DRAFT INITIAL STUDY / MITIGATED NEGATIVE DECLARATION
Seal Beach Water Infrastructure Capital Improvement Projects

Lead Agency:
CITY OF SEAL BEACH
Department of Public Works
211 8th Street
Seal Beach, CA 90740

Project Sponsor:
City of Seal Beach

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Project No. 9383

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PROJECT TITLE:	Seal Beach Water Infrastructure Capital Improvement Projects
APPLICANT:	City of Seal Beach Public Works 211 Eighth Street Seal Beach, CA 90740
APPLICANT'S CONTACT PERSON:	David Spitz, Engineering Division (562) 431-2527
GENERAL PLAN DESIGNATION:	Beach, Military, and Commercial-General
ZONING:	Beach, Commercial-General, Commercial-Professional Office, Open Space, Park-Golf, and Military

1.1 Introduction

The City of Seal Beach (City) has prepared this document to assess the potential environmental effects of improving seven (7) water infrastructure facilities as part of the City's Capital Improvement Plan (CIP). Compliance with CEQA is required because the City is requesting Joint Powers Authority funding for these improvements and the potential effects shall be evaluated holistically to assess for any potential cumulative effects. The City is seeking approval for six (6) water system maintenance, upgrades, and relocation projects; and one (1) beach and pier project to rehabilitate the Seal Beach Pier.

As a result of the City's Water Master Plan Update in 2012, these CIP projects address aging and damaged public works infrastructure in preparation for future growth and extreme events. In addition to the water system projects, the City also proposes utility upgrades and structural repairs to the Seal Beach Pier. The project locations are depicted in Figure 1. The specific details of the proposed projects are presented in Section 4.

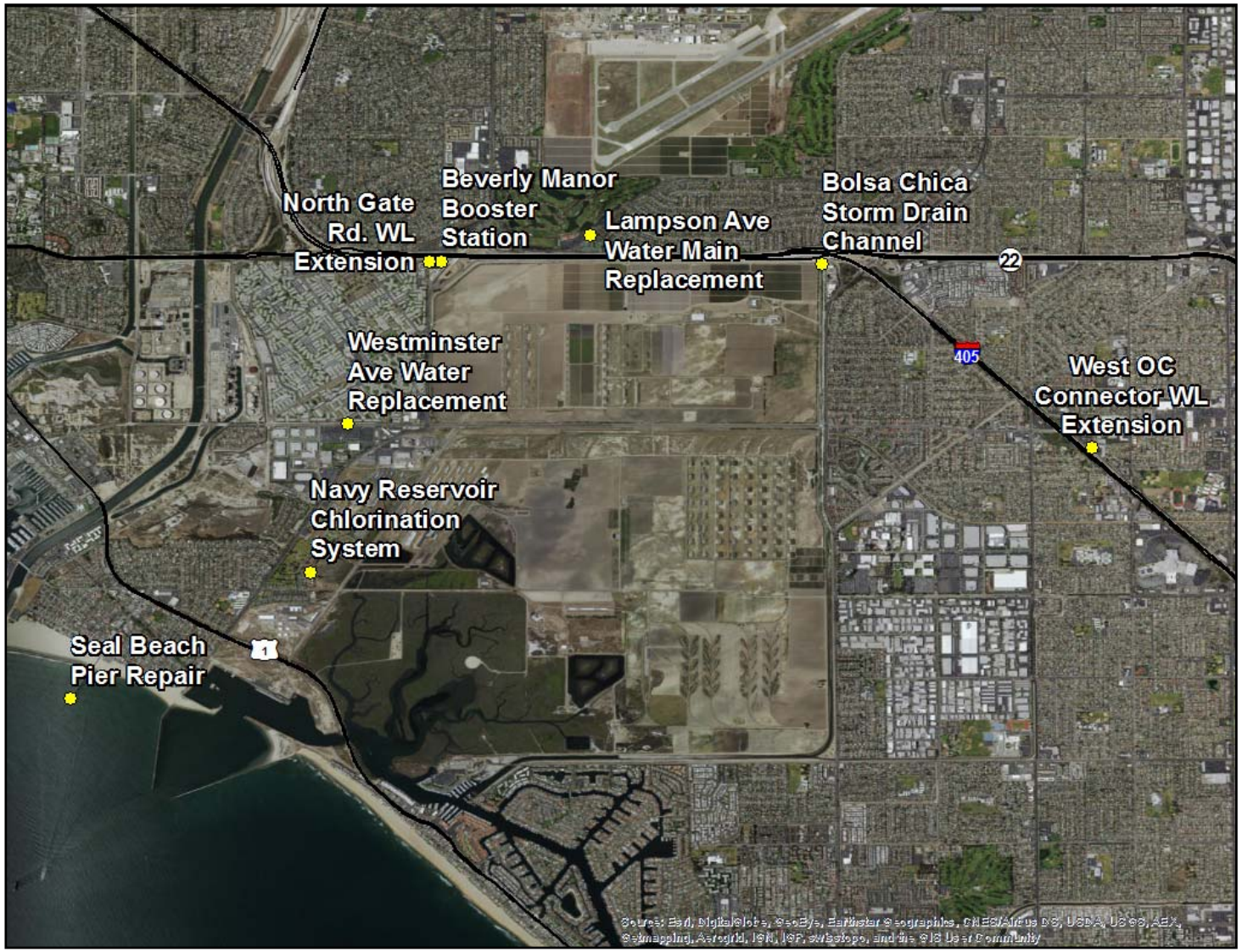

Figure 1. City of Seal Beach CIP Project Locations

1.2 Description of Project

The water infrastructure CIP projects have been categorized by Project Type for the purpose of examining similar projects and their respective potential environmental impacts. Table 1 summarizes the proposed projects.

Project Type A involves system upgrades of existing City facilities, including, but not limited to, monitoring equipment, electrical equipment, flow meters, etc. In addition, Project Type A projects involve rehabilitation or replacement of the existing sodium hypochlorite disinfection systems.

Project Type B involves the replacement, relocation, or extension of specific waterlines.

Project Type C involves the Seal Beach Pier and includes the proposed utility upgrades and structural repairs.

Table 1. Summary of CIP Projects Subject to Approval

Project I.D.	Project Category	Project Name	Location	Description
A-1	Water System	Water Station Rehabilitation – Beverly Manor	North Gate Rd.	Rehabilitation of well pump and booster station; Replacement of chlorination system
A-2	Water System	Navy Reservoir Chlorination System Upgrades	Navy Reservoir	Replacement of chlorination system
B-1*	Water System	West Orange County Connector Waterline Extension	Westminster Blvd.	Relocation and extension of feeder line
B-2	Water System	Westminster Ave. Water Main Replacement	Westminster Blvd.	Replacement of waterlines
B-3-a* B-3-b*	Water System	I-405 Widening Waterline Reconfiguration	a. North Gate Rd. b. Bolsa Chica Storm Drain Channel	Extension of encasement and relocation of waterlines
B-4	Water System	Lampson Ave. Water Main Replacement	Lampson Ave.	Replacement of waterline
C-1	Beach & Pier	Pier Repair & Utility Upgrades	City Pier	Replacement of utilities; Rehabilitation to damaged structural members

* The City of Seal Beach is a source of funding for B-1, B-3-a, and B-3-b, however the City of Seal Beach is not the project proponent and therefore is not responsible for project implementation. Project owners (OCTA and WOCWB) and their contractors are anticipated to be the parties responsible for compliance with avoidance, minimization, and mitigation measures.

The currently proposed water infrastructure projects were initially suggested in the updated Water Master Plan in 2012. The CIP was developed as a result of the hydraulic modeling of the existing water systems. The Water Master Plan Update identified approximately 5.5 miles of pipe that had exceeded their life expectancy.

Inspection of the Seal Beach Pier had identified a need to replace the pier fire line. In addition to the fire line, existing water, sewer, and gas lines have deteriorated over the years requiring replacement. Re-decking, as a result of line replacement, was identified as a need as well as some limited pile repair work. In May 2016, the pier was damaged by an electrical fire at the end of the pier. The fire burned a building that previously operated as a bait shop and the building that formerly housed a Ruby's Diner restaurant. The fire also caused structural damage to the pier's decking, stringers and pile wraps. Emergency repairs were performed by the City between May and July 2016. Some of the structural repairs identified in the 2015 Structural Safety Assessment Inspection Report by COWI, was completed through the emergency repair work, however any remaining repairs to the timber piles, including but not limited to straps, wraps, and concrete encasements, will still need to be completed for satisfactory structural safety[1].

1.3 Surrounding Land Uses and Setting

All proposed projects are within the corporate boundaries of the City of Seal Beach, Orange County, California. Project B-1 is located within the City of Westminster's city limits, according to the Westminster General Plan Land Use Map[2], and is maintained by the West Orange County Water Board. The Navy Reservoir project is located within the boundaries of the U.S. Naval Weapons Station, east of Seal Beach Boulevard and north of Bolsa Avenue. The land use zones for each project location is in Table 2 and depicted in Appendix B.

Table 2. General Plan Zoning for Proposed Projects

Project Name	Land Use
Water Station Rehabilitation – Beverly Manor	Public and Semipublic Facilities
Navy Reservoir Chlorination System Upgrades	Military
West Orange County Connector Waterline Extension	Commercial - General
Westminster Ave. Water Main Replacement	Commercial – General, Light Manufacturing, Residential
I-405 Widening Waterline Reconfiguration	State Highway, Flood Control Channel
Lampson Ave. Water Main Replacement	Recreation/Golf
Pier Repairs	Beach

[1] COWI - Structural Safety Assessment Inspection Report; Seal Beach Pier 2015
[2] City of Westminster General Plan Land Use Map, http://www.westminster-ca.gov/civicax/filebank/blobdload.aspx?BlobID=6844, Accessed on 8/18/2016

Photos of the Beverly Manor Booster Station Rehabilitation site (A-1) are provided in Figure 2 and Figure 3. Photos of the Navy Reservoir Chlorination System site (A-2) are provided in Figure 4. Figure 5 presents photos of the West Orange County Connector Waterline Extension site (B-1). Photos of the Westminster Ave Water Main Replacement site (B-2) are provided in Figure 6 while the I-405 Widening Waterline at North Gate Rd. and the Bolsa Chica Storm Drain Channel (B-3-b) are shown in Figure 7 and Figure 8, respectively. Photos of the Lampson Ave Water Main Replacement site (B-4) are provided in Figure 9. Finally, the City's Pier site (C-1) is shown in Figure 10.

2. Purpose and Need

2.1 Purpose of the Action

The purposes of the proposed water system projects grouped under Project Types A and B are to:

- Maintain compliance with water quality standards
- Upgrade aging infrastructure & prevent future breaks
- Resolve equipment controlling deficiencies

The purpose of the pier repairs under Project Type C is to rehabilitate damaged structural members of the pier and improve the pier's existing utility system. The City's goal is to restore the pier for public use and access.

2.2 Needs for the Actions

The City's Water Division of the Department of Public Works maintains 66 miles of pipeline, four active groundwater wells, an active service connection with Metropolitan Water District, emergency interconnections with other utilities, two reservoirs with a total storage capacity of seven million gallons (MG), two booster stations that constantly maintain water at approximately 60 pounds per square inch (psi), four disinfection sites, approximately 680 hydrants and approximately 5,500 service connections that collectively services a population of 24,128 people (US Census, July 2010). To meet present and future water resource demands within the City of Seal Beach, the City must maintain and implement upgrades to its aging infrastructure. Further detail on needs and justifications for each proposed project is provided in Section 4.2. Additionally, some waterline pipes are within the right-of-way of the upcoming I-405 widening project and will need to be relocated to maintain public services during these improvements and to be in compliance with Caltrans requirements.

