (*Leuresthes tenuis*) is a fish that uses the high intertidal sandy beach habitat of many southern California beaches as spawning habitat (Walker, 1952), including Newport Beach (CRM and Chambers Group, 2002). The grunion is a member of the silversides family, Atherinidae, along with the jacksmelt and topsmelt. They normally occur from Point Conception, California, to Point Abreojos, Baja California. Occasionally, they are found farther north to Monterey Bay, California and south to San Juanico Bay, Baja California. They inhabit the nearshore waters from the surf to a depth of 60 feet. Grunion may occasionally be present in the nektonic community in the Bay, but they are unlikely to spawn on the sandy beach at the base of the PCH Bridge.

California halibut (*Paralichthys californicus*). Although the California halibut does not have a formal special species status, it is considered a sensitive species by resource agencies because of its commercial value and a continued region-wide reduction of its nursery habitat in bays and wetlands. California halibut spawn at sea and the larval stages are planktonic. After several months, the larval fish settle to the bottom, and migrate into shallow coastal waters, including Newport Bay. Halibut are distributed throughout the waters of Newport Harbor and Upper Newport Bay, primarily as juveniles, although larger individuals are caught near the ocean entrance and in offshore waters. Young-Of-The-Year (YOTY) prefer shallow waters between about –0.45 meter

(1.5 ft) and –1.0 meter (3.5 ft) Mean Lower Low Water (MLLW), whereas juveniles prefer deeper channel bottoms to a maximum depth of approximately 4.5 meters (15 ft) MLLW. After spending nearly nine months in Newport Bay, juveniles will move out into the open coastal environment. This species has a low to moderate potential to occur in the shallow waters of the project area because of the nature of the sand shoreline and the relatively wide shelf of sandy silt sediments.

Garibaldi (*Hypsypops rubicundus*). The garibaldi is the largest of the damselfish family (Pomacentridae); adults, orange in color, typically reach 14 inches in length. It is found in shallow waters off the Southern California coast and Mexico (California Department of Fish and Game, 2001). Males build the nests, the female enters several of them and then makes her decision. The garibaldi is one of the few fish to use the same nesting site every year. In 1995 the California Legislature designated the Garibaldi as the Official State Marine Fish and banned any further commercial take. Garibaldi populations have rebounded from the local effects of commercial take and are in good condition throughout their range in southern California. Sports fishing take of this species is also prohibited. (http://www.dfg.ca.gov/marine/pdfs/oceanfish 2008.pdf). Garibaldi will not occur in the Balboa Marina West project area.

3.4.5 Marine Birds

California least tern (*Sterna antillarum browni*). The State and Federally-listed California least tern is a spring-and-summer resident in southern California during the breeding and nesting season. The least tern does not breed or nest near the project site but will forage in Newport Bay and nearshore coastal waters during their March through September breeding season. The nearest least tern nesting sites are located approximately 2.5 miles west (upcoast) at the mouth of the Santa Ana River and 4.2 mi northeast in Upper Newport Bay near the Jamboree Bridge.

California brown pelican (*Pelecanus occidentalis*). The California brown pelican is a federally endangered species, but is proposed for delisting by both the federal government and the State of California due to its population resurgence along the California coastline. On 5 February, 2009, the California Fish and Game Commission voted unanimously to remove the California brown pelican from the state endangered species list. The Commission's decision to delist the brown pelican will now be reviewed by the Office of Administrative Law before the large seabird can be officially removed from the Endangered Species list. This species is found in Newport Bay year-around but does not breed locally. The brown pelican utilizes Newport Harbor waters for foraging on baitfish, and the shoreline as resting habitat. The California brown pelican is designated as a Fully Protected Species under the Fish and Game Code, and that will not change as a result of the delisting. It is still illegal to kill or harm a brown pelican in California.

3.4.6 Marine Reptiles

Marine reptiles do not utilize the local marine waters as a permanent breeding or foraging habitat. However, the green turtle (*Chelonia mydas*) and hawksbill (*Eretmochelys imbricata*), will occasionally occur in the nearshore environment offshore Orange County. Green sea turtles have been reported in the San Gabriel River where they encounter the warmer, discharged waters of the power generating facilities located farther up in Anaheim Bay/Sunset Harbour (Kim Garvey, Moffatt & Nichol, pers. com with R. Ware, 3 October 2013), the San Gabriel River and Alamitos Bay (Vivian Cook, Marine Bureau; Allen Powder, Long Beach Lifeguards pers. comm. with R. Ware, CRM, 27 July 2007). Their occurrence within Newport Bay, located 20 miles east of Long Beach is expected to be rare although because Newport Bay has a productive eelgrass system, green sea turtles may occasionally utilize the seagrass beds as one source of their nutritional requirements. This would be a rare occurrence.

3.4.7 Marine Mammals

Three species of marine mammals have a potential to occur within the project site; the California sea lion (*Zalophus californianus*), the bottlenose dolphin (*Tursiops truncatus*) and the California gray whale (*Eschrichtius robustus*). Some California sea lions can be found year-around in Newport Harbor either resting on docks and/or foraging in the bay. Individuals are found primarily between the Pavilion and the harbor entrance channel, but may occasionally wander farther into Newport Harbor and Upper Newport Bay. Bottlenose dolphin are occasional visitors in Newport Harbor and can be observed in Upper Newport Bay.

In June 1994, the California gray whale eastern pacific population was removed from the Federal Endangered Species List, due to recovery of population numbers to near the estimated sustainable population size. The gray whale migrates through the SCB twice each year, traveling between its feeding grounds in Alaska and its breeding grounds in Baja California. The southern migration through the SCB occurs from December through February, with pregnant females moving through the area first. The northward migration begins in February and lasts through May, peaking in March (Dailey et al. 1993). Solitary animals generally lead the northbound migration with cow-calf pairs following 1 to 2 months later. Gray whales migrate within 125 miles (200 km) of the shoreline and many are sighted within 9 miles (15 km) of shore (Bonnell and Dailey, 1993). On the northbound migration, cow-calf pairs are believed to more closely follow the shoreline rather than the offshore route. On rare occasions, they have been known to enter Newport Bay, but no reports of gray whales are known from the project area near the PCH bridge.

3.5 FISHERY MANAGEMENT PLAN SPECIES

This assessment of Essential Fish Habitat (EFH) is being provided in conformance with the 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act (FR 62, 244, December 19, 1997). The 1996 amendments to the Magnuson-Stevens Act set forth a number of new mandates for the National Marine Fisheries Service, eight regional fishery management councils, and other federal agencies to identify and protect important marine and anadromous fish habitat. The councils, with the assistance from NMFS are required to delineate EFH for all managed species. Federal action agencies which fund, permit, or carry out activities that may adversely impact EFH are required to consult with NMFS regarding the potential effects of their actions on EFH, and respond in writing to the NMFS recommendations.

EFH is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity". An adverse effect is "any impact which reduces the quality and/or quantity of EFH". Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to benthic organisms, prey species, and their habitat, and other ecosystem components. Adverse effects may be sites specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions [50 CFR 600.910(a)].

Impacts to Habitat Areas of Particular Concern (HAPC) are described in the regulations as subsets of EFH which are rare, particularly susceptible to human induced degradation, especially ecologically important, or located in an environmentally stressed area, including eelgrass. Eelgrass habitat is discussed in Section 1.3 and 3.2.

The proposed project is located within an area designated as EFH for the Coastal Pelagics Management and the Groundfish Management Plan designated species. Appendix 1 lists species potential present in Newport Bay. Four coastal pelagic species (northern anchovy, pacific sardine, jack mackerel, and Pacific mackerel) potentially occur in the waters offshore of Newport Beach. Six groundfish species also potentially occur within the local project area, including California scorpion fish, vermillion rockfish, calico rockfish, California skate, spiny dogfish shark, and leopard shark. Of these species, only the northern anchovy comprises a significant portion of fish that occur, and contribute moderate-to-heavy abundances to the nearshore fish, but much less so within Newport Bay. Northern anchovy comprise a portion of the commercial bait fishery in San Pedro Bay and a commercial bait fishing operation operates in the Newport Harbor entrance channel that provides northern anchovy to sports fishermen. This species is a planktivore, and is preyed upon by larger fish and seabirds. Larvae of northern anchovy are also part of the Newport Bay ichthyofauna and icthyoplankton community. Although several other coastal pelagic and groundfish Fisheries Management Plan species are known from the project area, temporal data indicate that their presence in the project area is likely sporadic and their numbers in the project region would be extremely low (Coastal Resources Management, 2008).

3.6 INVASIVE SPECIES

3.6.1 *Caulerpa taxifolia*

Biologists did not observe any noxious algae, *Caulerpa taxifolia* in the project area during the subtidal survey. Biologists swam a total of 41 transects between 18 and 40 meters long, covering a total of 1,376 sq meters of a total of 4,555 sq meters of bottom habitat (30.2% of the total area). A minimum of 20% cover is required by the Caulerpa Survey Protocol (NMFS, 2008).

3.6.2 *Undaria pinnatifida* (Brown Algae, "Wakame")

In the last decade, the invasive brown alga *Undaria pinnatifida* has spread throughout the Northeastern Atlantic and Southwestern Pacific, and most recently to California. In March 2000 it was detected in Los Angeles Harbor, and subsequently spread northward, reaching Monterey Harbor in 2001 (Lonhart, 2003). This macrophyte has also been observed in King Harbor, San Diego Bay and Anaheim Bay (R. Ware, pers. observations). It was not observed at the Balboa Marina West project site. There is no feasible eradication effort for this species.

3.6.3 *Sargassum muticum* (Brown Algae)

This algae is a large, yellowish-brown or olive-brown seaweed that can be distinguished from most other Pacific coast seaweeds by its small, spherical float bladders. It grows on rocks, shells or other hard objects, attached by a stout, spongy holdfast. On the Pacific Coast, plants grow up to about 2 m long in northern Washington and British Columbia, but in southern California a large plant can be 3-4 m long and plants up to 10 m long have been reported. It is commonly found in harbors, marinas, and bays on boat floats, rip rap, jetties, and breakwaters, as well as the low intertidal and shallow subtidal reefs. *S. muticum* is present-to-common in the project area, and widespread throughout Newport Harbor. There are no agency-mandated efforts or actions to eradicate this species. There are many reports of *Sargassum muticum* competing with and displacing native species of seaweed and eelgrass, at least in part by shading and reduction of light levels.
http://www.exoticsguide.org/species_pages/s_muticum.html.