The municipal pier serves as a popular destination for tourists and beach goers providing scenic views and recreational fishing opportunities for visitors of all ages.

3. Other Public Agency Approvals

A number of decisions, approvals, and permits must be obtained to implement the proposed projects, including:

Table 3. Other Required Public Agency Approvals

Approval Agency	A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
	Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs
U.S. Department of the Navy and/or U.S. Fish and Wildlife Service		✓						
U.S. Army Corps of Engineers						✓ (possible)		✓
Santa Ana Regional Water Quality Control Board	✓					✓		✓
West Orange County Water Board			✓					
California Department of Fish and Wildlife		✓				✓ (possible)		
California Department of Transportation			✓		✓	✓		
California Coastal Commission								✓
O.C. Flood Control District						✓		

4. Description of Alternatives

4.1 No Action

Under the no action alternative, none of the proposed projects would be implemented. Projects B-1, B-3-a, and B-3-b would be subject to identification in the I-405 widening project environmental documents. As a result, aging infrastructure would not be addressed and structural integrity of the pier would remain compromised. Without the implementation of these projects, safety to the public is threatened with the potential of water facility breaks and pier instability.

4.2 Proposed Action

The City of Seal Beach is proposing two (2) existing water system facilities upgrades and rehabilitation; four (4) replacement, relocation, and/or extension of waterlines; and one (1) pier structural repairs and utilities upgrades. Each project is thoroughly described in the following sections.

4.2.1 Type A Projects

A-1: Beverly Manor Booster Station Rehabilitation

The Beverly Manor Booster Station is housed in a water facility, originally built in 1969, on North Gate Rd. (formerly Beverly Manor Dr.) with a domestic water well, reservoir, and water treatment facility. The location of the facility can be seen in Figure 2.

Figure 2. Beverly Manor Booster Station Project Location

Rehabilitation of this booster station was planned for 2008/2009, and is therefore a high priority project allowing the City to effectively distribute domestic water. Existing facility site photos are shown in Figure 3. The proposed project would include the following components[3]:

- New electrical equipment and SCADA systems
- Pumps and new 12 inch discharge piping
- One (1) 150 HP and two (2) 75 HP VFD electric motors
- Three (3) natural gas engine drivers and a 350 kW natural gas emergency generator
- New 200 lb/day sodium hypochlorite chlorination system
- New 560 sq. foot chlorination building
- Replacement of flow meter and vaults
- New parking lot pavement
- New 2,200 sq. foot maintenance and storage building

[3] AKM Consulting Project Portfolio, http://www.akmce.com/us/services/projects/beverly-manor-booster-pump-station/, Accessed 8/18/2016

Source: City of Seal Beach CIP Budget Book, FY 2015/16 to 2019/20

Source: AKM Consulting Project Portfolio

Source: AKM Consulting Project Portfolio

Source: AKM Consulting Project Portfolio

Figure 3. Beverly Manor Existing Water Facility

A-2: Navy Reservoir Chlorination System Upgrades

This project involves the replacement of the 50 lbs/day on-site sodium hypochlorite generation facility, which feeds disinfectant to the outlet of the Navy Forebay Reservoir by means of a pump. There have been numerous problems with the current chlorine controller. The controller, sodium hypochlorite mixer, along with other chlorination system parts, need to be replaced to ensure the drinking water in Seal Beach continues to meet water quality requirements. The project location and existing facility can be seen in Figure 4.

Figure 4. Navy Reservoir Project Location and Existing Facility

4.2.2 Type B Projects

B-1: West Orange County Connector Waterline Extension

To accommodate the I-405 widening project, being undertaken by Orange County Transportation Authority (OCTA), the 33 inch OC-9 Transmission Main, operated by West Orange County Water Board (WOCWB), will need to be relocated. Feeder line #2 is composed of steel pipe and located on Westminster Blvd. The line would be relocated along Springdale, then east on Mahogany Avenue, running under I-405, and then north on Willow Lane, where it will reconnect at Westminster Blvd, as shown in Figure 5. Implementation of these projects in accordance with this environmental review is anticipated to be accomplished by OCTA, WOCWB, and the projects contractors.

Figure 5. West Orange County Connector Waterline Project Location

Westminster Avenue Water Main Replacement

The existing 18 inch cement mortar lined steel pipe and 12 inch ACP pipes on Westminster Blvd are nearing their expected useful life. As previous breaks have occurred on these lines, they are recommended to be replaced with either ductile iron or PVC piping. The pipeline is approximately 3-5 feet below the surface of the existing roadway. The waterlines extend from Seal Beach Blvd. and west to the fire hydrant before the cooling channel, as shown in Figure 6.

Figure 6. Westminster Water Main Project Location

I-405 Widening Waterline Reconfiguration

As a result of the upcoming I-405 widening project, there are two waterline pipes owned and operated by the City that will be in conflict with the project. Implementation of these projects in accordance with this environmental review is anticipated to be accomplished by OCTA and the projects' contractors.

A. A 12 inch encased cement mortar lined steel pipe crossing I-405 at North Gate Rd. (formerly Beverly Manor Dr.) is depicted in Figure 7. Caltrans will require the encasement to be extended to cover the new ROW and freeway alignment on the north and south sides of the freeway. The encasement extension is expected to require a maximum of 40 feet on each side.

Figure 7. North Gate Rd. Waterline Project Location

B. A 12 inch ACP water pipe running under I-405 at the Bolsa Chica Storm Drain Channel, which will be referred to as the Bolsa Chica Waterline for the purposes of this report (Figure 8, bottom photo taken September 30, 2016). The existing pipe connects College Park East southerly to the Bolsa Chica Well. Caltrans will require that the section of pipe parallel to their freeway be relocated outside their ROW.

Figure 8. Bolsa Chica Storm Drain Channel Transmission Main Project Location

Lampson Avenue Water Main Replacement

The Lampson Avenue 12 inch water main is in poor condition, experiencing deterioration, and has outlasted its useful life. The existing waterline has historically experienced numerous main line breaks[4]. The City proposes to replace this 12 inch mortar lined steel pipe with a new 16 inch ductile iron or PVC pipe. This pipe is approximately 3-5 feet below the surface of the roadway between Seal Beach Boulevard and Basswood Road.

Figure 9. Lampson Avenue Water Main Project Location

[4] City of Seal Beach Capital Improvement Budget Book 2015/16 – 2019/20

4.2.3 Type C Projects

Seal Beach Pier Repairs

Prior to the May 2016 fire, pier inspections indicated utility upgrades and structural repairs to the pier were necessary to maintain stability of the pier. The electrical fire at the end of the pier triggered emergency demolition and debris removal allowed pursuant to a CEQA statutory exemption, as identified in Section 15269 of the CEQA Guidelines. Fire induced structural repairs will include new structural components to replace charred decking, stringers, cross braces, pile wraps and caps (see Figure 10).

Figure 10. Seal Beach Pier May 2016 Fire Damage

The City is proposing to prepare the pier for a future tenant at the end of the pier. These upgrades and repairs would include replacing the utility lines and remaining structural repairs from the pre-fire pier inspection due to deterioration and aging. Remaining structural repairs would occur along the length of the pier. These proposed repairs would address degraded or split timber piles, damaged or missing pile wraps, cracked concrete encasements, corroded straps and caps, and loose pile-brace connections[1]. Location of the pier is shown in Figure 11.

Figure 11. Seal Beach Pier Project Location

The proposed work includes the following actions:

- Replacement of existing timber decking from Bents 69-82.
- Replacement of existing utility lines including the 6-inch fire line, 2-inch domestic water line, 4-inch sewer line, gas, and electrical conduits and distribution lines.
- Replacement of corroded utility line support clamps.
- Replacement of existing LED safety lighting including appurtenances and fixtures.
- Replacement of damaged or deteriorated stringers.
- Install new stringers to bring the loading capacity of the public platform to code.
- Reinforcement of split timber piles with fiberglass sleeves and cementitious or epoxy grout.
- Protection of charred timber piles with fiberglass sleeves and epoxy grout.
- Removal of damaged tops of piles and replace the section using the corbel approach (splicing a second cap member to the shortened piles).
- Repair of pile wraps short of the mudline or with abrasion damage by installing a wrap extension or fiberglass sleeves with cementitious grout.
- Replacement of damaged or missing pile wraps.
- Replacement of broken pile at Bent 82.
- Repair of cracked concrete encasements with fiberglass sleeves and cementitious or epoxy grout.
- Replacement of marginal transverse and longitudinal braces.
- Repair of handrail sections and posts with splits, missing nails, or charred rail.
- Replacement of missing or corroded connecting hardware.
- Replacement of missing or reinstall loose blocking.
- Replacement of termite damaged rail.

Construction best management practices will be implemented during pier work and will include the following:

- Use of turbidity curtains during any installation of piles or sleeves. The turbidity curtains will be left in place until the clarity of the water inside the curtains approaches normal conditions based on visual observations.
- All construction equipment shall be in proper operating condition. The construction contractor will ensure that the equipment is properly maintained and keep an equipment maintenance log.
- No construction materials, equipment, debris or waste will be stored where it may be subject to inundation or dispersion in the waters.
- Floating debris will be contained with the project site and removed as soon as possible but no later than the end of the day.
- Reasonable and prudent measures will be taken to prevent all discharge of fuel or oily waste from construction equipment. The construction contractor will have adequate equipment available to contain any such spill immediately.

Affected Environment

The CEQA Environmental Checklist has been completed for the proposed project and is located on page 20 of this report. The City of Seal Beach is a source of funding for B-1, B-3-a, and B-3-b, however the City of Seal Beach is not the project proponent and therefore is not responsible for project implementation. Project owners (OCTA and WOCWB) and their contractors are anticipated to be the parties responsible for compliance with avoidance, minimization, and mitigation measures.

Table 4. CIP Projects Avoidance, Minimization, or Mitigation Measures Summary Table

ID	Avoidance, Minimization, or Mitigation Measure and Brief Description	Applicable Projects
AQ-1	The construction contractor shall comply with SCAQMD Rule 403 to control fugitive dust emissions during construction activities. Fugitive dust emissions generally must meet a "no visible dust" criterion at the point of emission. Best available control measures shall be used during the applicable construction activities.	**All**
AQ-2	The construction contractor shall locate equipment and materials storage sites at least 75 feet from residential uses. Construction areas shall be kept clean and orderly.	**All**
AQ-3	The construction contractor shall schedule construction vehicles to avoid peak travel times as much as possible to reduce congestion and related air quality impacts caused by idling vehicles along local roads.	**All**
BIO-1	The construction contractor shall use temporary fencing within the construction site to delineate paved versus unpaved surfaces and avoid impacts to potential foraging species. Construction equipment shall only utilize paved surfaces.	**A-2**
BIO-2	The exact locations of existing trees and vegetation to be preserved shall be conducted during the final design and included in plans.	**B***
BIO-3	The construction contractor shall protect existing vegetation to be preserved with temporary fencing.	**B***
BIO-4	To avoid impacts to nesting birds, any native vegetation removal or tree (i.e., native or exotic) trimming activities will occur outside of the nesting bird season (Feb. 15th through Aug. 31st). If vegetation clearing is necessary during the nesting season, a qualified biologist will conduct a preconstruction survey within 2 weeks of start of construction to identify the locations of nests. Should nesting birds by found, an exclusionary buffer will be established by the biologist. This buffer shall be clearly marked in the field by construction personnel under guidance of the biologist, and construction or clearing will not be conducted within this zone until the biologist determines that the young have fledged or the nest is no longer active. In addition, work shall be limited to daylight hours and avoid sunrise/sunset.	**B-3-b*** **B-4**

* The City of Seal Beach is a source of funding for B-1, B-3-a, and B-3-b, however the City of Seal Beach is not the project proponent and therefore is not responsible for project implementation. Project owners (OCTA and WOCWB) and their contractors are anticipated to be the parties responsible for compliance with avoidance, minimization, and mitigation measures.

ID	Avoidance, Minimization, or Mitigation Measure and Brief Description	Applicable Projects
BIO-5	Construction work on the shoreline shall avoid Grunion run season (March through September, per CDFW annual schedule). If work in the intertidal zone (estimated to be within -2.8 and +2.7 feet MSL[6]) during run season is absolutely required, a certified biologist shall be present to monitor grunion activity during the predicted run. Should the biologist determine that grunion spawning has occurred within the project footprint, work activities shall occur landward of the highest high tide line to avoid impacting grunion eggs buried in the sand.	**C-1**
BIO-6	A qualified biologist will provide environmental training for all construction crew members on the identification of the following special-status species with the potential to occur at the respective project sites: • B-3-b: Southern Tarplant (*Centromadia parryi* ssp. *australis*), San Bernardino Aster (*Symphyotrichum defoliatum*), Southwestern Spiny Rush (*Jancus acutus* ssp. *leopoldii*), Bank Swallow (*Riparia riparia*), and Tri-colored Blackbird (*Agelaius tricolor*) • B-4: Burrowing Owl (*Athene cunicularia*) • C-1: California Grunion (*Leuresthes tenius*)	**B-3-b*** **B-4** **C-1**
CUL-1	Work shall be halted in the vicinity of any previously known or unknown buried cultural materials unearthed during construction until a qualified archaeologist can assess the significant of the materials. Any mitigation measures required by the archaeologist will be implemented.	**B***
CUL-2	If human remains and associated artifacts are encountered during ground-disturbing activities, then the provisions of Public Law 101601, Section 5097.98 and .99 of the PRC and Section 7050 of the Health and Safety Code, will be followed. Any further mitigation measures required shall be developed.	**B***
GHG-1	The construction contractor shall properly tune and maintain construction equipment and vehicles.	**All**
HAZ-1	Prior to construction, the construction contractor shall develop and implement a Spill Prevention, Control, and Countermeasures (SPCC) Plan which shall at least include the following: storage locations, spill prevention measures, training requirements, waste-specific spill response actions, spill response kits, and notifications to authorities.	**A** **B-1*** **B-3-b***
HAZ-2	The construction contractor shall train all employees to promptly contain, report, and/or clean up any hazardous material spill.	**A** **B-1*** **B-3-b***

* The City of Seal Beach is a source of funding for B-1, B-3-a, and B-3-b, however the City of Seal Beach is not the project proponent and therefore is not responsible for project implementation. Project owners (OCTA and WOCWB) and their contractors are anticipated to be the parties responsible for compliance with avoidance, minimization, and mitigation measures.

[6] NOAA – LA Outer Harbor Station, 1983-2001 Tidal Epoch

ID	Avoidance, Minimization, or Mitigation Measure and Brief Description	Applicable Projects
HAZ-3	The project owner(s) shall obtain a Corrosive Hazardous Materials Permit from the local fire department, in accordance with NFPA 704, to ensure proper design, placement, and signage. Storage of sodium hypochlorite solutions shall be in compliance with NFPA 430.	**A**
HAZ-4	An approved and permitted Cal/OSHA contractor shall expose, cut, and handle all ACP pipe using cutting, handling, and transportation procedures in accordance with OSHA standard 1926.1101.	**B-1*** **B-3-b***
HAZ-5	If signs of potential impact (e.g. odors, discolored soil, and any hazardous waste) are observed during construction activity, construction shall cease and the appropriate authorities will be contacted.	**All**
WQ-1	Construction activities shall follow BMP requirements of the North Orange County MS4 Permit.	**All**
NOI-1	Sound control shall conform to the City's Noise Ordinance and construction shall take place during the City of Seal Beach construction hours of 7:00 a.m. to 8:00 p.m. Mondays through Fridays and 8:00 a.m. to 8:00 p.m. on Saturdays. No construction shall be conducted on Sundays and City holidays.	**All**
REC-1	Coastal access along the pedestrian promenade and adjacent beaches shall remain open and accessible to the public during construction.	**C-1**
T-1	Due to the proximity of these projects to a fire station, the construction contractor shall coordinate with Orange County Fire Authority at least two weeks prior to construction to inform them on timing and site access. Avoidance and minimization measures, pursuant to Title 9 (California Fire Code) of the Seal Beach Municipal Code into the final specifications and plans.	**A-1** **B-3-a***
T-2	During construction, emergency service providers will be alerted at least two weeks in advance of any temporary lane reductions and expected delays so they have adequate time to make appropriate accommodations to ensure prompt emergency response.	**All**
T-3	Transportation of hazardous materials (e.g. hypochlorite, ACP, etc.) shall be in accordance with Title 11 of the Seal Beach Municipal Code.	**A** **B-1*** **B-3-b***
T-4	The construction contractor shall schedule construction vehicles to avoid and minimize impacts to traffic and circulation. The contractor shall submit a plan with the potential routes to the project owner(s) at least 2 weeks prior to construction. Any deviation from these plans must be submitted and approved by the project owner(s) at least one week prior to alternate route use.	**All**
T-5	The community shall be notified of any temporary lane reductions and expected delays prior to construction activities. Examples of notifications can be via changeable message signs, posting on the City of Seal Beach website, etc.	**All**

* The City of Seal Beach is a source of funding for B-1, B-3-a, and B-3-b, however the City of Seal Beach is not the project proponent and therefore is not responsible for project implementation. Project owners (OCTA and WOCWB) and their contractors are anticipated to be the parties responsible for compliance with avoidance, minimization, and mitigation measures.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture & Forest Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Geology & Soils
☐ Greenhouse Gas Emissions	☐ Hazards & Hazardous Materials	☐ Hydrology & Water Quality
☐ Land Use & Planning	☐ Mineral Resources	☐ Noise
☐ Population & Housing	☐ Public Services	☐ Recreation
☐ Transportation/ Circulation	☐ Utilities & Service Systems	☐ Mandatory Findings of Significance

DETERMINATION (To be completed by the Lead Agency.)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☑ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a significant effect(s) on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets, if the effect is a "potentially significant impact" or "potentially significant unless mitigated." An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect

on the environment, there WILL NOT be a significant effect in this case because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards and (b) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Submitted by:

Planner Signature Date

Prepared by:

Signature Date

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

CITY OF SEAL BEACH
ENVIRONMENTAL CHECKLIST

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
I. AESTHETICS					
Would the project:					
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☑
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☑
c)	Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☐	☑
d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☑

IMPACT ANALYSIS

a) *Have a substantial adverse effect on a scenic vista?*

Project Type A
The proposed water system projects, A-1 and A-2, are contained within their own facilities, and therefore would not affect the visual quality of the area.

Project Type B
The proposed water system maintenance projects would involve the replacement, extension, and/or relocation of waterlines below or near the ground surface. Therefore, these projects would not impact scenic vistas.

Project Type C
Beaches are part of the existing visual character of the area. The pier repair project will not significantly impact scenic vistas at Seal Beach. Repair of the existing

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

damaged pier may be considered an improvement of the visual character since a portion of the pier was recently damaged by a fire.

b) *Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?*

Project Types A-B
The proposed waterline projects are not within a designated scenic highway therefore would not damage any corresponding scenic resources.

Project Type C
Beaches are part of the existing visual character of the area, therefore, the pier repair project will not impact scenic vistas at Seal Beach. Repair of the existing damaged pier may be considered an improvement of the visual character.

c) *Substantially degrade the existing visual character or quality of the site and its surroundings?*

Project Type A
A-1 is located behind the Clean Energy building and between the Orange County Fire Station and I-405. The facility is separated from the I-405 with a chain-linked fence and is on a land designation of Public and Semi-public Facilities (see attached Land Use Map). Therefore, the proposed upgrades would not degrade the existing visual character of the site or its surroundings.

A-2 is located within a Military designated land use, northeast of the Seal Beach Blvd. and Bolsa Ave. intersection. The current facility is surrounded by pavement, undeveloped land, and located behind residential facilities within the Military jurisdiction. Therefore, minor improvements to the existing facility will not degrade the visual character of the site or its surroundings.

Project Type B
Replacement or relocation of proposed waterlines will be under or near the ground surface, therefore, visual impacts would be minor and would not impact the visual character of the project footprint or surrounding areas.

Project Type C
The proposed pier repairs would be consistent with the existing visual character. All repairs are within the pier footprint. Thus, the visual character and quality of Seal Beach shall not be degraded.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

d) *Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?*

Project Types A-B
All proposed projects would not create a new source of light or glare.

Project Type C
The City Pier had LED lighting throughout the length of the pier prior to the fire. The City is proposing to repair the pier to its existing function, including the pier lighting. Therefore, no new source of light would be created by the proposed project.

FINDINGS
No impacts would occur to aesthetics as a result of the proposed projects.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
II. AGRICULTURE AND FOREST RESOURCES					
Would the project:					
a)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☑
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☑
c)	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☑
d)	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☑
e)	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☑

IMPACT ANALYSIS

a) *Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?*

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

Project Type A
According to the Farmland Mapping and Monitoring Program of the California Resource Agency, Beverly Manor Booster Station is located on a designated Urban and Built-Up Land area[7]. In addition, the Navy Reservoir is located on an area designated as Other Land. Therefore, will not be converting farmland.

Project Type B
Lampson Avenue and the West Orange County waterline projects are in Urban and Built-Up areas, thus will not be converting farmland. The Bolsa Chica I-405 project is within the Bolsa Chica Drainage Channel, therefore, will not impact farmland. The Westminster waterline project is located in an area designated as Other Land, thus will not be impacting farmland.

Project Type C
The pier project is not within designated farmland.

b) *Conflict with existing zoning for agricultural use, or a Williamson Act contract?*

Project Types A-C
None of the CIP Projects are zoned for agricultural use, therefore the projects will not conflict with agricultural use.

c) *Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?*

Project Types A-C
The only forest designated area within the City of Seal Beach is Gum Grove Park and is not located within the vicinity of any of the proposed projects.

d) *Result in the loss of forest land or conversion of forest land to non-forest use?*

Project Types A-C
No loss of forest land or conversion of forest land to non-forest use will result from the proposed projects.

e) *Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?*

[7] Orange County Important Farmland 2014, http://www.conservation.ca.gov/dlrp/fmmp, Accessed 8/18/2016.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

Project Types A-C

The proposed projects will not cause any additional changes in the existing environment which would result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use.