3.6.4 *Sargassum hornerii* (Brown Algae)

The brown seaweed *Sargassum hornerii* is native to Asia (Japan, Korea, China, Viet Nam). This species was spotted in Long Beach Harbor in October 2003. In April 2006, it was found near the Wrigley Marine Science Center, Cherry Cove, and Emerald Bay, Bird Rock, Isthmus Reef, Pumpernickel Cove and Big Geiger Cove in the Isthmus area, as well as Hen Rock, east of Long Point (Miller et al., 2007), and Descanso Beach (Coastal Resources Management, Inc. 2009). It was found at Point Loma, California in September 2006. The plant is golden-brown. Its branching is radial around the upright, tough stipe;

each frond is flat and very symmetrical (fern-like) with a notched tip. This juvenile specimen is about 10 cm tall. This species was not observed at the Balboa Marina West project area.

3.6.5 *Zostera japonica* (Dwarf Eelgrass)

Dwarf eelgrass is native to Asia and an invasive to California wetlands. It has been recorded in Humboldt Bay but not in southern California. This species can be distinguished from the native eelgrass, *Zostera marina* by its very narrow blades. It is a serious concern to resource managers. Dwarf eelgrass invades mudflats, which are home to many creatures and vital feeding grounds for shorebirds (Foss et al., 2007, (http://www.dfg.ca.gov/invasives/dwarfeelgrass). It is not present in the project area.

4.0 IMPACT ASSESSMENT

4.1 PROPOSED ACTION (Source: CAA Planning, Inc. and URS)

The proposed project is described in Section 1.2. Figures 4 and 5 illustrate the components of the proposed project. This impact analysis addresses water quality issues related to the demolition of existing structures, site hydrology, and marine-related impacts associated with the construction of the marina.

Clam shell dredging techniques will be used to excavate 15,000 cubic yards of shallow subtidal habitat material and an areal cover of 45,563 sq ft of soft bottom habitat to create the depths required for the marina (10 ft MLLW). The existing rip-rap shoreline will be moved landward and new mudflats will be created in the process. The amount of rip-rap that will be placed is 520 cubic yards. The amount of mudflat created is approximately 600 sq ft (3.9 ft wide by 155 sq ft long).

The total surface area of the new docks and floats is 9,045 sq ft. Of this total, 2,258 sq ft will be public docks and 6,787 sq ft will be private.

Forty-one piles will be driven into the bayfloor. These include eleven, 20-inch diameter piles; twenty-two, 16-inch diameter piles; and eight 16-inch diameter platform piles that will be installed at elevations higher than the mean tide line. The combined surface area of all piles is 65.9 sq ft (Source: Randy Mason, URS).

4.2 THRESHOLDS FOR SIGNIFICANCE

The threshold for significance of impacts to marine biological resources is determined by scientific judgment, and considers the relative importance of the habitat and/or species affected by project implementation. For the purposes of this analysis, the project's effects on biological resources are considered to be significant if it would:

- Substantially affect a rare, threatened, endangered, or candidate plant or animal species, or the habitat of any such species;
- Substantially diminish or degrade the habitat of any marine plant or animal;
- Result in notable net loss of a biotic community that is subject to local, state, and/or federal regulations or that is otherwise of very limited occurrence in the region;
- Interfere substantially with the movement of any resident or migratory fish and wildlife species; or
- Conflict with adopted environmental policies, general plans, or regulatory policies of the community and State of California.

4.3 RELEVANT CALIFORNIA ENVIROMENTAL POLICIES AND ACTS

The California Coastal Act (State of California 1976, amended 1999) provides the basis for protection of land and marine resources within the California coastal zone. The following relevant sections of the Coastal Act apply to protection of local marine resources in the vicinity of the proposed Balboa Marina West project.

Section 30231 of the California Coastal Act:

"*The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through among other means, minimizing adverse effects of wastewater discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with groundwater flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams*.

Section 30107.5 of the California Coastal Act.

Environmentally sensitive areas are "any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily be degraded by human activities and developments"

Section 30240 of the California Coastal Act:

(a) *Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas*.

(b) *Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade these areas, and shall be compatible with the continuance of those habitats and recreational areas*.

Section 30230 of the California Coastal Act:

Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economical significance. Use of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

4.4 PROJECT-RELATED ISSUES THAT COULD ADVERSELY AFFECT MARINE BIOLOGICAL RESOURCES

Demolition and construction tasks for the project could potentially affect Newport Harbor marine resources. Particular aspects of this project that have a potential to degrade water quality and the quality of local marine resources include hydrology and site runoff, visitor use, and construction and operation of a marina. This project incorporates upfront Water Quality Best Management Practices that ensure there will be no adverse and significant short-term or long-term effects on local water quality and subsequent adverse effects on marine biological resources. These items include:

4.4.1 Storm Water Pollution Prevention Plan

Land-side construction impacts on water quality and marine resources will be reduced to less than significant with the implementation of a Storm Water Pollution Prevention Plan that incorporates specific Best Management Practices to avoid impacts to water quality for both onshore and water-side construction operations. An Erosion Control Plan will be part of this document. This plan will reduce the potential impacts of airborne dust deposition and waterborne soil erosion during storm events on the marine environment. See Section 4 for a listing of potential construction BMPs.

4.4.2 Post-Construction (Operational) Project Water Quality Management Plan

A Water Quality Management Plan will be prepared to avoid potentially significant effects of the project on water quality and marine resources. The plan will address current drainage systems, improvements to the drainage system to manage storm water and dry weather runoff, hydrology, and mitigation measures to reduce potentially significant project-related effects to less than significant. The Water Quality Management Program will consist of strategies and Best Management Practices (BMPs) that will provide source control for pollutants as well as treatment of runoff constituents.

Additional water quality BMPs will be developed for the construction and operation of the marina.

Implementation of a Water Quality Plan for the construction and operation of Balboa Marina West will reduce potentially significant water quality and hydrological impacts associated with storm water and dry weather runoff to less than significant impacts. Consequently, hydrological and water quality effects originating from the construction of the resort will have less than significant impacts on marine resources with the inclusion of these measures.

4.5 DEMOLITION AND MARINA CONSTRUCTION IMPACTS TO MARINE RESOURCES

4.5.1 Site Hydrology, Water Quality, Noise, Dust, and Pollutant Generation

Implementation of the proposed project may alter the existing drainage pattern of the site. In the short-term, construction activities may result in siltation and erosion as well as potential fuel oil spills, which could result in a decrease in water quality and an increase in turbidity and sedimentation as it relates to the amount of pollution flowing to Newport Bay and the ocean. The project site is under the jurisdictional responsibility of the Santa Ana Region of the California Water Quality Control Board which regulates discharges into the State's waters. As part of its oversight, the state ensures the project is implemented in accordance with federal water quality requirements during grading and construction. More specifically, the Federal Clean Water Act (Section 402[p]) requires discharges of stormwater associated with industrial and construction activity to be regulated by National Pollutant Discharge Elimination System (NPDES) permits. NPDES compliance requires implementation of Best Management Practices (BMPs) for water quality control.

Site Hydrology

A storm water conveyance system will be constructed to manage storm water flowing onto the site, as well as flows generated onsite. The project site, in its existing conditions, drains directly to the bay. Site drainage will be improved and standard Best Management Practices will be included to prevent adverse impacts to bay water quality and biology. The incorporation of the measures proposed by the project's Water Quality Management Plan (WQMP) will greatly reduce existing pollutant discharge to the bay. This is considered a beneficial impact on Newport Harbor water quality.

Storm Water Runoff

Fine sediments generated from the construction activities that might be transported to the bay in storm water runoff would result in a localized short-term impact on water quality and bay marine resources. During rainfall events, sediment flowing to the bay would increase the concentration of suspended sediments, increasing water turbidity. Tidal currents in this region near the Coast Highway Bridge are swift, thereby reducing the potential that fine sediments generated from construction will remain in the local area. Reductions in submarine light intensity, slight reductions in primary productivity, and reduced subsurface visibility for sight-foraging fishes and seabirds would be expected. These impacts will be mitigated to less than significant with the implementation of the Erosion Control Plan and the Storm Water Pollutant Prevention Plan. Project Water Quality Control Plan BMPs will ensure that Newport Harbor marine biological resources will be protected from short-term construction effects.

With the implementation of the project's long-term WQMP, storm water runoff associated with the project will not result in localized adverse hydraulic effects.

Improved drainage system along the bay front will reduce storm drain flows to the beach area and will improve water quality compared to conditions that currently exist, resulting in a long-term, beneficial impact to water quality. Improvements to the storm drain system and implementing the Water Quality Management Plan BMP provisions will result in no significant impacts to water quality in Newport Bay.

Noise and Dust

Intertidal Sandy Beach Habitats and Resources. Noise, and dust generated from the project may result in a temporary reduction in the quality of the sand beach located immediately north of the proposed marina (Figure 3c). This area is a resting and foraging habitat for shorebirds. This would result in a temporary, less than significant impact to these resource groups. Implementation of construction BMPs including the installation of screening around the site will assist in lessening potential construction impacts on seabird and shorebirds. No shorebird or seabird nesting or breeding activity occurs on this local stretch of shoreline further reducing the potential for population-level impacts to these resource groups.

Open Bay Environment. Demolition, grading, and construction of the marina will produce dust from the operation of construction equipment and vehicles on the site. During high velocity, windy conditions, this dust might be transported into Newport Harbor. The addition of dust would result in a short-term, less-than-significant impact that would form a light coating of sediment on the water depending on the velocity and duration of the wind event. The deposition of fine dust in the project area could result in a short-term increase of water turbidity and a reduction in photosynthetic processes. Such a reduction would result in a slight decrease in photosynthetic activity of bay phytoplankton. However, there would be no long-term impacts to benthic resources resulting from an increase of dust settling on the water.

Because of the expected short duration of any wind events that might generate dust the expected effect will be less-than significant on water quality and marine resources. The generation of dust from the construction site will also be mitigated by the inclusion of project water quality management BMPs .

Pollutant Generation

Typical pollutants generated during demolition and marina construction related-activities could include heavy metals, toxic chemicals, waste materials and debris, fuel, lubricants and other toxins related to construction equipment and its maintenance. If these pollutants enter the bay through airborne or water-borne transport methods, then water quality degradation and potential adverse impacts to marine life could occur, including reduced viability, tissue contamination, and a short-term/and or long term effect on plankton, fish, and benthic resources.