FINDINGS

No impacts would occur to agricultural or forest resources as a result of the proposed projects.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
III. AIR QUALITY					
Would the project:					
a)	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☑
b)	Violate any air quality standard or contribute to an existing or projected air quality violation?	☐	☐	☐	☑
c)	Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	☑
d)	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☑	☐
e)	Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☑

III. AIR QUALITY

ENVIRONMENTAL SETTING

The South Coast Air Quality Management District (SCAQMD) has jurisdiction over an area of approximately 10,743 square miles. This area includes all of Orange County, Los Angeles County except for the Antelope Valley, the non-desert portion of western San Bernardino County, and the western and Coachella Valley portions of Riverside County. The City of Seal Beach is located within the South Coast Air Basin (SCAB) which is a sub-region of the SCAQMD jurisdiction. While air quality in this area has improved, the Basin requires continued diligence to meet air quality standards.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

POLLUTANTS AND EFFECTS

Criteria air pollutants are defined as pollutants for which the federal and state governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The federal and state standards have been set, with an adequate margin of safety, at levels above which concentrations could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort. Pollutants of concern include: Ozone (O_3), Nitrogen Oxide (NO_2), Carbon Dioxide (CO), Sulfur Dioxide (SO_2), particulate matter with an aerodynamic diameter less than or equal to 10 microns (PM_{10}), particulate matter with an aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$), and lead. These pollutants are discussed below[8].

Within each of the project areas, ambient concentrations of CO and O_3 are anticipated to be predominantly influenced by motor vehicle activity. Emissions of NO_2, PM_{10} and $PM_{2.5}$ can be generated from both mobile and stationary sources. Hydrocarbons (HC) and NO_2 emissions from motor vehicle fuels are precursors in the formation of O_3. O_3 is formed through a series of reactions that take place within the atmosphere in the presence of sunlight. Since these reactions are relatively slow and occur as the pollutants are diffusing downwind, elevated levels of O_3 are often found many miles from the source or the precursor pollutants. Therefore, the effects of HC and NO_2 are often examined during the regional planning process, and only qualitatively assessed during a project-level analysis.

AIR QUALITY ASSESSMENT

Common construction activities associated with water service infrastructure repair or replacement and infrastructure rehabilitation tasks generally include site preparation, earthmoving, paving of roadway surfaces, the erection and/or demolition of structures. Earth moving activities may consist of grading, trenching, soil compaction and minor cut and fill operations.

The potential emissions generated from common construction activities include particulate matter and NO_2 from fuel combustion/exhaust, Volatile Organic Compounds (VOC) from paving activities, and fugitive dust from soil disturbance and construction/demolition actions. The release of fugitive dust particles caused by construction equipment emissions are generally short-term and in the case of the proposed projects are expected to occur only when construction activities are underway. The proposed projects are replacing existing facilities.

[8] The following descriptions of health effects for each of the criteria air pollutants associated with project construction and operations are based on the EPA's "Six Common Air Pollutants" (EPA 2012) and the CARB "Glossary of Air Pollutant Terms" (CARB 2012) published information.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

Each project's potential emissions from stationary, mobile or areas sources were considered both independently, and in a cumulative fashion for the purpose of assessing any potential cumulative effects to air quality associated with project construction.

The SCAQMD is currently designated as non-attainment for the following criteria pollutants: O_3, CO, particulate matter smaller than 10 and 2.5 microns (PM_{10} and $PM_{2.5}$), and lead[9]. PM_{10} is primarily due to activities that re-suspend dust, such as emissions from paved and unpaved roads and construction. $PM_{2.5}$ is primarily a byproduct of combustion; therefore, is from sources such as vehicles, and stationary combustion sources. Table 5 shows the SCAQMD criteria pollutant standards.

The following daily pollutant thresholds have been identified by SCAQMD for construction.

Table 5. SCAQMD Air Quality Significance Construction Thresholds

Pollutant	Construction Daily Thresholds
Nitrogen Oxides	100 lbs./day
VOC	75 lbs./day
PM_{10}	150 lbs./day
$PM_{2.5}$	55 lbs./day
Sulfur Oxides	150 lbs./day
CO	550 lbs./day
Lead	3 lbs./day

[9] NAAQS and CAAQS Attainment Status for SCAB – February 2016, Accessed on 9/15/2016

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

Emission factors for mobile sources have been estimated based on the anticipated timeframe of the various project's construction activities and vehicle miles traveled per day (VMT). Truck trips for each project were estimated based on the proposed material required for in-kind replacement. Pipeline diameter was used to determine the length and number of pipe segments that could be transported in a single truck load. The construction timeframe for completion of all proposed projects has been projected to be between 9 and 12 months. A nine month period was chosen to represent the timeframe for the overall project construction phase since it represents a more conservative approach when determining the daily VMT. Table 6 provides the daily VMT estimates by project, which were based on project-specific VMT data. The daily VMT estimates were derived by multiplying the average daily trips, to and from a site, by the estimated miles traveled per trip. The various daily VMT estimates are useful when estimating the potential daily weight (in pounds per day) of criteria pollution emissions generated from construction related activities at the project sites. Further discussion regarding estimating truck trips is provided in the Greenhouse Gas Emissions discussion.

Table 6. Trip based VMT Calculation

Project	Total Trips	Daily Vehicle Trips (Over 9-Month Timeframe)	Miles Per trip	Daily VMT by project
A-1	5	0.019	125	2.315
A-2	5	0.019	125	2.315
B-1*	22	0.081	550	44.815
B-2	20	0.074	600	44.44
B-3-b*	2	0.007	60	0.444
B-3-b*	2	0.007	60	0.444
B-4	12	0.044	300	13.333
C-1	20	0.074	500	37.037

* The City of Seal Beach is a source of funding for B-1, B-3-a, and B-3-b, however the City of Seal Beach is not the project proponent and therefore is not responsible for project implementation. Project owners (OCTA and WOCWB) and their contractors are anticipated to be the parties responsible for compliance with avoidance, minimization, and mitigation measures.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

Vehicle exhaust generation and equipment operation activities are anticipated to be the primary contributors to criteria emission pollution for the proposed projects. The use of the EPA's averaged Heavy-Duty Gasoline-fueled Vehicles (HDGV) and Heavy-Duty Diesel Vehicles (HDDV), emission rates allows for the estimation of potential emission amounts. Table 7 illustrates the Environmental Protection Agency's (EPA's) estimated average in-use emission rates for Heavy-Duty Trucks. The average in-use emission rates were used to encompass all categories of HDGV and HDDV vehicles. Gross Vehicle Weight Ratings that are represented by these averages include full-size pick-up trucks and large passenger vans (Class IIb) to double long-haul semi-tractor trailer rigs (Class VIIIb). As smaller and newer trucks could be used for waterlines of smaller diameters or smaller loads of material, these emission rates represent a conservative approach.

Table 7. Average In-Use Emission Rates for Heavy-Duty Vehicles

Pollutant	Average In Use Emission for HDGV (grams per mile)*	Average In Use Emission for HDDV (grams per mile)*
Nitrogen Oxides	2.914	8.613
Volatile Organic Compounds	1.586	0.447
PM_{10}	0.051	0.219
$PM_{2.5}$	0.044	0.202
CO	13.130	2.311

*Source: EPA, Office of transportation and Air Quality, EPA420-F-08-027, October 2008.

(1) Based on total daily average of vehicle miles traveled per day of the various projects

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

Utilizing EPA's emission data, the cumulative amount of criteria pollutant emissions for the proposed projects can be estimated cumulatively by multiplying the estimated total VMT of the projects by the average in-use emissions for heavy-duty vehicles. Table 8 provides an estimate of the combined project emissions based on cumulative daily VMT data derived from Table 2, and EPA's estimated average in-use rates for Heavy-Duty Trucks.

Table 8. Average Estimated Cumulative Emissions

Pollutant	Average Estimated Cumulative Emissions (lbs./day)(1)	SCAQMD Construction Daily Threshold (lbs./day)
Nitrogen Oxides	0.940 (HDGV) 2.753 (HDDV)	100
Volatile Organic Compounds	0.507 (HDGV) 0.143 (HDDV)	75
PM_{10}	0.016 (HDGV) 0.070 (HDDV)	150
$PM_{2.5}$	0.014 (HDGV) 0.065 (HDDV)	55
CO	4.197 (HDGV) 0.739 (HDDV)	550

(1) Based on EPA's total daily average of vehicle miles traveled per day of the various projects

Data provided in Table 8 shows that when considered cumulatively, the proposed construction projects would generate short-term VOC, NOx, CO and PM emissions, but in amounts that are not anticipated to exceed criteria pollutant thresholds.

Fugitive dust emission could temporarily contribute to air emission levels, even though the short-term nature of the construction projects indicates that the SCAQMD criteria pollutant thresholds, would not be exceeded. Particulate emission would be anticipated to increase in the project areas as dust from construction activities collects in the air surrounding the various project. Construction equipment would be expected to temporarily produce nominal levels of exhaust emissions.

In addition to standard construction protocols, included within a Water Pollution Control Program (WPCP) for the projects, compliance with SCAQMD Rule 403-Fugitive Dust, shall be confirmed prior to and during each phase of construction. The City's Representative and/or Construction Manager should periodically inspect the work area

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

to ensure that construction-related activities do not generate excessive amounts of dust or cause other in-air disturbances (e.g. noise).

IMPACT ANALYSIS

a) *Conflict with or obstruct implementation of the applicable air quality plan?*

Project Types A-C
Construction of the projects would not obstruct the implementation of the South Coast Air Quality Management District (AQMD) or the Los Angeles portion of the California State Implementation Plan (SIP) as SCAQMD project-level thresholds for pounds of pollutants generated each day would not be exceeded (Table 8).

b-c) *Violate any air quality standard or contribute to an existing or projected air quality violation? Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?*

Project Types A-C
Based on the cumulative emissions data (Table 8), the cumulative total construction emissions would not exceed SCAQMD significance thresholds.

The proposed projects would not contribute significantly to any criteria pollutant for which the South Coast Air Basin is in non-attainment. The cumulative effect of the proposed projects would be minimized by coordinating construction windows to allow for adequate dissipation.

d) *Expose sensitive receptors to substantial pollutant concentrations?*

The proposed projects would generate short-term air pollutant emissions associated with construction activities, however would be less than significant with construction best management practices. As the proposed projects are improving existing infrastructure, they would not generate long-term emissions. Construction activities for each individual project would be minimal and will generate emissions below regional and localized SCAQMD thresholds, therefore, cumulative impacts from the proposed projects shall be evaluated from here on.

Standard construction protocols implemented during construction would reduce these impacts to below a level of significance. Fugitive dust associated with construction/demolition activities, disturbed surface area, or heavy- and light-duty

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

vehicular movement[10] shall be controlled through best available control measures in compliance with SCAQMD Rule 403.

Project Type A

The proposed projects are within close proximity to residential areas and the J.H. McGaugh Elementary School and the Leisure World retirement community. Project A-1 is about 0.4 miles from the retirement community and A-2 is about 0.4 miles from the elementary school. Construction activities will follow best management practices to minimize effects to these sensitive receptors.

AQ-1: The construction contractor shall comply with SCAQMD Rule 403 to control fugitive dust emissions during construction activities. Fugitive dust emissions generally must meet a "no visible dust" criterion at the point of emission. Best available control measures shall be used during the applicable construction activities.

AQ-2: The construction contractor shall locate equipment and materials storage sites at least 75 feet from residential uses. Construction areas shall be kept clean and orderly.

AQ-3: The construction contractor shall schedule construction vehicles to avoid peak travel times as much as possible to reduce congestion and related air quality impacts caused by idling vehicles along local roads.

Project Type B[11]

The Sunrise Assisted Living Facility is located along Lampson Avenue. Best management practices and construction timing will be utilized to minimize exposure to sensitive receptors, as the projects are located near residential areas and residential care facilities.

AQ-1, AQ-2, AQ-3

Project Type C

Construction of the project will not impact sensitive receptors to substantial pollutant concentrations.

[10] AQMD Rule book – Rule 403. Fugitive Dust, Accessed 9/14/2016

[11] The City of Seal Beach is a source of funding for B-1, B-3-a, and B-3-b, however the City of Seal Beach is not the project proponent and therefore is not responsible for project implementation. Project owners (OCTA and WOCWB) and their contractors are anticipated to be the parties responsible for compliance with avoidance, minimization, and mitigation measures.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

e) *Create objectionable odors affecting a substantial number of people?*

Project Type A

The proposed projects may have minor odors associated with the maintenance and replacement of sodium hypochlorite systems. Odors will be minimized by proper handling and installation/replacement of air pollution control devices.

Project Types B-C

Construction activities are not listed as a source of odor by complaints received by the AQMD, therefore, is not anticipated to affect people with objectionable odors.

FINDINGS

Although the proposed projects are cumulatively not expected to exceed air pollutant emission thresholds, short-term air pollutant emissions associated with construction activities could impact nearby sensitive receptors. However, these impacts would be less than significant with implementation of the listed avoidance, minimization or mitigation measures.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES					
Would the project:					
a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☑	☐
b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☑
c)	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☑
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impeded the use of native wildlife nursery sites?	☐	☐	☐	☑
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☑

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☑	

DISCUSSION

A California Natural Diversity Database (CNDDB) search for special-status species was conducted for the USGS Seal Beach and Los Alamitos topographic quads[12]. The species were analyzed to determine if there may be a potential for occurrence at the project sites based on their preferred habitat, foraging, and nesting behavior. The complete analysis is provided in Appendix C. Species that may have habitat present were either categorized as having the potential to occur or having no impact due to the proposed projects. Appendix C provides the justifications for determining which species have the potential to occur and those species are further discussed as follows. Marine biological assessments for previous projects within the vicinity of Project C-1 in 2015 and 2008. These reports are provided in Appendix D.

PLANTS

Species: Southern Tarplant (*Centromadia parryi* ssp. *australis)* – CNPS: List 1B.1
Project: B-3-b[11]
The southern tarplant is an annual herb that occurs in saline or alkaline soils near the coast[13]. Flowering season is from May through November and is identified by a yellow flower with prickly foliage. Project B-3-b has discolored soil that could be suitable for the southern tarplant. If permits are required, avoidance, minimization, or mitigation measures will be implemented in compliance with the permit. If permits are not required, further biological studies will be conducted during final design to determine if the species is present and best management practices will be used to prevent material from falling in the channel.

Species: San Bernardino Aster *(Symphyotrichum defoliatum)* – CNPS: List 1B.2
Project: A-2 and B-3-b[11]
San Bernardino aster is a rhizomatous perennial herb that could occur in marshes and swamps, as well as valleys and foothill grasslands. Flowering season is from July through November and it identified by a pale purple flowers with long, narrow leaves. These habitats are present at A-2 and B-3-b. If permits are required, avoidance, minimization, or mitigation measures will be implemented in compliance with the permit. If permits are not required, further biological studies will be conducted during final

[12] CDFW – California Natural Diversity Data Base, https://map.dfg.ca.gov/bios/?tool=cnddbQuick, Accessed 8/26/2016 and 9/26/2016.
[13] Oscar F. Clarke – *Flora of the Santa Ana River and Environs*, 2007

design to determine if the species is present and best management practices will be used to prevent material from falling in the channel.

Species: Southwestern Spiny Rush *(Jancus acutus* ssp. *leopoldii)* – CNPS: List 4.2
Project: B-3-b[11]
Southwestern spiny rush is a rhizomatous perennial herb that could occur in alkaline, wet places. Flowering season is from May through June and is identified as a shrub with long, narrow, prickly grass. Project B-3-b has discolored soil that could be suitable for the southwester spiny rush. If permits are required, avoidance, minimization, or mitigation measures will be implemented in compliance with the permit. If permits are not required, further biological studies will be conducted during final design to determine if the species is present and best management practices will be used to prevent material from falling in the channel.

Species: Seaside Cistanthe *(Cistanthe maritima)* – CNPS: List 4.2
Project: A-2
Seaside cistanthe is an annual herb that can occur in valleys and grasslands. Flowering season is from March through June and is identified as a bright magenta flower with thick, wide leaves. Project A-2 is an annual grassland that could potentially support this species. Further biological studies will be conducted during final design to determine if the species is present and best management practices will be used to prevent material from falling in the channel.

BIRDS
Species: Bank Swallow *(Riparia riparia)* – State Threatened
Project: B-3-b[11]
Bank swallows are commonly found near water in fields, marshes, streams, and lakes. They almost always nest in vertical banks and cliffs of sand or dirt[14]. The nest is in a burrow of the vertical face. Bank swallows are small with tiny bills and feet with light brown top feathers and a white belly. Project B-3-b has habitat that could attract bank swallows with slow-moving water and the vertical channel walls. If permits are required, avoidance, minimization, or mitigation measures will be implemented in compliance with the permit. If permits are not required, further biological studies will be conducted during final design to determine if the species is present and best management practices will be used to prevent material from falling in the channel. If the species is present, **BIO-4** will be implemented to avoid impacts to nests and additional mitigation measure may be incorporated to avoid, minimize, or mitigate for the species.

[14] Audubon – *Guide to North American Birds*, http://www.audubon.org/field-guide/bird/bank-swallow, Accessed on 9/26/2016.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

Species: Tri-colored Blackbird *(Agelaius tricolor)* – Species of Special Concern
Project: B-3-b[11]
The tri-colored blackbird prefers marshes or fields near water. It is identified as having black feathers with yellow and red markings on the wings. It forages on the ground and nests within vegetation. Project B-3-b has habitat that could attract tri-colored blackbirds. If permits are required, avoidance, minimization, or mitigation measures will be implemented in compliance with the permit. If permits are not required, further biological studies will be conducted during final design to determine if the species is present and best management practices will be used to prevent material from falling in the channel. If the species is present, **BIO-4** will be implemented to avoid impacts to nests and additional mitigation measure may be incorporated to avoid, minimize, or mitigate for the species.

Species: Burrowing Owl *(Athene cunicularia)* – Species of Special Concern
Project: A-2 and B-4
The burrowing owl is commonly found on airports, golf courses, vacant lots, industrial parks, and other open areas[15]. It prefers to burrow in open, dry annual or perennial grasslands, deserts, and scrublands with low-growing vegetation. Projects A-2 and B-4 have habitat that could attract burrowing owls. Construction activities for A-2 are proposed to occur within existing facilities and paved surfaces, therefore no impacts are anticipated. Further biological studies will be conducted during final design to determine if the species is present. If so, **BIO-4** will be implemented to avoid impacts to nests and additional mitigation measure may be incorporated to avoid, minimize, or mitigate for the species.

IMPACT ANALYSIS

a) *Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?*

Project Type A
All the proposed work is within existing, paved facilities. There is a potential for some sensitive species to occur in the surrounding open space at the A-2 project site. As the proposed work is within the chlorination building and staging would occur on paved surfaces, it is not anticipated for construction activities to disturbed these species. The following avoidance measure shall be implemented, therefore no substantial adverse effects would occur as a result of the proposed projects.

[15] Audubon – *Guide to North American Birds*, http://www.audubon.org/field-guide/bird/bank-swallow, Accessed on 9/26/2016.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

BIO-1: The construction contractor shall use temporary fencing within the construction site to delineate paved versus unpaved surfaces and avoid impacts to potential foraging species. Construction equipment shall only utilize paved surfaces.

Project Type B[11]

No areas of the proposed projects are located in the vicinity of the Orange County NCCP/HCP. The project areas exhibit high levels of human disturbance, therefore, a less than significant impact is anticipated. There is a potential for some sensitive species to occur in the project area, which is addressed through avoidance, minimization, or mitigation measures. Therefore, the proposed projects will not have a substantial adverse effect on any sensitive species.

BIO-2: The exact locations of existing trees and vegetation to be preserved shall be conducted during the final design and included in plans.

BIO-3: The construction contractor shall protect existing vegetation to be preserved with temporary fencing.

BIO-4: To avoid impacts to nesting birds, any native vegetation removal or tree (i.e., native or exotic) trimming activities will occur outside of the nesting bird season (Feb. 15th through Aug. 31st). If vegetation clearing is necessary during the nesting season, a qualified biologist will conduct a preconstruction survey within 2 weeks of start of construction to identify the locations of nests. Should nesting birds by found, an exclusionary buffer will be established by the biologist. This buffer shall be clearly marked in the field by construction personnel under guidance of the biologist, and construction or clearing will not be conducted within this zone until the biologist determines that the young have fledged or the nest is no longer active. In addition, work shall be limited to daylight hours and avoid sunrise/sunset.

Project Type C

Shorebirds identified to potentially occur in the Seal Beach area are not expected to be affected as they would temporarily displace themselves during construction activities. The only sensitive species that could be affected by the project are the California Grunion. Impacts will be avoided by scheduling repairs to the pier on the shoreline outside the Grunion run season. In addition, construction staging will be located on existing paved surfaces. Therefore, the proposed project will not have a substantial adverse effect on any sensitive species.

BIO-5: Construction work on the shoreline shall avoid Grunion run season (March through September, per CDFW annual schedule). If work in the intertidal zone (estimated to be within -2.8 and +2.7 feet MSL[6]) during run season is absolutely required, a certified biologist shall be present to monitor grunion activity during the

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

predicted run. Should the biologist determine that grunion spawning has occurred within the project footprint, work activities shall occur landward of the highest high tide line to avoid impacting grunion eggs buried in the sand.

b) *Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?*

Project Types A-B
Riparian habitat is sparse such that it has little potential to support a diverse array of wildlife species. Therefore, riparian habitat will not be adversely affected.