The generation of these pollutants from the construction site will be mitigated by the inclusion and implementation the Water Quality Management Plan and the preparation of

both a Storm Water Pollution Protection Plan (SWPPP) and an erosion control plan. Strict adherence to identified source controls and project BMPs in these documents will result in short-term, and less than significant impacts on Newport Harbor water quality and marine resources.

In summary, the impacts of demolition and marina construction activities will be less than significant on Newport Harbor and marine resources with the preparation and implementation of the (1) Water Quality Control Plan, and (2) and a Storm Water Pollution Prevention Plan (SWPPP). These plans and will identify dry season and wet season runoff control measures, source control, and or treatment controls that will be implemented during construction to avoid and/or mitigate potential soil erosion, runoff pollutants, and other storm water constituents.

4.5.2 Marina Construction

Marine biological habitats and resources (plants, invertebrates, fishes, marine mammals, seabirds, federally listed and State-listed marine associated species and sensitive habitats) have a potential to be affected by marina dredging and excavation. Figures 4 and 5 illustrate marina construction plans. Table 2 summarizes the potential impacts of the proposed marina project on marine biological resources.

Landside excavation will be accomplished using dozers, skip loaders, trucks, and other small equipment. Dredging will involve the removal of bayfloor sediments by a clam shell dredge for the purpose of providing necessary depths to accommodate vessels to depths of -10 ft MLLW. Forty-one cement piles will be hydraulically driven into the sediments to secure the docks.

4.5.2.1 Impacts on Water Quality

Dredging and marina construction activities will cause a short-term increase in turbidity from the discharging of the suspended fine sediments with the liquefied portion of the dredge material. Localized increases in turbidity can also occur as a result of vessel propeller wash from tug and support vessels. Increased turbidity will reduce the amount of available underwater light that could potentially lead to short-term adverse biological impacts such as a slight decrease in plankton production, the movement of fishes out of the project area, and an interruption of seabird and shorebird foraging behaviors. The extent and orientation of the dredge plume will depend on the prevailing tidal cycle. With ebbing tides, the plume will dissipate into the main channel, and out towards the harbor entrance channel. Incoming flood tides could result in the turbidity plume dispersing farther up into Upper Newport Bay. However, an increase in turbidity is expected to be a localized, less than significant impact with the implementation of Best Management Practices to limit the spread of any turbidity plumes.

The sediment-bound particulates resuspended during dredging could potentially affect water quality by releasing detectable levels of trace metals and organic contaminants in the water column. Organically enriched sediments resuspended into the water column during dredging will cause a slight decrease in dissolved oxygen levels. Tidal currents will slowly dissipate the oxygen-poor water mass and replenish ambient oxygen levels. These impacts are expected to be short-term and less than significant, with a return to ambient water quality conditions upon the completion of the dredging project.

Accidental oil or fuel spills that could occur during the dredging operation or marina construction could result in significant effects on the fish and wildlife of the Harbor depending on the severity of the spill. Such events are likely to be localized spills of lighter, refined diesel fuels, gasoline, and lubricating oils that are highly toxic to marine life. The potential for petroleum-product leaks or spills would be low but the potential for significant, long-term effect on marine resources would be moderate to high.

The inclusion and implementation of a Marina Dredging Management Plan will assist in preventing accidental spills and providing the necessary guidelines to follow in case of an oil or fuel spill and reduce the potential for a significant long term impact to be mitigated to less than significant.

4.5.2.2 Dredging, Excavation, and Marina Construction Impacts on Marine Resources

Habitat Alterations

Table 2 summarizes habitat losses and habitat created for the marina. The project will excavate 600 sq ft of supra-tidal habitat to create a rock rip-rap protection shoreline for the marina. This action will result in a beneficial increase of 600 sq ft of shallow water habitat. This is in addition to approximately 1 acre of bayfloor dredging required to achieve design depths for the marina. There will be no net reduction in shallow water habitat as a consequence of dredging, although the bayfloor will be deeper (design depth of -10 ft MLLW).

Plants. Eelgrass (*Zostera marina*) will be adversely impacted by the dredging of the shallow water habitat that will result in the loss of 515 sq ft (47.9 sq m) of eelgrass vegetation. This will result in a locally significant, but mitigatable adverse impact to eelgrass.

Docks and floats will shade 9,045 sq ft of shallow water habitat, but will not adversely affect any additional eelgrass, since all of the eelgrass on the site will be removed during dredging.

Table 2. Habitat Losses and Gains

	Habitat Loss	Habitat Created	**Net Effect**	**Mitigation**
Construction of Balboa Marina West				
Excavation of supra tidal habitat to realign rip rap	600 sq ft of supratidal habitat will be removed when the marine rip rap shoreline is realigned.	600 sq ft of mudflat habitat.	600 sq ft increase of mudflat habitat. Beneficial impact to marine resources and Habitat Area of Particular Concern (HAPC). Essential Fish Habitat; provides additional water column habitat for fishes and seabirds and soft bottom benthic habitat for benthic invertebrates and bottom-foraging fishes at high tides, and foraging habitat for shorebirds at low tides.	Beneficial increase in mudflat habitat. None required. No mitigation required. Short-term Best Management Practices (BMPs) to avoid adverse water quality impacts to bay resources.
Dock Pile Emplacement	65.9 sq ft of soft bottom habitat and benthic organisms will be permanently lost.	Net increase in biomass of marine community of organisms living on hard substrate.	New docks and piles will support an assemblage of species typical of Newport Bay's hardscape habitat (algae, mussels, limpets, chitons, sea squirts and moss animals) providing a source of food for bay fishes.	Loss of 65.9 sq ft of soft bottom habitat will be mitigated by the creation of 600 sq ft of mudflat habitat at the project site., for a net increase of 534.1 sq ft of soft bottom habitat.
Dredging of shallow water habitat to create shallow water habitat for marina	Deepening, but no loss of shallow water marine habitat (approximately 1 acre) Loss of 515 sq ft of eelgrass at depths between -2 to -4 ft MLLW.	None; will remain shallow water habitat. Shallow water habitat will remain, but beyond the depth limit for eelgrass.	No change in benthic invertebrate or fish populations. Reduction of 515 sq ft of eelgrass (HAPC).	The loss 515 sq ft (47.9 sq m) of eelgrass will be mitigated at a 1.2 to 1 Mitigation to Impact ratio at the site of the existing Balboa Marina Eelgrass Mitigation Area. A conceptual mitigation plan is presented in Appendix 2 of this report. A final eelgrass mitigation plan will be developed that identifies mitigation goals, mitigation success criteria, methods, location, and timing per provisions of the Southern California Eelgrass Mitigation Policy. The mitigation plan will be included in the ACOE and the CCC permit conditions.

The loss of eelgrass will be mitigated by implementing an eelgrass transplant program at a 1.2 to 1 (mitigation to impact ratio) such that 618 sq ft (57.4 sq m) of eelgrass will be successfully transplanted at the end of a five-year post-transplant monitoring period per provisions of the Southern California Eelgrass Mitigation Policy (National Marine Fisheries Service, 1991 as amended). The location of the eelgrass transplant area will be in the Irvine Company's Balboa Marina Eelgrass Mitigation Area, established to mitigate the impacts of the re-construction of the Balboa Marina in 2008-2009.

Benthic Invertebrates. The subtidal soft bottom habitat of Newport Bay supports a diverse assemblage of benthic invertebrates (i.e., clams, worms, crustaceans) that are important in the detrital food web because they process organics and release nutrients back to the system. Dredging of approximately 1 acre of bayfloor will temporarily reduce benthic invertebrate populations in the project area. However, following the completion of dredging, benthic invertebrates will recolonize the shallow subtidal habitat. Losses will be short-term with no long-term reduction in benthic community diversity, function, or structure. The installation of support piles for the docks will replace a total of 54.7 sq ft of soft bottom habitat below the Mean Tide Line and an additional 11.2 sq ft above the Mean Tide Line (65.9 sq ft total). The reduction of soft bottom habitat will be offset by the creation of 600 sq ft of intertidal mudflat associated with the removal of upland habitat and the realignment of the existing rip rap (Figure 5). The overall net increase in mudflat habitat will be 534.1 sq ft.

Piling associated flora and fauna. The installation of dock piles will result in a decrease of soft bottom benthic invertebrates, and a shift in the community structure to the presence of hard substrate flora and fauna. Once these structures are installed, the hard-bottom community of algae and invertebrates is expected to successfully colonize the habitat. The reduction in soft bottom habitat will be offset by the creation of additional intertidal mudflat.

Fishes. The project area fish community consists of species such as shiner surf perch, white surfperch, black surf perch, opaleye perch, barred sand bass, and spotted sand bass. Water column species will move out the area, avoid bottom disturbances, and short-term increases in turbidity. The loss of bottom-dwelling species such as gobies may occur. However, these losses will be short-term as other individuals migrate into the area created for the marina.

Non-Endangered Water Birds. The most common groups of non-endangered species of water birds to be present nearby on the sandy beach and in the general vicinity of marina construction and dredging are seabirds (gulls, cormorants), waterfowl (mallards), and various shorebirds (willets, marbled godwits, sanderlings). These species may avoid the marina construction zone due to noise, interruption of resting areas and foraging sites. The activities will result in a short-term, less than significant impact on the local water bird population.

Marine Reptiles. Marine reptiles are protected under the Endangered Species Act. See Endangered Species Section below.

Marine Mammals. All marine mammals are protected under the Marine Mammal Act (1972). See Endangered Species Section below.

Endangered, Threatened, Rare, or Sensitive Species

Plants. The project will result in a loss of eelgrass. See Section 4.5.2.2.

Benthic Invertebrates. No sensitive species of benthic invertebrates occur in the project area.

Fishes. The California halibut is a sensitive marine fish but does not have official status as such. This species is an important commercial and sport fish resource that uses Newport Harbor as nursery habitat. Dredging activity will temporarily degrade soft bottom subtidal habitat where this species is present, but individuals will move to non-impacted areas precluding any direct or indirect adverse impacts. Proposed project construction activities will not result in the mortality of any individuals. Habitat degradation will be a short-term, less than significant impact on halibut.

Marine Reptiles. The potential for sea turtles to be in the project area is extremely low. No impacts are anticipated on this resource group.

Marine Birds. Brown pelicans and California least terns forage in Newport Harbor waters in the general project vicinity. Turbidity plumes that would spread away from the dredge area could potentially affect their foraging behavior by limiting their ability see their prey, and causing them to search other nearby areas of Newport Harbor for food. This could result in a short-term impact on these two species. Of the two species, least terns have the greater potential to be adversely affected. Least terns are present in the region between March and late September during their breeding season. They forage within several miles of their nesting sites at Bolsa Chica Marsh, and Upper Newport Bay. During this period, adults will forage on juvenile baitfish and take their prey back to their fledglings. Brown pelicans do not breed in the project region and therefore, an alteration of their foraging behavior would not affect young-on-the-nest. Both species may react to construction disturbances (noise and vessel activity) by altering their normal foraging behaviors. No direct mortality of endangered seabirds will result from the dredging or excavation activities.

To mitigate the potential for a locally significant impact to least terns and brown pelicans related to turbidity, a silt curtain could be placed around dredging and excavation activity to limit the spread of any turbidity plumes into Newport Harbor (See Section 4). Because tidal currents can be swift in this part of the bay, a silt curtain may not always function properly, and should be deployed during less extreme tidal current conditions.

Marine Mammals. Occasionally, sea lions, harbor seals, and bottlenose dolphin may swim into this section of Newport Bay. The impacts of both dredging and pile driving on marine mammals are discussed below.

Dredging Impacts on Marine Mammals. Clamshell dredging will be used for the project. The measured sound exposure levels of a clamshell dredge may range between 75-88 dBA (re 20 /-lPa) at 50 feet. Animals have been observed flushing from haul out sites at a sound exposure level of less than 100dBA, and it is possible that marine mammals may modify their behavior as a result of the noise produced by the pile driving and dredging operations.

The duration of such noise would be approximately 30 days. Based on Port of Los Angeles responses to comments on the Port of Los Angeles Channel Deepening Project EIR/EIS, NMFS Comment NMFS 08, page 14-08, April 2009) underwater noise from the clamshell dredging would be 150-162 dB (re1 μPa) in LA Harbor, which is below the designated level A harassment threshold of 190 dBrms (re 1 μPa) for pinnipeds. This would imply that clamshell dredging effects for pinnipeds, or any other marine mammals near the Balboa Marina West project site would be less than significant.

Pile Driving. Few marine mammals are expected in the project area. However, if present, pile driving in the air and water could result in avoidance behaviors. Sea lion and bottlenose dolphins occurrences in the bay have shown that they have the ability to adapt to noise and vessel traffic. It is expected that pile driving and dredging activity will occur during a relatively short-period (one-month) which limits the potential for adverse effects, if any to occur. Breeding would not be affected because sea lions nor bottlenose dolphin breed in the Harbor.

Sound pressure waves in the water caused by pile driving could temporarily affect the hearing of marine mammals (primarily sea lions) if swimming near the proposed marina construction site.

The following information is extracted from the Port of Los Angeles, Pacific L.A. Marine Terminal LLC Crude Oil Terminal Final SEIS/SEIR 3.3-23 and 3.3 24 in regards to the NMFS comments on the effects of noise on pinnipeds relative to pile driving in the Port of Los Angeles.

"Pinnipeds appear to have greater tolerance to noise levels than cetaceans. Kastelein et al. (2006) demonstrated that captive seals avoid zones where the sound pressure levels were louder than 107 dBrms (re 1 μPa), but noted that it is possible that in the wild, seals may tolerate higher levels, in order to get food, escape predators, or stay with a pup. Finneran et al. (2003) found no measurable Temporary Threshold Shift (TTS) at sound pressure levels up to 178 to 183 dB (re 1 μPa) for California sea lions. a sea lion, harbor seal, and northern elephant seal at sound pressure levels over periods of 25 to 50 minutes. Increasing the exposure duration from 25 to 50 minutes had a greater effect on threshold shifts than increasing the exposure level from 80 dB original sound source level (SL) (137 to 159 dBrms re 1 μPa) to 95 dB SL (152 to 174 dBrms re 1 μPa); SELs resulting in

TTS onset ranged from about 183 to 206 dB (re 1 µPa2 s). Kastak and Schusterman (1996) reported TTS in California sea lions exposed to airborne noise from nearby construction.

Pile driving produces noise levels of 175 to 205 dBrms 177 to 220 dB (re 1 µPa) at 33 ft (10 m) depending on the material and size of the piles (Caltrans 2007, Hastings and Popper 2005). Caltrans (2007) data indicate the sound level for the proposed steel piles could be as high as 195 dBrms at 33 ft (10m). In comparison, an underwater sound level of 180 190 dBrms (re 1 µPa) has been designated as the 12 level A harassment level for pinnipeds (Federal Register 2005), representing a 13 potential effect level for marine mammals occurring close to construction noise 14 sources in the Outer Harbor.

Observations during pile driving for the San Francisco-Oakland Bay Bridge East Span seismic safety project showed minimal response in harbor seals while sea lions swam rapidly out of the area (Caltrans 2001). In water, sound transmission loss is between 3 and 6 dB per doubling of distance, with approximately 4.5 dB per doubling of distance in nearshore waters (Vagle 2003). However, at distances of less than about 330 feet (100 m), the transmission loss (rate of attenuation) can be less (Caltrans 2007). For this project, marine mammals such as pinnipeds could experience sound levels approaching Level A harassment levels at around 100 m (330 feet) from the pile driving. This estimate accounts for the size of the largest steel piles, the power of the hammer that would be required to drive them, the lower rate of attenuation close to the pile, and uncertainty in the sound propagation rate that depends on site-specific characteristics (Caltrans 2007). “

Few, if any, individual sea lions or marine mammals would be expected to be present at the Balboa Marina West marina construction site. If they are present, they are unlikely to be harmed because they would likely either move out of range of sound produced by pile driving, or they would adapt to expected sound intensities. The effect would be an impact of short duration for each pile, and for the project, within a relative short period (30 days**).** Sea lions tend to be present in Newport Bay during the spring to autumn time frame. Therefore, it would be advisable for the City to drive piles and conduct dredging operations during the late-autumn to winter period to lessen the potential for marine mammals to be affected by pile driving (and dredging) operations.

To lessen the potential for impacts to marine mammals, the City will add a mitigation measure to the Balboa Marina West project that requires slowly ramping up pile-driving activities (referred to as a “soft start”) at the start of pile-driving activities (at the beginning of the day and at restarting of construction after lunch breaks or other pile driving interruptions of longer than 15 minutes). The soft-start approach to pile driving would also prevent “take” of marine mammals, and therefore, an Incidental Harassment Authorization under MMPA will not be required.

The added mitigation measure reads as follows:

- The contractor shall be required to use sound abatement techniques to reduce noise and vibrations from pile-driving activities. Sound abatement techniques shall include, but not be limited to, vibration or hydraulic insertion techniques, drilled or augured holes for cast-in-place piles, bubble curtain technology, and sound aprons where feasible. At the initiation of each pile-driving event and after breaks of more than 15 minutes, the pile driving shall also employ a "soft-start" in which the hammer is operated at less than full capacity (i.e., approximately 40 to 60 percent energy levels) with no less than a 1-minute interval between each strike for a 5-minute period.

- A biological monitor shall be on site to monitor effects on marine mammals. The biological monitor shall also note (surface scan only) whether marine mammals are present within 100 meters (333 ft) of the pile driving and, if any are observed, temporarily halt pile driving until the observed mammals move beyond this distance.

The operation of the hammer at 40 to 60 percent energy level during the soft start of pile driving is expected to result in similar levels of noise reduction (40 to 60 percent) underwater.

Based on (1) the less-than-significant expected levels of impacts to marine mammals for the project (2) proposed mitigation measures identified for reducing pile-driving effects on marine mammals and (3) expected sound levels that are below those identified as harassment during dredging operations, the City believes that an application to the NMFS for an Incidental Harassment Authorization, under Section 101 of the Marine Mammal Project Act is not necessary.

Fishery Management Plan Species (FMP), Essential Fish Habitat Analysis

Project activities that could potentially affect identified Coastal Pelagic FMP species (northern anchovy juveniles) and HAPC (estuarine habitat) include increased water turbidity caused by the site excavation, pile installation, and dredging. These impacts could result in (1) the avoidance of juvenile and adult FMP species to the affected, turbid waters, (2) an increase in the suspended sediment load in the water column that could introduce contaminants to FMP species, and (3) the clogging of the gill apparatus of filter feeders (engrauliids) that would reduce the ability of the fish to breathe and/or feed. Groundfish species are likely to be extremely rare or absent in the Balboa Marina West project area. However, should they be present, the potential for direct mortality on juveniles or adults of is minimal-any impacts resulting from project turbidity would result in species avoiding the project area.

Based upon the life histories and the distribution of identified FMP species that indicate coastal pelagic and groundfish-managed species occur in very low abundances in

Newport Harbor. The potential for adverse short-term impacts on FMP species related to the project is less than significant.

Estuaries are considered Habitats of Particular Concern (HAPC) for various federally managed fish species within the Pacific Groundfish Fisheries Management Plan of the Magnuson-Stevens Fishery Conservation and Management Act (1997). The excavation of the landside area for the relocation of the protective rip rap will result in creation of 600 sq ft of estuarine mudflat habitat for benthic invertebrates, fishes, water fowl and seabirds, and result in a beneficial impact to fishery habitat in Newport Bay.

Eelgrass is identified as a Habitat of Particular Concern (HAPC). The deepening of the project area will result in the loss eelgrass habitat. See Section 4.5.2.2 for a discussion of eelgrass habitat losses.

Invasive Species

Caulerpa algae is not present at the site of the proposed marina. However, a *Caulerpa* algae survey will be conducted according to the National Marine Fisheries Service Control Protocol (http://swr.ucsd.edu/hcd/CaulerpaControlProtocol.htm) prior to marina construction. The City will conform to the 2008 Caulerpa Control Protocol, which requires survey results to be submitted to NOAA and California Department of Fish and Game (CDFG) within 15 days of completion. This protocol also requires that NOAA and CDFG be notified within 24 hours if Caulerpa is identified at a permitted project site. If this species is found, then protocols for the eradication of *Caulerpa* will be implemented to remove this species from the project area.

4.6 LONG-TERM IMPACTS OF LANDSIDE OPERATIONS ON WATER QUALITY

3.6.1 Water Quality

With the implementation of the Water Quality Management Plan and a Storm Water Protection Plan (Section 4), there will be no significant impacts on Newport Bay water quality resulting from the use of Balboa Marina West.

4.7 LONG-TERM IMPACTS OF MARINA USE ON WATER QUALITY

BMPs to reduce the potential for marina visitor-use impacts should be included in the project's Water Quality Management Plan (Section 4). These could include, but not be limited to adding additional signage to remind visitors to use trash receptacles, and providing conservation brochures to visitors who visit Balboa Marina West.