Project Type C
No substantial adverse effects are anticipated to be experienced by sensitive natural communities and standard best management practices will be used during construction operations.

c) *Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?*

Project Types A-C
The only project area with the potential to be located within sites delineated as a jurisdictional wetland, as defined by Section 404 of the Clean Water Act by the US Army Corps of Engineers is at Project B-3-b. However, at this time, impacts to the Bolsa Chica Wetlands are not anticipated to be caused by construction activity for Project B-3-b. Therefore, the projects would not affect federally protected wetlands.

d) *Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impeded the use of native wildlife nursery sites?*

Project Types A-B
All proposed projects are replacing existing facilities in developed areas of Seal Beach. The Navy Reservoir is adjacent to the Seal Beach National Wildlife Refuge, however would have no significant impacts on sensitive species. Proposed waterline projects are not anticipated to interfere with any native residents, migratory fish, or wildlife species. Project B-3-b is a concrete-lined channel that has the potential to support biological habitat; however, it is not anticipated to have any adverse impacts. Potential occurrences for wildlife present in the project area is very low considering the developed areas do not have habitat to support sensitive species.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

Project Type C

The project area is located within a general area designated as Essential Fish Habitat (EFH) by the Pacific Coast Groundfish FMP[16]. There are no sensitive species within the intertidal or subtidal habitat at Seal Beach[17]. The project will not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or nurseries. The breeding restrictions for grunion will be avoided for construction. This would avoid any adverse impacts to these species.

e) *Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?*

Project Types A-C[11]

The County of Orange has no tree protection or preservation ordinance within the project areas. Trees within the project areas will be avoided and preserved in accordance with Title 9.40 of the Seal Beach Municipal Code. Eucalyptus trees are present near Project B-4, however will be avoided as all construction is to be within the roadway. Therefore, the proposed projects will not conflict with any local policies or ordinances[18].

BIO-2: The exact locations of existing trees and vegetation to be preserved shall be conducted during the final design and included in plans.

BIO-3: The construction contractor shall protect existing vegetation to be preserved with temporary fencing.

[16] NOAA National Marine Fisheries Service – Essential Fish Habitat Mapper, http://www.habitat.noaa.gov/protection/efh/efhmapper/, Accessed 8/18/2016.

[17] Coastal Resources Management Inc., Update of Intertidal and Subtidal Habitat Bio-assessment Information for the City of Seal Beach East Beach Nourishment Project, 4/2/2015.

[18] State Route 22/West Orange County Connection FEIS/EIR - Biology

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

f) *Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?*

Project Types A-C

No areas of the proposed projects are located in the vicinity of the Orange County Nature Reserve. Therefore, the proposed projects will not conflict with a NCCP.

FINDINGS

Project impacts to biological resources would be less than significant with implementation of the listed avoidance, minimization or mitigation measures.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
V.	**CULTURAL RESOURCES**				
Would the project:					
a)	Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☑
b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☐	☑
c)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☑
d)	Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☑

ENVIRONMENTAL SETTING

There are two historic resources within the City of Seal Beach: Old City Hall and Anaheim Landing. Old City Hall is located on the corner of 8th and Central Ave. The closest project to Old City Hall is the City Pier, less than a quarter mile away. Anaheim Landing is located at the southern end of Electric Ave. The City Pier and Navy Reservoir projects are less than half a mile and a mile, respectively. The Seal Beach area supported the Gabrielino Native Americans with Spanish, Mexican, and American settlements.

IMPACT ANALYSIS

a) *Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?*

<u>Project Type A</u>

The proposed projects are replacing existing facilities and are not proposing to extend the footprint. Therefore, historical resources will not be adversely changed.

<u>Project Type B</u>

The proposed projects are either replacing existing waterlines, extending encasements within a developed area, or relocating waterlines along existing

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

established roadways. Therefore, the projects will not cause an adverse change in the significance of a historical resource.

Project Type C
The project involves making repairs to the municipal pier. Therefore, the proposed project will not cause an adverse change in the significance of a historical resource as defined in §15064.5.

b) *Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?*

Project Type A
The proposed projects are replacing existing facilities and are not proposing to extend the footprint. Therefore, archaeological resources will not be adversely changed.

Project Type B[11]
These projects have the potential to affect archaeological resources during open trench excavation activities. If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find.

CUL-1: Work shall be halted in the vicinity of any previously known or unknown buried cultural materials unearthed during construction until a qualified archaeologist can assess the significant of the materials. Any mitigation measures required by the archaeologist will be implemented.

Project Type C
The project does not involve digging or trenching activities. Therefore, the proposed project will not cause an adverse change in the significance of an archaeological resource as defined in §15064.5.

c) *Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*

Project Type A
The proposed projects are replacing existing facilities and are not proposing to extend the footprint. Therefore, archaeological resources will not be adversely changed.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

Project Type B[11]
These projects have the potential to affect paleontological resources during open trench excavation activities. If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find.

CUL-1

Project Type C
The project does not involve digging or trenching activities. Therefore, the proposed project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

d) *Disturb any human remains, including those interred outside of formal cemeteries?*

Project Type A
The proposed projects are replacing existing facilities and are not proposing to extend the footprint. Therefore, human remains will not be disturbed.

Project Type B[24]
Although probability is low in developed areas, these projects have the potential to uncover human remains during open trench excavation activities. If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall stop in any area or nearby area suspect to overlie remains, and the County Coroner contacted. Pursuant to CA Public Resources Code (PRC) Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission (NAHC), which will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact the City so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable[19].

CUL-2: If human remains and associated artifacts are encountered during ground-disturbing activities, then the provisions of Public Law 101601, Section 5097.98 and .99 of the PRC and Section 7050 of the Health and Safety Code, will be followed. Any further mitigation measures required shall be developed.

[19] OC Parks – *Final Drafter Is/MND Resource Management Plan Aliso and Wood Canyons Wilderness Park,* July 2009

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

Project Type C

The project does not involve digging or trenching activities. Therefore, the proposed project will not disturb any human remains, including those interred outside of formal cemeteries.

FINDINGS

No impacts would occur to cultural resources as a result of the proposed projects.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
VI. GEOLOGY AND SOILS				
Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☐	☑
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☑
ii) Strong seismic ground shaking?	☐	☐	☐	☑
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☑
iv) Landslides?	☐	☐	☐	☑
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☑
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☐	☑
d) Be located on expansive soil, as defined in Table 18- 1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☑

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

e)	Have soils incapable of adequately supporting the use septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☑

DISCUSSION

The Newport-Inglewood fault zone extends through the southwestern portion of Seal Beach, cuts through the Navy Reservoir project location, and heads northwest. The Whittier Fault and Palos Verdes Fault, although not extending through the city are sufficiently close to still cause extensive damage in Seal Beach, 16 and 15 miles away from the City, respectively. There are also several "blind" faults that underlie Southern California. "Blind" faults do not break the surface, but rather occur thousands of feet below the ground. However, they are not less of a seismic hazard.

The City of Seal Beach is located on thick alluvial sediments and is in a zone of potential for liquefaction, except for a small area consisting of the Navy Reservoir Chlorination System project. The City requires a geotechnical investigation prior to any proposed project to begin since geologic conditions vary so greatly[20].

IMPACT ANALYSIS

a) *Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death?*

Project Types A-C

Although Seal Beach is in an area of potential liquefaction and could be influenced by the Newport-Inglewood fault, any impacts would be less than significant with a pre-construction geotechnical study and resulting recommendations. In addition, all proposed structures would meet appropriate County seismic design requirements. The proposed projects would be replacing old infrastructure, of which could expose people or structures to potential adverse effects if not addressed or maintained as proposed. The projects will not introduce new risks of loss, injury, or death as a result of project implementation.

b) *Result in substantial soil erosion or the loss of topsoil?*

Project Types A-C

The projects will not result in erosion and topsoil loss beyond that which presently occurs.

[20] Seal Beach General Plan – Safety Element

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

c-d) *Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse? Be located on expansive soil, as defined in Table 18- 1-B of the Uniform Building Code (1994), creating substantial risks to life or property?*

Project Types A-B

The City of Seal Beach is zoned for potential liquefaction and any impacts would be mitigated to less than significant with implementation of a WPCP prior to construction. The proposed projects are replacing existing facilities, without extending the footprint, therefore will not introduce new stability concerns beyond that which presently exists.

Projects of Type B do not involve human occupied structures and a majority of the proposed infrastructure developments would be located underground, therefore substantial adverse effects are not anticipated to occur as a result of the water infrastructure projects. Construction of the new/relocated pipelines would require one-time trench excavation, pipeline installation, backfill and compaction, and regrading where necessary. Other than the old waterline, all material will be balanced onsite.

The projects would reduce the risk of exposing people or buildings to substantial adverse effects relative to strong seismic ground shaking, ground failure including liquefaction, or landslides by replacing aged infrastructure that has corroded or is no longer operating up to designed standards.

Project Type C

The project site may be located on a geologic unit or soil that is unstable during strong seismic events, however, the pier foundation is a series of pilings embedded deep into the ground and seafloor, and, any on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse would not be a result from this project. The project would not create an unstable soil condition.

e) *Have soils incapable of adequately supporting the use septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?*

Project Types A-C

No septic systems are proposed by the projects.

FINDINGS

No impacts would occur to geology and soils as a result of the proposed projects.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
VII. GREENHOUSE GAS EMISSIONS				
Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☐	☑
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☑

DISCUSSION

The analysis of greenhouse gas (GHG) emissions for the project is based on an assumption that Heavy Duty Diesel Trucks would be used for transporting the construction materials. It is further assumed that a loaded truck would average 2.5 miles per gallon and an empty one 6 miles per gallon[21]. For residential and commercial projects, if projects emit less than 3,000 metric tons/year of CO^2e, the project is presumed to be less than significant for GHGs[22].

Operation of construction equipment with internal combustion engines (e.g. excavators and pavers) and offsite vehicles (e.g. employee vehicles, deliver and hauling trucks) would generate criteria air pollutants (CO, ROC, NOx, SO_2, and PM) during project construction activities. The proposed waterline projects are estimated to be completed within 9 hours of construction with Monday through Friday work days and assuming the contractors could replace about 50 linear feet of large pipe per day and 100 linear feet of small pipe per day. Assuming semi-trucks with flatbeds would be used to transport material to and from the project sites, truck capacity was used to estimate the number of trucks trips necessary to complete each project. Depending on whether the project involves the disposal of asbestos-containing material, the old material was assumed to be disposed of in the BKK Landfill in West Covina (approximately 30 miles away) or in the Olinda Landfill in Brea (approximately 25 miles away). Construction schedules would be refined and approved prior to construction. Table 9 summarizes the estimated

[21] 2014 Vehicle Technologies Market Report, Oak Ridge National Laboratory.

[22] SCAQMD. CEQA Significance Thresholds Working Group Meeting #15. September 28 of 2010, http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-15/ghg-meeting-15-minutes.pdf?sfvrsn=2.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

truck trips per proposed project and the associated estimated VMT and Table 10 shows some typical construction equipment that would be used for each CIP project.

Table 9. CIP Projects Estimated VMT

Project	Truck Type	Truck Trips	Vehicular Miles Traveled
A-1	Waste-hauling Truck[1]	5[2]	125
A-2	Waste-hauling Truck[1]	5[2]	125
B-1	Semi-truck with flatbed	22	550
B-2	Semi-truck with flatbed	20	600[4]
B-3-a	Semi-truck with flatbed	2	60
B-4	Semi-truck with flatbed	12	300
C-1	Semi-truck with flatbed	20[3]	500

(1) Waste-hauling truck will have similar air emissions as semi-truck with flatbed
(2) Assumed maximum truck trips for demo activities
(3) Pier utility lines estimated with same methodology for Project Type B
(4) Hazardous material to BKK Landfill

Table 10. Typical Construction Equipment for Proposed CIP Projects

Project	Equipment
A-1	Excavators; Jack hammer; Skip Loader; Employee vehicles
A-2	Excavators; Jack hammer; Skip Loader; Employee vehicles
B-1	Excavators; Jack hammer; 30-ton crane; Employee vehicles
B-2	Excavators; Jack hammer; Skip Loader; Employee vehicles
B-3-a	Excavators; Jack hammer; Skip Loader; Employee vehicles
B-3-b	Excavators; Jack hammer; Employee vehicles
B-4	Excavators; Jack hammer; Skip Loader; Employee vehicles
C-1	Workboat (assuming less than 50 hp); Booster Pump (500 hp); Impact hammer; 30-ton crane; Employee vehicles

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

IMPACT ANALYSIS

a) *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?*

Project Types A-C[11]
Greenhouse emissions associated with the construction phase of the proposed projects would occur as a result of burning the fuel required to operate the on-site construction equipment and equipment and hauling activities. Based on the estimated VMT for the projects and EPA's common conversion factor of 8,887 grams of CO_2 emission per gallon of gasoline it was determined that potential effects of the projects GHG emissions during construction would not be considered significant. Assuming that project would require approximately 2260 miles of travel and operation, the cumulative amount of GHG emissions would be less than 10 metric tons/year of CO_2e metric tons.