4.8 LONG TERM MARINA IMPACTS ON MARINE RESOURCES

4.8.1 Water Quality

Marina Tenant Impacts. Water quality will also be governed by the practices of the tenants relative to their compliance with ordinances, laws, and guidelines related to discharges, vessel maintenance and marina maintenance. Periodic and/or uncontrolled discharges of various pollutants, oils, greases, and wastes will result in a long-term significant adverse effects on water quality and local marine life. Surface runoff from the marina will also be regulated through NPDES permit for storm water discharges. Implementation of the creation and the implementation of a Marina Management Plan would reduce potential long-term water quality impacts to less than significant.

4.8.2 Marine Resources

4.8.2.1 Non-sensitive Plants

The presence of marina hardscape (docks, pilings, and groin walls) will promote the growth and establishment of algal species typical of Newport Bay hardscape areas. This will result in a beneficial impact to marine plant productivity assuming water quality and tidal flushing is maintained in Balboa Marina West.

4.8.2.2 Impacts to Benthic (bottom-dwelling) Resources

Hard substrate of pilings and docks will be created which will provide attachment surfaces for intertidal and subtidal hardscape associated plants and animals such as algae, barnacles, mussels, limpets, and limpets, resulting in a beneficial impact to hard substrate-associated plants and invertebrates. Many of these organisms are food for fishes. The increased surface area and additional marine habitat afforded by the presence of hard substrate will increase species diversity of both invertebrates and algae in the project area which will also attract a greater diversity of fish to the project area because of an increase in food supply and increased habitat diversity.

Forty-one cement piles will replace 65.9 sq ft of soft bottom habitat. This loss will be mitigated by the creation of 600 sq ft of mudflat habitat that will restore soft bottom habitat value with a net increase of 534.1 sq ft of soft bottom habitat.

4.8.2.3 Impacts to Fishes

No long-term losses of soft bottom habitat will occur precluding impacts to fishes. The addition of the pilings, and docks will attract fishes (i.e., perch) that will forage on plants and invertebrates attached to the hard substrate.

4.8.2.4 Impacts to Non-endangered Shorebirds and Seabirds

The proposed project will have no adverse impacts on non-endangered species of birds. Foraging habitat will be present along the re-aligned rip rap, plus there will be additional mudflat foraging habitat created, which will be a beneficial impact to this resources group.

4.8.2.5 Impacts to Marine Mammals

See Section 4.8.2.6.

4.8.2.6 Impacts to Endangered Species and Sensitive Species

Plants. The proposed marina will be excavated and dredged to a depth of -10 ft MLLW, below the depth range required to support eelgrass. Consequently, the loss of eelgrass as a result of the project will require a mitigation program to offset project-related reductions of eelgrass vegetation and potential eelgrass habitat.

Invertebrates. No endangered species of invertebrates will be impacted by the presence or the operation of the proposed marina.

Fishes. The project will have no long-term impact on any sensitive species of fish.

Reptiles. The proposed project will have no impact on marine reptiles (sea turtles) due to their absence in Newport Harbor.

Marine Mammals. There will be no long-term impacts on marine mammals resulting from the presence or operation of the marina. Although sea lions may occasionally swim into the marina, they are not expected to haul out in this part of the Harbor. Cetaceans (whales and dolphins) are not expected to enter Balboa Marina West precluding potential impacts to these species.

Based on the expected levels of impacts to marine mammals for the project, mitigation measures identified for reducing pile-driving effects on marine mammals, sound noise levels are expected to be below that identified as harassment during dredging operations, the City believes that an application to the NMFS for an Incidental Harassment Authorization, under Section 101 of the Marine Mammal Project Act is not necessary.

Seabirds. There will be no long-term adverse impacts on endangered species of seabirds.

4.8.2.7 Impacts to Fishery Management Plan Species. Based upon the life histories and the distribution of identified FMP species that indicate coastal pelagic and groundfish-managed species occur in very low abundances in Newport Harbor, the potential for long-term, adverse impacts is less than significant. The only managed

species likely to be present in Newport Bay will be the northern anchovy, which is unlikely to be benefited or adversely affected in this part of Newport Harbor.

4.8.2.8 Impact To Sensitive Habitats

See Section 3.4.1 and Table 1 for a discussion of impacts to sensitive habitats. No intertidal sandy beach or mudflats will be adversely affected. The project will have a beneficial long term impact on mudflats and associated resource groups, since 600 sq ft of mudflats will be created in the process of re-aligning the rip rap. This action will (1) offset the loss of pile emplacement impacts on soft bottom habitat (65.9 sq ft) with a net increase of 534.1 sq ft of soft bottom mudflat habitat and associated benthic invertebrates. This habitat will provide additional and important foraging habitat for shorebirds.

4.8.2.9 Impacts to Invasive Species

Caulerpa is not currently present at the proposed marina site. In the event that it colonizes the marina, an eradication program would be implemented immediately under the supervision of the Regional Water Quality Control Board, National Marine Fisheries Service, and the California Department of Fish and Game according to the *Caulerpa* Eradication Protocol (http://swr.ucsd.edu/hcd/CaulerpaControlProtocol.htm).

Informational and educational pamphlets alerting boaters and visitors of this potentially destructive species should be included in the Marina Management Plan.

5.0 MITIGATION MEASURES

5.1 RUNOFF WATER QUALITY

Planning Documents. With the preparation and implementation of the following documents and all required Best Management Practices contained in the plans, potential water quality impacts on Newport Harbor related to site construction and operation will be reduced to less than significant:

Post-Construction (Operational) Project Water Quality Management Plan and Storm Water Pollution Prevention Plan

Specific BMPs should include:

Construction BMPs should include the following:

- Dust Control: Water will be sprayed in newly graded areas to prevent grading activities dust to be blown to adjacent areas.
- Construction Staging: Specific areas will be delineated for storage material and equipment, and for equipment maintenance, to contain potential spills.
- Sediment Control: Sand bags or silt fences will be located along the perimeter of the site. Existing inlets and proposed area drains will be protected against intrusion of sediment.
- Waste Disposal: Specific area and/or methods will be selected for waste disposal. Typical construction waste include concrete, concrete washout, mortar, plaster, asphalt, paint, metal, isolation material, plants, wood products and other construction material. Solid waste will be disposed of in approved trash receptacles at specific locations. Washing of concrete trucks will be done in contained area allowing proper cleanup. Other liquid waste will not be allowed to percolate into the ground.
- Construction dewatering will require approved permits by the California Regional Water Quality Control Board and the City.
- Maintenance: Maintenance of BMPs will take place before and after rainfall events to insure proper operation.
- Training: The SWPPP will include directions for staff training and checklists for scheduled inspections.
- Installation of screening around the site will assist in lessening potential impacts on seabird and shorebirds.

These plans shall be completed prior to the initiation of construction and included in construction bid packages to the contractors and be part of project's long-term management requirements.

5.2 MARINA CONSTRUCTION AND OPERATION

5.2.1 Planning Documents.

- A Marina Management Plan shall be developed by the applicant to identify construction and long-term operational BMPs to reduce the level of potential water quality impacts to less than significant. This document shall be developed and included in marine construction bid packages and implemented as a requirement of the long term operation of the project.

With the implementation of the Marina Management Plan and Best Management Practices, potential water quality impacts on Newport Harbor will be reduced to less than significant. This will significantly reduce the potential for adverse impacts to intertidal and subtidal marine resources. The plan should provide boaters with reasonable BMPs, safety guidelines, and steps to take in response to accidental spills, leakages and fires to reduce the potential for water quality degradation. In addition, two pamphlets *The Guide to Clean, Green Boating* (California Department of Fish and Game 1999) and *Clean Boating* (California Department of Boating and Waterways (undated material) should be distributed and made available to management and marina tenants. These are available through the City of Newport Beach Harbor Resources Department.

Clean Marinas California Program (2006) has developed a guidebook for to making marinas environmentally clean facilities and to help protect the state's waterways from pollution. This guidebook is available at http://cleanmarinascalifornia.org. It is recommended that a copy of this document be kept onsite in the Marina Office.

Examples of shoreline and boat dock BMPs[1] include:

- Limiting heavy equipment use to the backshore portions of the beach.

- Prohibit boat in-water maintenance and discharge of waste.
- Provide easily accessible restrooms and trash receptacles.
- Provide firefighting and spill containment equipment.
- Additional BMPs for marina construction and operation will be integrated into the project's Water Quality Management Plan.
- Dispose of used oil, antifreeze, paints, and other household chemicals properly.

- Avoid spills of hazardous or polluting material and prepare guidelines for remediation of such occurrences.
- Affix signs educating user of the property about BMPs.
- Scheduled inspections.
- Long-Term Maintenance: As design progresses, the owner's plan for the long-term and continuous maintenance of all on-site BMP's requiring ongoing maintenance will be developed. This plan will include his acceptance of the responsibility for the on-site maintenance of all structural and treatment control BMPs.
- Maintenance of a Water Quality Management Plan report, its distribution to lessees, and assignment of specific responsibilities by the owner.

5.2.2 Specific Dredging BMPs to reduce impacts to water quality and marine resources

- The dredging contractor shall be required as part of the dredging contract to ensure that dredging activities shall be conducted so as not to disturb sensitive biological habitats and resources in Newport Bay.
- No vessel discharges are allowed within Newport Bay.
- Dredging and spoils disposal must be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation.
- Prior to the issuance of a grading permit, the City of Newport Beach Public Works Department shall be provided with evidence that all appropriate permits or clearances have been obtained from the U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Coast Guard, and Regional Water Quality Control Board.
- Dredging and excavation operations will be surrounded with a silt curtain when feasible to reduce turbidity from spreading outside the marina construction site and to mitigate the potential for a locally significant impact to endangered brown pelicans and least terns. In addition, Best Management Practices that will further reduce the impact of turbidity include using appropriate machinery when dredging and transporting materials, and employing proper maintenance and operation on equipment (including adequate training, staffing, and working procedures. Turbidity monitoring should be conducted during dredge operations to insure compliance with standards set forth by the Santa Ana Regional Water Quality Control Board.

- Treatment of extracted water, if required, shall be conducted in a manner and at a location approved by the City of Newport Beach City Engineer and the Santa Ana Regional Water Quality Control Board.

- Provisions shall be made, as necessary, for treatment of hydrogen sulfide to comply with water quality standards and to control odors from the dewatering process.

- The dredging contractor shall conduct dredging activities in accordance with the approved dredging permit from the U.S. Army Corps of Engineers.

- Conditions imposed by the Regional Water Quality Control Board and the Department of Fish and Game will be incorporated into the project.

- Should ocean disposal be required for the project, project operations will require that the scow doors used to release dredged material remain closed until the scows are towed to the disposal site.

5.2.3 Mitigation for the Loss of Soft Bottom Habitat and Eelgrass

The loss of 65.9 sq ft of soft bottom habitat will be offset by the creation of 600 sq ft of mudflat habitat on the project site, resulting in a net increase of 534.1 sq ft of soft bottom habitat.

- The loss of 515 sq ft of eelgrass as a consequence of dredging will be mitigated by conducting an eelgrass transplant program at the Balboa Marina Eelgrass Mitigation Area at a mitigation to impact ratio of 1.2 to 1 per provisions of the Southern California Eelgrass Mitigation Policy (NMFS 1991 as amended). A total of 618 sq ft of eelgrass will be successfully transplanted at the end of the required 5-year monitoring program. In addition, a conceptual eelgrass mitigation plan is provided in Appendix. 1. A final eelgrass mitigation plan will be developed that further refines the mitigation program. The mitigation plan will be included in the ACOE and the CCC permit conditions. If the mitigation program is successful, then impacts would be reduced to a level considered less than significant.

5.2.4 Marine Mammal Impacts During Construction

- In the event of a construction vessel collision with a marine mammal, the City will immediately contact the National Marine Fisheries Service Southwest Regional Office's Stranding Coordinator and will submit a report to the NMFS Southwest Regional Office.

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APPENDIX 1

Pelagic and Groundfish Fishery Management Plan Species
Potentially Present in Newport Bay

Common Name	Scientific Name	Comment
Coastal Pelagics FMP		
Northern anchovy	*Engraulis mordax*	Upper Newport Bay Absent in Upper Newport Bay (Allen, 1976) 1 individual in Upper Newport Bay (MBC and SCCCWRP, 1980; Eighth most abundant species in Upper Bay (Horn and Allen, 1981); Seventh most abundant species in Upper Newport Bay (Allen, 1988); Not among 10 most dominant species in Upper Newport Bay (MBC 1997 in MEC 1997); Engraulid juveniles abundant (1,844) in purse seines in Upper Newport Bay (MEC 1997); Lower Newport Bay Present (13) in Lower Newport Bay (Allen, 1976)
Pacific sardine	*Sardinops sagax*	Rare (1) in Lower Newport Bay (Allen, 1976)
Pacific mackerel	*Scomber japonicus*	rare (1) in Lower Newport Bay (Allen, 1976)
Jack mackerel	*Trachurus symmetricus*	none reported
Pacific Groundfish FMP		
English sole	*Parophrys vetulus*	rare (1) in Upper Newport Bay (Allen, 1976) rare (1) in Lower Newport Bay (Allen, 1976)
Pacific sand dab	*Citharichthys sordidus*	none reported
Leopard shark	*Triakis semifasciata*	rare (1) in Upper Newport Bay (Allen, 1976)
Bocaccio	*Sebastes paucispinis*	none reported
California scorpion fish	*Scorpaena guttata*	rare (1) in Lower Newport Bay (Allen, 1976)
Olive rockfish Rockfish, unid)	*Sebastes serranoides* *Sebastes* sp.	rare (1) in Lower Newport Bay (Allen, 1976)
Cabezon	*Scorpaenichthys marmoratus*	none reported

APPENDIX 2
CONCEPTUAL EELGRASS MITIGATION PLAN

1.0 MITIGATION FOR EELGRASS HABITAT LOSSES

An eelgrass transplant mitigation plan is proposed to mitigate the long-term, direct loss of eelgrass as a result of dredging activity. This plan, along with monitoring and reporting requirements associated with the transplant is provided below.

1.1 Direct, Long-term Eelgrass Habitat Losses

A total of 515 sq ft (47.8 sq m) of eelgrass vegetation will be permanently removed from the project area due to the direct impacts of dredging. The removal of this eelgrass will be mitigated at minimum ratios of 1.2 to 1 for loss of existing vegetation such that a total of 618 sq ft (57.4 sq m) of eelgrass will be successfully mitigated by conducting an eelgrass transplant program according to the *Southern California Eelgrass Mitigation Policy* (National Marine Fisheries Service 1991 as amended). A copy of this document is provided in Appendix 1.

Table 1. Mitigation Required for the Balboa Marina West Project

	Existing Eelgrass Habitat	**Notes**
Location	**Mitigation (1.2 to 1 Replacement to Impact Ratio) (sq ft)**	
Balboa Marina West Project Site	618 feet (57.4 sq m) required for the loss of 515 sq ft	To be transplanted at the existing eelgrass mitigation site in the Balboa Marina

TRANSPLANT ELEMENTS

1.2.1 Permission to transplant within tideland areas.

Permission will be required to transplant within tidelands that are under the City of Newport Beach and/or the County of Orange jurisdiction. The appropriate agency will be contacted and permission to transplant obtained once the transplant site is selected. Contacts to obtain permission include Mr. Chris Miller, City of Newport Beach Harbor Resources Director (949) 644-3041 and Ms. Andrea Richards, County of Harbor Department of Harbors, Beaches, and Parks Tidelands Lease Administrator (714) 834-4677. In addition, permission will be required from The Irvine Company, since the project will be conducted within the Marina.

1.2.2 Permission to collect eelgrass donor material

State of California Scientific Collecting Permits will be required for staff involved with the actual collecting of donor material for the transplant. In addition, special permission

will be required from the California Department of Fish and Wildlife to collect eelgrass donor material. The CDF&W contact is Ms. Loni Adams (LAdams@dfw.ca.gov).

1.2.3 Responsible Parties

The Applicant, The Irvine Company, will be the responsible party for this project. The California Department of Fish and Game, National Marine Fisheries Service, the California Coastal Commission, and the U.S Army Corps of Engineers will be responsible for reviewing the project's monitoring program results and for determining if the project meets or does not meet criteria as a successful eelgrass mitigation project.

1.2.4 Selection of a Transplant (Receiver) Mitigation Area

The proposed transplant site is the Balboa Marina Eelgrass Transplant Mitigation Area, constructed in 2009 for mitigation of eelgrass losses associated with the Balboa Marina. To date, eelgrass transplant surveys at the site have shown the transplants have exceeded mitigation guidelines of the Southern California Eelgrass Mitigation Policy (NMFS 1991 as amended) after 4 years of monitoring. The areas available for transplants associated with the Balboa Marina West project are shown in Figure 1. There is about 1,932 sq ft (179.6 sq m) available for transplants at the site.

1.2.5 Eelgrass Transplant

The following program will be implemented to mitigate the loss of eelgrass associated with the Balboa Marina West Project. The eelgrass transplant will involve several steps; collecting stock material from the donor site(s), preparing the material for transplanting, replanting the eelgrass in the mitigation area receiver site, following up the transplant with monitoring surveys, and evaluating the success of the transplant.

Collection and Preparation of Donor Eelgrass Material. Material will be harvested by diver-biologists from the shallow subtidal at a minimum of three sites in Newport Bay to increase genetic diversity in the transplanted material and to minimize disturbances within donor beds. Proposed donor sites include (1) Harbor Island (2) Balboa Island and (3) Linda Isle. The preferred transplant method is the bundle method (Fonseca et al. 1982) in which eelgrass is collected by divers from the donor site, transferred to shore, separated into planting units, and replanted by divers along a pre-determined grid. The donor material from each area will be mixed together and then integrated into planting units consisting of about 10 shoots and associated substrate and root mass. Shoots will be bundled and tied together with biodegradable line and a sediment anchoring device. The bundles will be transferred to the divers who will then replant the eelgrass bundles in spacing units of 1 unit per 1/2 sq meter over a 70 sq m planting area (140 bundles and an additional 28 to account for edge effects).

Figure 1. Potential Eelgrass Transplant Site for the Balboa Marina West Project. Existing Eelgrass Mitigation Area for the Balboa Marina Eelgrass Transplant Program, Established 2009.

The preliminary number of eelgrass bundles and eelgrass shoots required for the transplant is calculated in Table 2. These figures are based upon the area of eelgrass to be mitigated at

both 1.2 to 1 mitigation ratio for direct impacts to existing eelgrass and at a 1 to 1 mitigation ratio for impacts to "potential" eelgrass habitat (Table 1).

The actual amount of area to be mitigated will be determined during agency-required project pre-dredging eelgrass mapping surveys that are required to be conducted within 120 days of the start of the proposed project.

Transplant timing. The transplants will occur during the active growing period for eelgrass (March-September, focusing on May-June). It is anticipated that the transplants will be conducted over a three day period.

Table 2. Estimated Amount of Eelgrass Vegetation Required for the Balboa Marina West Project

MINIMUM TOTAL NUMBER OF PLANTING UNITS (P.U.)

Total eelgrass surface area/(P.U. Density)^2

$$\frac{58\ m^2}{0.5\ m^{(2)}}$$

= 116 P.U.

Estimated Additional Material Required
= 24 P.U.

Total Planting Units
= **140**

TOTAL NUMBER OF SHOOTS

Total number of P.U. x 10 shoots/P.U.
10 shoots/P.U. x 116 P.U.
= 1,400 shoots

1.3 FIELD MONITORING

1.3.1 Pre-Construction Survey

An updated pre-construction eelgrass habitat mapping (and invasive algae survey) for this project will be completed within 120 days of the proposed dredging date in accordance with the Southern California Eelgrass Mitigation Policy (NMFS 1991 as amended) to amend, if required, the amount of eelgrass that will likely be affected by dredging activity. The results of this survey will be integrated into a Final Eelgrass Mitigation Plan and used to calculate the amount of eelgrass to be mitigated.

1.3.2 Post-Construction Survey

A post-dredging project eelgrass survey will be completed within 30 days of the completion of dredging in accordance with the Southern California Eelgrass Mitigation Policy (NMFS 1991 as amended). The report will be presented to the resource agencies and the Executive Director of the California Coastal Commission within 30 days after the completion of the survey. If any eelgrass has been impacted in excess of that determined in the pre-dredge survey, then any additional impacted eelgrass will be mitigated at a ratio of 1.2:1 (mitigation to impact).