GHG-1: The construction contractor shall properly tune and maintain construction equipment and vehicles.

b) *Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?*

Project Types A-C
The projects would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

FINDINGS
Impacts related to greenhouse gas emissions as a result of the proposed projects will be reduced to less than significant with implementation of the listed avoidance, minimization or mitigation measure.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
VIII. HAZARDS AND HAZARDOUS MATERIALS					
Would the project:					
a)	Create a significant hazard to the public or the environment through routine transport, use, or disposal of hazardous materials?	☐	☐	☑	☐
b)	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☑	☐
c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☑
d)	Be located on a site which is included on a list of hazardous materials sites which complied pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☑	☐
e)	For a project within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☑
f)	For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☑

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

g)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☑
h)	Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☑

DISCUSSION

The City of Seal Beach is a participant of the Orange County Hazardous Waste Management Plan[23]. The City is in the process of removing and monitoring known sites of gasoline underground storage tanks within the City limits. The City is committed to comprehensive plans to reduce usage and provide proper disposal of hazardous materials. Disposal sites within Orange County are provided in the hazardous waste management plan.

IMPACT ANALYSIS

a) *Create a significant hazard to the public or the environment through routine transport, use, or disposal of hazardous materials?*

Project Type A

Projects A-1 and A-2 involve the replacement of chlorination systems, thus requiring transport of sodium hypochlorite and demolition of existing storage containers. Chlorine storage containers can be rinsed and allowed to sit for 72-hours for non-hazardous disposal. Proper handling of chemicals will be required and transportation will be minimal for drop-off and disposal purposes only. A site-specific WPCP and Spill Prevention Plan will minimize and/or eliminate potential accidental releases and spills during construction. Therefore, impacts through transport, use, or disposal of hazardous materials will be less than significant.

HAZ-1: Prior to construction, the construction contractor shall develop and implement a Spill Prevention, Control, and Countermeasures (SPCC) Plan which shall at least include the following: storage locations, spill prevention measures, training requirements, waste-specific spill response actions, spill response kits, and notifications to authorities.

HAZ-2: The construction contractor shall train all employees to promptly contain, report, and/or clean up any hazardous material spill.

[23] Seal Beach General Plan – Safety Element

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

HAZ-3: The project owner(s) shall obtain a Corrosive Hazardous Materials Permit from the local fire department, in accordance with NFPA 704, to ensure proper design, placement, and signage. Storage of sodium hypochlorite solutions shall be in compliance with NFPA 430.

Project Type B[11]
Projects B-1 and B-3-b require the disposal of ACP pipe. ACP pipe is classified as a Class 1 non-friable asbestos-containing material in Rule 1403 of the AQMD Rule Book. Proper cutting techniques will be used and specified in the WPCP. Best management practices, including wetting the cutting area to minimize worker exposure. Proper disposal to a hazardous waste facility would be required throughout the duration of pipe removal. Following construction, the projects will have eliminated the hazardous materials hazard and therefore will be less than a significant impact.

HAZ-4: An approved and permitted Cal/OSHA contractor shall expose, cut, and handle all ACP pipe using cutting, handling, and transportation procedures in accordance with OSHA standard 1926.1101.

Project Type C
No hazardous substances would be transported to or from the project site. Therefore, the proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

b) *Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?*

Project Type A
Potential for releases will be minimized through the system upgrades for both A-1 and A-2. New and existing equipment will be regularly inspected and properly maintained. Since these systems are being utilized for cleaning the City's distributed water, spill prevention is of high importance to the safety of the public. Spill prevention measures, such as secondary containment, will be implemented for all hazardous material containing equipment and storage. In addition, impacts related to accidental spills will be minimized through the implementation of a Spill Prevention Plan.

HAZ-1, **HAZ-2**, **HAZ-3**

Project Type B[11]
The contractor will be in compliance with all AQMD and CAL/OSHA requirements for handling Asbestos Containing Materials. Proper handling and disposal will

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

minimize the potential for accidental releases during the short duration of demolition of the existing pipelines. In addition, a Spill Prevention Plan will minimize impacts to the public and environment, therefore will be less than significant.

HAZ-1, HAZ-2, HAZ-4

Project Type C
The only type of hazardous materials associated with the project would be through the use of conventional types of fuels to power construction equipment and trucks. Containment for potential leaks and spills from construction equipment would be in place during construction, in accordance with the North Orange County MS4 Permit BMP requirements. Impacts related to the release of hazardous materials are less than significant.

c) *Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?*

Project Types A-B
None of the proposed projects are within one-quarter mile of an existing or proposed school. Project A-2 is within half a mile of the J.H. McGaugh Elementary School. Transport of hypochlorite solutions will be in accordance with the Seal Beach Municipal Code Section 11.4.60, thus ensuring safe transportation of Hazardous Waste.

Project Type C
There are no schools located within one-quarter of a mile of the project site. The proposed project, including transport trucks, would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste, except for conventional types of fuels. Therefore, the project would have no potential effect on any nearby school related to hazardous material exposure.

d) *Be located on a site which is included on a list of hazardous materials sites which complied pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?*

Project Type A
Proposed projects are not located on a hazardous materials site. Leaking underground storage tanks within proximity of proposed project that required

remediation have been closed[24]. Therefore, the proposed project would not create hazards from a hazardous materials site.

Project Type B[11]
Project B-1 is within close proximity to an open site assessment for a Shell LUST clean-up site. As of 2014, the site is being monitored by Orange County Health Care Agency (OCHCA) for diesel constituents[21] and was eligible for closure. Hazards from this site have been addressed in the remediation plan and therefore impacts will be less than significant.

HAZ-5: If signs of potential impact (e.g. odors, discolored soil, and any hazardous waste) are observed during construction activity, construction shall cease and the appropriate authorities will be contacted.

Project Type C
The proposed construction site is not located on a hazardous materials site; therefore, would not create a significant hazard to the public or the environment.

e) *For a project within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?*

Project Types A-C
The projects are not located near a public airport.

f) *For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?*

Project Types A-B
The proposed projects are within half a mile of the Joint Forces Training Base airstrip. This airstrip is limited to military use and will not result in a safety hazard for people residing or working in the project area.

Project Type C
The project is not located near a private airstrip.

g) *Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

[24] Department of Toxic Substances Control – EnviroStor, http://www.envirostor.dtsc.ca.gov/public/, Accessed 9/21/16.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

Project Type A-B[11]
Projects A-1 and B-3-a are located adjacent to the Orange County Fire Station. Coordination with the OC Fire Station will occur prior to construction to ensure emergency response is not impacted. Avoidance and minimization measures will be included in the final specifications and plans in accordance with the California Fire Code specified in Title 9 of the Seal Beach Municipal Code.

T-1: Due to the proximity of these projects to a fire station, the construction contractor shall coordinate with Orange County Fire Authority at least two weeks prior to construction to inform them on timing and site access. Avoidance and minimization measures, pursuant to Title 9 (California Fire Code) of the Seal Beach Municipal Code into the final specifications and plans.

T-2: During construction, emergency service providers will be alerted at least two weeks in advance of any temporary lane reductions and expected delays so that they have adequate time to make appropriate accommodations to ensure prompt emergency response.

Project Type C
Material transport as part of the proposed project would not interfere with an adopted emergency response plan or evacuation plan. Activity would occur where adequate circulation and access is provided to address emergency response. Therefore, project implementations would not interfere with an emergency response plan or emergency evacuation plan.

T-2

h) *Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?*

Project Types A-C
The proposed sites are not located in wildland fire areas.

FINDINGS
Impacts resulting from hazards or hazardous materials as a result of the proposed projects would be reduced to less than significant with implementation of the listed avoidance, minimization or mitigation measures.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
IX. HYDROLOGY AND WATER QUALITY					
Would the project:					
a)	Violate any water quality standards or waste discharge requirements?	☐	☐	☐	☑
b)	Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☑
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☑	☐
d)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of a course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off-site?	☐	☐	☐	☑
e)	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☑
f)	Otherwise substantially degrade water quality?	☐	☐	☑	☐

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

g)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☑
h)	Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☑
i)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☑
j)	Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☑

IMPACT ANALYSIS

a) *Violate any water quality standards or waste discharge requirements?*

Project Types A-B[11]
The proposed projects would not violate water quality standards or waste discharge permits. Best management practices would be utilized during all construction activities.

WQ-1: Construction activities shall follow BMP requirements of the North Orange County MS4 Permit.

Project Type C
Project C-1 proposes some in-water work to repair broken or split timber piles, piles missing wraps, or exposed timber piles below the mudline. During construction, best management practices BMPs will be followed to minimize any impacts to less than significant levels. BMPs for in-water work is described in Section 4.2.1 of this environmental review. BMPs will address water turbidity, construction debris storage, floating debris, and construction equipment operations.

WQ-1

b) *Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?*

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

Project Types A-C
The proposed projects do not propose the use of groundwater, nor do they introduce new impervious areas or features that would interfere with groundwater recharge. Groundwater elevations within the City range from -40 to -50 feet (MSL), therefore projects will not impact existing groundwater resources[25].

c) *Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?*

Project Type A-C
The projects would not significantly alter existing drainage patterns of the site or area that would result in erosion or siltation. The sites would remain substantially the same as pre-project conditions. The project would not alter the course of a stream or river.

d) *Substantially alter the existing drainage pattern of the site or area, including through the alteration of a course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or off-site?*

Project Type A
The proposed projects would not substantially increase the rate of runoff such that flooding would occur. Drainage will be analyzed in the WPCP and the corresponding BMPs will be implemented on-site.

WQ-1

Project Type B[11]
The proposed projects would not significantly alter existing drainage patterns, since the waterlines are under or near the ground surface. The projects would not alter the course of a stream or river. Best management practices will be used to prevent construction runoff. Excavated soil will be balanced on site, compacted, and graded to pre-construction grades. Therefore, the proposed projects would not substantially increase the rate of runoff, such that flooding would occur.

WQ-1

[25] OCWD Groundwater Elevation Contours for the Principal Aquifer (June 2015), http://www.ocwd.com/media/3673/june_wl_principal_2015.pdf

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

Project Type C
As mentioned above the project does not alter the existing drainage pattern of the site or area and does not alter the course of a stream or river, thus will not increase the amount of surface runoff and will not result in increased on site or off site flooding.

e) *Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?*

Project Types A-C[11]
The proposed projects do not create any new impervious areas and would not result in increased volumes of storm water runoff or introduce additional polluted runoff from the site. Any runoff from the projects would be similar to existing and naturally occurring conditions. Any potential runoff from construction activities would be managed through the use of BMPs. Therefore, the projects would not provide additional sources of polluted runoff.