1.3.3 Transplant Monitoring Surveys

A series of seven monitoring surveys will be required to evaluate transplant success over a period of five years. Furthermore, if the initial transplant fails to conform with required performance standards, a supplemental transplant area and monitoring program in conformance with the *Southern California Eelgrass Mitigation Policy* will be required (See Section 5.7).

Post-transplant monitoring surveys will be conducted during the active vegetative growth periods of eelgrass (March through October) at intervals of 3 months, 6 months, 1 year, 2 years, 3 years, 4 years, and 5 years after the transplant to determine the health of the transplanted vegetation and to evaluate transplant success based on established criteria (NMFS 1991 as amended). Eelgrass areal cover, percent cover and shoot density of eelgrass will be determined during each monitoring survey. Undisturbed areas of the eelgrass meadows in the vicinity of the transplant site will be used a control area when assessing the results of the transplant. If yearly criteria are not met, then a replant will be conducted. The amount to be replanted is based upon a formula that takes into account area and/or density deficiencies (NMFS 1991 as amended).

1.4 REPORTING

Field survey results will be submitted to the resource agencies and the Executive Director of the California Coastal Commission in report format within 30 days of the pre-and post-project monitoring surveys, and seven post-transplant monitoring surveys. The reports will present eelgrass area and density data, an assessment of the functional quality of the area, a qualitative assessment of invertebrate and fish use of the area, determination if mitigation success criteria have been met, and recommended remedial measures if the transplant is not meeting mitigation success criteria. Reporting summaries (See Appendix 3) will also be included per NMFS 1991 Eelgrass Mitigation Policy Guidelines (NMFS 1991, as amended).

1.4.1 Mitigation Success Criteria (NMFS 1991 as amended, Revision 11)

Criteria for determination of transplant success shall be based upon a comparison of vegetation coverage (area) and density (turions per square meter) between the project adjusted impact area (i.e., original impact area multiplied by 1.2, or the amount of eelgrass habitat to be successfully mitigated at the end of five years) and mitigation

site(s). Extent of vegetated cover is defined as that area where eelgrass is present and where gaps in coverage are less than one meter between individual turion clusters. Density of shoots is defined by the number of turions per area present in representative samples within the original impact area, control or transplant bed. See Appendix 3 for the full text of the Southern California Eelgrass Mitigation Policy.

Specific criteria are as follows:

> a. the mitigation site shall achieve a minimum of 70 percent area of eelgrass and 30 percent density as compared to the adjusted project impact area after the first year.
>
> b. the mitigation site shall achieve a minimum of 85 percent area of eelgrass and 70 percent density as compared to the adjusted project impact area after the second year.
>
> c. the mitigation site shall achieve a sustained 100 percent area of eelgrass bed and at least 85 percent density as compared to the adjusted project impact area for the third, fourth and fifth years.

Should the required eelgrass transplant fail to meet any of the established criteria, then a Supplementary Transplant Area (STA) shall be constructed, if necessary, and planted. The size of this STA shall be determined by the following formula:

$$STA = MTA \times (|A_t + D_t| - |A_c + D_c|)$$

MTA = mitigation transplant area.
A_t = transplant deficiency or excess in area of coverage criterion (%).
D_t = transplant deficiency in density criterion (%).
A_c = natural decline in area of control (%).
D_c = natural decline in density of control (%).

The STA formula shall be applied to actions that result in the degradation of habitat (i.e., either loss of areal extent or reduction in density).

Five conditions apply:

1) For years 2-5, an excess of only up to 30% in area of coverage over the stated criterion with a density of at least 60% as compared to the project area may be used to offset any deficiencies in the density criterion.
2) Only excesses in area criterion equal to or less than the deficiencies in density shall be entered into the STA formula.
3) Densities which exceed any of the stated criteria shall not be used to offset any deficiencies in area of coverage.
4) Any required STA must be initiated within 120 days following the monitoring event that identifies a deficiency in meeting the success criteria. Any delays beyond 120 days

in the implementation of the STA shall be subject to the penalties as described in Section 8 of the Southern California Eelgrass Mitigation Policy.
5) Annual monitoring will be required of the STA for five years following the implementation and all performance standards apply to the STA.

1.5 REMEDIATION AND CONTINGENCY PLANS FOR UNSUCCESSFUL EELGRASS MITIGATION

If the initial transplant is unsuccessful, then one additional replanting at the primary on-site mitigation area will occur. The amount to be transplanted will be based upon the guidelines in the *Southern California Eelgrass Mitigation Policy* (NMFS 1991 as amended). If remedial transplants at the project site are unsuccessful, then eelgrass mitigation should be pursued at off-site locations in either Lower or Upper Newport Bay, upon consulting with National Marine Fisheries Service and the California Department of Fish and Wildlife.

6.0 LITERATURE CITED

Fonseca, M.S., WS Kenworthy, and G.W. Thayer. 1982. *A low-cost planting technique for eelgrass (Zostera marina L.).* Coastal Engineering Tech. Aid. No. 82-66. Coastal Engineering Research Center, Kingman Bldg., Ft. Belvoir, Virginia. 15 pp.

National Marine Fisheries Service. 1991. *Southern California Eelgrass Mitigation Policy.* National Marine Fisheries Service, Southwest Region, Long Beach, CA. 11th Revision.

APPENDIX 3
SOUTHERN CALIFORNIA EELGRASS MITIGATION POLICY

SOUTHERN CALIFORNIA EELGRASS MITIGATION POLICY

(Adopted July 31, 1991; (last revised 08/30/05, Version 11)

Eelgrass (Zostera marina) vegetated areas are recognized as important ecological communities in shallow bays and estuaries because of their multiple biological and physical values. Eelgrass habitat functions as an important structural environment for resident bay and estuarine species, offering both predation refuge and a food source. Eelgrass functions as a nursery area for many commercially and recreational important finfish and shellfish species, including those that are resident within bays and estuaries, as well as oceanic species that enter estuaries to breed or spawn. Eelgrass also provides a unique habitat that supports a high diversity of non-commercially important species whose ecological roles are less well understood.

Eelgrass is a major food source in nearshore marine systems, contributing to the system at multiple trophic levels. Eelgrass provides the greatest amount of primary production of any nearshore marine ecosystem, forming the base of detrital-based food webs and as well as providing a food source for organisms that feed directly on eelgrass leaves, such as migrating waterfowl. Eelgrass is also a source of secondary production, supporting epiphytic plants, animals, and microbial organisms that in turn are grazed upon by other invertebrates, larval and juvenile fish, and birds.

In addition to habitat and resource attributes, eelgrass serves beneficial physical roles in bays and estuaries. Eelgrass beds dampen wave and current action, trap suspended particulates, and reduce erosion by stabilizing the sediment. They also improve water clarity, cycle nutrients, and generate oxygen during daylight hours.

In order to standardize and maintain a consistent policy regarding mitigating adverse impacts to eelgrass resources, the following policy has been developed by the Federal and State resource agencies (National Marine Fisheries Service, U.S. Fish and Wildlife Service, and the California Department of Fish and Game). While the intent of this Policy is to provide a basis for consistent recommendations for projects that may impact existing eelgrass resources, there may be circumstances (e.g., climatic events) where flexibility in the application of this Policy is warranted. As a consequence, deviations from the stated Policy may be allowed on a case-by-case basis. This policy should be cited as the Southern California Eelgrass Mitigation Policy (revision 11).

For clarity, the following definitions apply. "Project" refers to work performed on-site to accomplish the applicant's purpose. "Mitigation" refers to work performed to compensate for any adverse impacts caused by the "project". "Resource agencies" refers to National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS), and the California Department of Fish and Game (CDFG).

1. **Mitigation Need.** Eelgrass transplants shall be considered only after the normal provisions and policies regarding avoidance and minimization, as addressed in the Section 404 Mitigation Memorandum of Agreement between the Corps of Engineers and Environmental Protection Agency, have been pursued to the fullest extent possible prior

to the development of any mitigation program. Mitigation will be required for the loss of existing vegetated areas, loss of potential eelgrass habitat, and/or degradation of existing/potential eelgrass habitat. Mitigation for boat docks and/or related work is addressed in section 2.

2. **Boat Docks and Related Structures**. Boat docks, ramps, gangways and similar structures should avoid eelgrass vegetated or potential eelgrass vegetated areas to the maximum extent feasible. If avoidance of eelgrass or potential eelgrass areas is infeasible, impacts should be minimized by utilizing, to the maximum extent feasible, construction materials that allow for greater light penetration (e.g., grating, translucent panels, etc.). For projects where the impact cannot be determined until after project completion (i.e., vessel shading, vessel traffic) a determination regarding the amount of mitigation shall be made based upon two annual monitoring surveys conducted during the time period of August to October which document the changes in the bed (areal extent and density) in the vicinity of the footprint of the boat dock, moored vessel(s), and/or related structures. Any impacts determined by these monitoring surveys shall be mitigated per sections 3-12 of this policy. Projects subject to this section must include a statement from the applicant indicating their understanding of the potential mitigation obligation which may follow the initial two-year monitoring.

3. **Mitigation Map.** The project applicant shall map thoroughly the area, distribution, density and relationship to depth contours of any eelgrass beds likely to be impacted by project construction. This includes areas immediately adjacent to the project site which have the potential to be indirectly or inadvertently impacted as well as potential eelgrass habitat areas. Potential habitat is defined as areas where eelgrass would normally be expected to occur but where no vegetation currently exists. Factors to be considered in delineating potential habitat areas include appropriate circulation, light, sediment, slope, salinity, temperature, dissolved oxygen, depth, proximity to eelgrass, history of eelgrass coverage, etc.

Protocol for mapping shall consist of the following format:

1) Bounding Coordinates

Horizontal datum - Universal Transverse Mercator (UTM), NAD 83, Zone 11 is the preferred projection and datum. If another projection or datum is used, the map and spatial data must include metadata that accurately defines the projection and datum.

Vertical datum - Mean Lower Low Water (MLLW), depth in feet.

2) Units

Transects and grids in meters.

Area measurements in square meters/hectares.

3) File format

> A spatial data layer compatible with readily available geographic information system software must be sent to NMFS and any other interested resource agency when the area mapped has greater than 10 square meters of eelgrass. For those areas with less than 10 square meters, a table must be provided giving the bounding x,y coordinates of the eelgrass areas. In addition to a spatial layer or table, a hard-copy map should be included within the survey report. The projection and datum should be clearly defined in the metadata and/or an associated text file.

All mapping efforts must be completed during the active growth phase for the vegetation (typically March through October) and shall be valid for a period of 60 days with the exception of surveys completed in August - October. Surveys completed after unusual climatic events (i.e., high rainfall) may have modified requirements and surveyors should contact NMFS, CDFG, and USFWS to determine if any modifications to the standard survey procedures will be required. A survey completed in August - October shall be valid until the resumption of active growth (i.e., in most instances, March 1). After project construction, a post-project survey shall be completed within 30 days. The actual area of impact shall be determined from this survey.

4. **Mitigation Site.** The location of eelgrass transplant mitigation shall be in areas similar to those where the initial impact occurs. Factors such as, distance from project, depth, sediment type, distance from ocean connection, water quality, and currents are among those that should be considered in evaluating potential sites.

5. **Mitigation Size.** In the case of transplant mitigation activities that occur concurrent to the project that results in damage to the existing eelgrass resource, a ratio of 1.2 to 1 shall apply. That is, for each square meter adversely impacted, 1.2 square meters of new suitable habitat, vegetated with eelgrass, must be created. The rationale for this ratio is based on, 1) the time (i.e., generally three years) necessary for a mitigation site to reach full fishery utilization and 2) the need to offset any productivity losses during this recovery period within five years. An exception to the 1.2 to 1 requirement shall be allowed when the impact is temporary and the total area of impact is less than 100 square meters. Mitigation on a one-for-one basis shall be acceptable for projects that meet these requirements (see section 11 for projects impacting less than 10 square meters).

Transplant mitigation completed three years in advance of the impact (i.e., mitigation banks) will not incur the additional 20 percent requirement and, therefore, can be constructed on a one-for-one basis. However, all other annual monitoring requirements (see sections 8-9) remain the same irrespective of when the transplant is completed.

Project applicants should consider increasing the size of the required mitigation area by 20-30 percent to provide greater assurance that the success criteria, as specified in Section 10, will be met. In addition, alternative contingent mitigation must be specified, and included in any required permits, to address situation where performance standards (see section 10) are not likely to be met.

For potential eelgrass habitat, a ratio of 1 to 1 of equivalent habitat shall be created.

Degradation of existing eelgrass vegetated habitat that results in a reduction of density greater than 25 percent shall be mitigated on a one-for-one basis. For example, a 25 percent reduction in density of a 100 square meter (100 turions/meter) eelgrass bed to 75 turions/meter would require the establishment of 25 square meters of new eelgrass with a density at or greater than the pre-impact density. All other provisions of the Policy would apply.

6. **Mitigation Technique.** Techniques for the construction and planting of the eelgrass mitigation site shall be consistent with the best available technology at the time of the project. Donor material shall be taken from the area of direct impact whenever possible, but also should include a minimum of two additional distinct sites to better ensure genetic diversity of the donor plants. No more than 10 percent of an existing bed shall be harvested for transplanting purposes. Plants harvested shall be taken in a manner to thin an existing bed without leaving any noticeable bare areas. Written permission to harvest donor plants must be obtained from the California Department of Fish and Game.

Plantings should consist of bare-root bundles consisting of 8-12 individual turions. Specific spacing of transplant units shall be at the discretion of the project applicant. However, it is understood that whatever techniques are employed, they must comply with the stated requirements and criteria.

7. Mitigation Timing. For off-site mitigation, transplanting should be started prior to or concurrent with the initiation of in-water construction resulting in the impact to the eelgrass bed. Any off-site mitigation project which fails to initiate transplanting work within 135 days following the initiation of the in-water construction resulting in impact to the eelgrass bed will be subject to additional mitigation requirements as specified in section 8. For on-site mitigation, transplanting should be postponed when construction work is likely to impact the mitigation. However, transplanting of on-site mitigation should be started no later than 135 days after initiation of in-water construction activities. A construction schedule which includes specific starting and ending dates for all work including mitigation activities shall be provided to the resource agencies for approval at least 30 days prior to initiating in-water construction.

8. **Mitigation Delay.** If, according to the construction schedule or because of any delays, mitigation cannot be started within 135 days of initiating in-water construction, the eelgrass replacement mitigation obligation shall increase at a rate of seven percent for each month of delay. This increase is necessary to ensure that all productivity losses incurred during this period are sufficiently offset within five years.

9. **Mitigation Monitoring.** Monitoring the success of eelgrass mitigation shall be required for a period of five years for most projects. Monitoring activities shall determine the area of eelgrass and density of plants at the transplant site and shall be conducted at initial planting, 6, 12, 24, 36, 48, and 60 months after completion of the

transplant. All monitoring work must be conducted during the active vegetative growth period and shall avoid the winter months of November through February. Sufficient flexibility in the scheduling of the 6 month surveys shall be allowed in order to ensure the work is completed during this active growth period. Additional monitoring beyond the 60 month period may be required in those instances where stability of the proposed transplant site is questionable or where other factors may influence the long-term success of transplant.

The monitoring of an adjacent or other acceptable control area (subject to the approval of the resource agencies) to account for any natural changes or fluctuations in bed width or density must be included as an element of the overall program.

A monitoring schedule that indicates when each of the required monitoring events will be completed shall be provided to the resource agencies prior to or concurrent with the initiation of the mitigation (see attached monitoring and compliance summary form).

Monitoring reports shall be provided to the resource agencies within 30 days after the completion of each required monitoring period and shall include the summary sheet included at the end of this policy.

10. **Mitigation Success.** Criteria for determination of transplant success shall be based upon a comparison of vegetation coverage (area) and density (turions per square meter) between the **adjusted project impact area** (i.e., original impact area multiplied by 1.2) and **mitigation site(s)**. Extent of vegetated cover is defined as that area where eelgrass is present and where gaps in coverage are less than one meter between individual turion clusters. Density of shoots is defined by the number of turions per area present in representative samples within the original impact area, control or transplant bed. Specific criteria are as follows:

a. the mitigation site shall achieve a minimum of 70 percent area of eelgrass and 30 percent density as compared to the adjusted project impact area after the first year.

b. the mitigation site shall achieve a minimum of 85 percent area of eelgrass and 70 percent density as compared to the adjusted project impact area after the second year.

c. the mitigation site shall achieve a sustained 100 percent area of eelgrass bed and at least 85 percent density as compared to the adjusted project impact area for the third, fourth and fifth years.

Should the required eelgrass transplant fail to meet any of the established criteria, then a Supplementary Transplant Area (STA) shall be constructed, if necessary, and planted. The size of this STA shall be determined by the following formula:

$$STA = MTA \times (|A_t + D_t| - |A_c + D_c|)$$

MTA = mitigation transplant area.
A_t = transplant deficiency or excess in area of coverage criterion (%).
D_t = transplant deficiency in density criterion (%).
A_c = natural decline in area of control (%).
D_c = natural decline in density of control (%).

The STA formula shall be applied to actions that result in the degradation of habitat (i.e., either loss of areal extent or reduction in density).

Five conditions apply:

1) For years 2-5, an excess of only up to 30% in area of coverage over the stated criterion with a density of at least 60% as compared to the project area may be used to offset any deficiencies in the density criterion.
2) Only excesses in area criterion equal to or less than the deficiencies in density shall be entered into the STA formula.
3) Densities which exceed any of the stated criteria shall not be used to offset any deficiencies in area of coverage.
4) Any required STA must be initiated within 120 days following the monitoring event that identifies a deficiency in meeting the success criteria. Any delays beyond 120 days in the implementation of the STA shall be subject to the penalties as described in Section 8.
5) Annual monitoring will be required of the STA for five years following the implementation and all performance standards apply to the STA.

11. **Mitigation Bank.** Any mitigation transplant success that, after five years, exceeds the mitigation requirements, as defined in section 10, may be considered as credit in a "mitigation bank". Establishment of any "mitigation bank" and use of any credits accrued from such a bank must be with the approval of the resource agencies and be consistent with the provisions stated in this policy. Monitoring of any approved mitigation bank shall be conducted on an annual basis until all credits are exhausted.

12. **Exclusions.**

1) Placement of a single pipeline, cable, or other similar utility line across an existing eelgrass bed with an impact corridor of no more than 1 meter wide may be excluded from the provisions of this policy with concurrence of the resource agencies. After project construction, a post-project survey shall be completed within 30 days and the results shall be sent to the resource agencies. The actual area of impact shall be determined from this survey. An additional survey shall be completed after 12 months to insure that the project or impacts attributable to the project have not exceeded the allowed 1 meter corridor width. Should the post-project or 12 month survey demonstrate a loss of eelgrass greater than the 1 meter wide corridor, then mitigation pursuant to sections 1-11 of this policy shall be required.

2) Projects impacting less than 10 square meters. For these projects, an exemption may be requested by a project applicant from the mitigation requirements as stated in this policy, provided suitable out-of-kind mitigation is proposed. A case-by-case evaluation and determination regarding the applicability of the requested exemption shall be made by the resource agencies.

(last revised 08/30/05)

Southern California Eelgrass Mitigation Policy
Monitoring and Compliance Reporting Summary

PERMIT DATA:

Permit (Type, Number)	Issuance Date	Expiration Date	Agency Contact
ACOE:_____			
CDP:_____			
Other:_____			

EELGRASS IMPACT AND MITIGATION REQUIREMENTS SUMMARY:

Permitted Eelgrass Impact Estimate	(m^2)	
Actual Eelgrass Impact,	(m^2)	(post-const. survey date)
Eelgrass Mitigation Requirement	(m^2)	(mitigation plan ref.)
Impact Site Location	(location)	
Impact Site Center Coordinates	(define projection and datum)	
Mitigation Site Location	(location)	
Mitigation Site Center Coordinates	(define projection and datum)	

PERMITTEE CONTACT INFORMATION:

Project Name	(same as permit ref.)
Permittee Information	(permittee name)
	(mailing address)
	(city, state, zip)
	(permittee contact)
	(phone, fax., e-mail)
Mitigation Consultant	(consultant contact)
	(phone, fax., e-mail)

PROJECT ACTIVITY DATA:

Activity	Start Date	End Date	Reference Info.
Eelgrass Impact			
Installation of Eelgrass Mitigation			
Initiation of Mitigation Monitoring			

MITIGATION STATUS DATA:

Mitigation Milestone	Scheduled Survey	Survey Date	Area (m^2)	Density (turions/m^2)	Reference Info.
Requirement					
0-month					
6-month					
12-month					
24-month					
36-month					
48-month					
60-month					

FINAL ASSESSMENT:

Was mitigation met?	
Were mitigation and monitoring performed timely?	
Was delay penalty required or were supplemental mitigation programs necessary?	