WQ-1

f) *Otherwise substantially degrade water quality?*

Project Type A
Best management practices would be used during construction to minimize any water quality impacts to the National Wildlife Refuge and surrounding areas. Implementation of BMPs would reduce water quality impacts to below a level of significance.

Project Type B[11]
During construction, best management practices BMPs would be followed to minimize any water quality impacts that could result to Bolsa Chica Channel and the Pacific Ocean. Implementation of BMPs would reduce water quality impacts to below a level of significance.

Project Type C
Best management practices would be utilized during construction to minimize any water quality impacts that could result to the Pacific Ocean. The use of turbidity curtains would be used during any pile repair work. They would be left in place until the clarity of the water inside the curtains approached normal conditions. Implementation of BMPs would reduce water quality impacts to below a level of significance.

WQ-1

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

g) *Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?*

Project Types A-C
The projects do not entail the construction of housing.

h) *Place within a 100-year flood hazard area structures which would impede or redirect flood flows?*

Project Type A
The proposed projects involve upgrades within the existing facilities, therefore would not impede or redirect flood flows.

Project Type B
Minimal adjustments to the project areas are being proposed, such that flood flows would not be effected.

Project Type C
The project entails repair of a coastal structure that is located within the 100-year flood hazard area. However, the project is located on pilings and would not impede or redirect the 100-year flood flow.

i) *Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?*

Project Types A-C
The projects would not expose people or structures to a significant risk of loss, injury, or death from flooding.

j) *Inundation by seiche, tsunami, or mudflow?*

Project Types A-B
Implementation of the projects would not result in the increased exposure of people or property to seiche, tsunami, or mudflow.

Project Type C
Implementation of the project would not result in the increased exposure of people or property to seiche, tsunami, or mudflow. The project area is currently vulnerable to tsunamis and the project would not change this existing condition. The project area is not subject to seiches or mudflows.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

FINDINGS

Impacts to hydrology and water quality as a result of the proposed projects would be reduced to less than significant with implementation of the listed avoidance, minimization or mitigation measure.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
X. LAND USE AND PLANNING					
Would the proposal:					
a)	Physically divide an established community?	☐	☐	☐	☑
b)	Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☑
c)	Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☑

IMPACT ANALYSIS

a) Project Types A-C
The proposed projects would not divide established communities.

b) Project Types A-C
No change of land use on the subject properties or on adjoining properties is anticipated as a result of the proposed projects.

c) Project Types A-C
The proposed projects would not conflict with any habitat conservations plans or natural community conservation plans.

FINDINGS
No impacts would occur to the existing land uses or plans as a result of the proposed projects.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
XI. MINERAL RESOURCES					
Would the project:					
a)	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☑
b)	Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☑

IMPACT ANALYSIS

a-b)

Project Type A

The proposed projects would not interfere with oil extraction operations and are not proposed to involve digging or trenching, therefore would not result in the loss of availability of a known mineral resource.

Project Type B

The proposed projects would not interfere with oil extraction operations within the Navy Weapons Station.

Project Type C

The project area has no known mineral resources that would be lost due to the construction and operation of the project. The site is not classified or nominated as a locally important mineral resource recovery site. Therefore, there would be no impact from this project.

FINDINGS

No impacts would occur to mineral resources as a result of the proposed projects.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
XII. NOISE					
Would the project result in:					
a)	Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☑	☐
b)	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☑
c)	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☑
d)	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☑	☐
e)	For a project located within an airport land use land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☑
f)	For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☑

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

DISCUSSION

The Seal Beach General Plan considers the most sensitive land use as residential development, with a typical noise exposure of up to 65 dB[26]. Applicable noise standards for construction noise and construction hours within City of Seal Beach limits are 7:00 a.m. to 8:00 p.m. Mondays through Fridays and 8:00 a.m. to 8:00 p.m. on Saturdays[27]. Construction activities are exempt from the City of Seal Beach noise provisions and limited to the stated allowable time windows.

IMPACT ANALYSIS

a) *Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*

Project Types A-C
All construction activities will be performed within the City of Seal Beach Noise Ordinance construction windows, therefore no persons would be exposed to noise levels in excess of standards.

b) *Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?*

Project Types A-B
Ground vibration equipment, such as jack hammers, may be used to break existing pavement. Construction work would be limited to the City's General Plan specifications to minimize exposure to higher noise levels.

Project Type C
An impact hammer may be used to replace the broken timber pile at Bent 82. Pile driving activities will temporarily expose marine mammals to groundborne vibrations and noise. In the marine biological assessment for the East Beach Sand Nourishment Project in 2008, noise and vibration impacts from dredging activities within the vicinity of Project C-1 were evaluated. This project indicated that marine mammals would likely be able to "sense" the noise, however the magnitude and intensity of the sources sounds are unlikely to results in any substantial changes in behavior[28]. Project C-1 is less intrusive and of a shorter duration than the dredging activities studied in 2008, therefore impacts to marine mammals is not anticipated. The proposed project would not expose people to excessive groundborne vibrations or noise as construction work would be limited to the City's General Plan specifications to minimize exposure to higher noise levels.

[26] Seal Beach General Plan – Noise Element,pg N-23
[27] City Municipal Code 7.15.025 – Exemptions – Noise Regulations.
[28] 2008 CRM – Marine Biological Assessment, Seal Beach, CA

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

c) *A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?*

Project Types A-C
The proposed projects would not result in construction of a permanent noise generating facility. By definition, the activities would only occur during the construction period and involve trucks hauling material and conventional construction equipment (e.g., fork lifts, trucks, and loaders) removing and placing construction materials. Therefore, the project would not cause a permanent increase in ambient noise levels in the project vicinity above existing levels.

d) *A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?*

Project Types A-C[11]
The projects could result in temporary, periodic increases in noise levels during construction. However, noise levels would be in compliance with the City's Noise Ordinance and construction would take place during normal construction hours. Compliance with these measures would minimize noise impacts to below a level of significance.

NOI-1: Sound control shall conform to the City's Noise Ordinance and construction shall take place during the City of Seal Beach construction hours of 7:00 a.m. to 8:00 p.m. Mondays through Fridays and 8:00 a.m. to 8:00 p.m. on Saturdays. No construction shall be conducted on Sundays and City holidays.

e) *For a project located within an airport land use land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?*

Project Types A-C
The projects are not located within an airport land use plan or within two miles of a public airport.

f) *For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?*

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

Project Type A

The proposed projects are not within the Los Alamitos Joint Forces Training Base noise exposure contours, therefore would not be exposed to excessive noise level unordinary of the existing conditions.

Project Type B

The proposed projects are within the Los Alamitos Joint Forces Training Base noise exposure contours. However, the most impacted site, Lampson Avenue, is exposed to airport noise similar, if not lower, than associated freeway noise (65-70 dB). Therefore, no excessive noise levels would be experienced by people working or residing in the project area.

Project Type C

The project is not located within the vicinity of a private airstrip.

FINDINGS

Noise related impacts as a result of the proposed projects would be reduced to less than significant with implementation of the listed avoidance, minimization or mitigation measure.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
XIII. POPULATION AND HOUSING					
Would the project:					
a)	Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☑
b)	Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑
c)	Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑

IMPACT ANALYSIS

a) Project Types A-C
The proposed projects would not induce population growth.

b) Project Types A-C
The proposed projects would not displace housing.

c) Project Types A-C
The proposed projects would not displace people necessitating the construction of replacement housing elsewhere.

FINDINGS

No impacts would occur to the Seal Beach population or housing as a result of the proposed projects.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
XIV. PUBLIC SERVICES				
Would the project:				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☐	☑
Police protection?	☐	☐	☐	☑
Schools?	☐	☐	☐	☑
Other public facilities?	☐	☐	☐	☑

IMPACT ANALYSIS

a) <u>Project Types A-C</u>
The projects would not result in an impact to fire or police protection, in that levels of required fire or police services would not change as a result of the project. Projects A-1 and B-3-a are adjacent to the Orange County Fire Station. Construction activities will avoid impacts to emergency response. The projects would not result in any impacts to schools. The projects would also not impact parks by affecting park services or require additional park services or park personnel. The projects would have no impact on other public facilities.

T-1

FINDINGS
No impacts would occur to public services as a result of the proposed projects.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
XV. RECREATION					
Would the project:					
a)	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☑
b)	Does the project include recreational facilities or require the construction of or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☑	☐

IMPACT ANALYSIS

a) *Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?*

Project Types A-B
The proposed projects would not result in the increased use of existing neighborhood and regional parks or other recreational facilities.

Project Type C
The proposed project might increase the use of neighborhood or regional park as a result of the pier being closed during construction activities. The project may result in some increase in beach-oriented recreational activity (towel space, beach sports, etc.) since access to the pier will be restricted during construction. However, that increase would be temporary and not expected to be substantial. Construction activities would require the temporary closure of the pier. Coastal access along the pedestrian promenade at Seal Beach and adjacent beaches would remain open and be accessible to the public during construction. Impacts to recreation would be less than significant.

REC-1: Coastal access along the pedestrian promenade and adjacent beaches shall remain open and accessible to the public during construction.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

b) *Does the project include recreational facilities or require the construction of or expansion of recreational facilities which might have an adverse physical effect on the environment? Opportunities?*

Project Types A-B
The proposed projects do not require the construction or expansion of recreational facilities.

Project Type C
All proposed work is limited to repair and maintenance to the pier itself. Best management practices will be utilized to minimize the effects to the Pacific Ocean. Turbidity curtains would be kept in place until the area cleared to normal levels to ensure that no adverse effect results from repairs.

WQ-1

FINDINGS
No impacts would occur to recreation as a result of the proposed projects.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
XVI. TRANSPORTATION/TRAFFIC					
Would the project:					
a)	Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☑
b)	Conflict with an applicable congestion management program, including, but not limited to level of service standard and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☑
c)	Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☑
d)	Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☑
e)	Result in inadequate emergency access.	☐	☐	☐	☑
f)	Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities?	☐	☐	☐	☑

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

DISCUSSION

Project Type A

The proposed projects involve the replacement of existing chlorination facilities. Project A-1 proposes the demolition and replacement of storage buildings, treatment systems, monitoring equipment, and repavement as discussed in the project description. Project A-2 proposes replacing the 50 lb/day hypochlorite generation system. Demolition and construction of these small treatment facilities are not expected to significantly affect traffic. A traffic control plan will be implemented to ensure trucking routes for material delivery and disposal to avoid sensitive receptors. Typical equipment are excavators, skip loaders, and jack hammers. It has been estimated that a maximum of 5 truck trips for each project would be required to handle project material. Construction work on the project site is not expected to result in any lane closures or disturbances to normal traffic.

Project Type B[11]

Typical waterline maintenance, relocation, or replacement uses open trenches to access the waterlines. For smaller diameter pipes (12-18 inches), approximately 50-100 linear feet of pipeline could be completed per day. For larger diameter pipes (33 inch), approximately 25-50 linear feet of pipeline could be completed per day. Temporary lane reductions may be necessary to provide adequate clearance from the waterline trenches. Typical equipment used are excavators, jack hammers, and cranes. For pipelines that encroach ROWs, jack and bore or directional drilling techniques may be used to remove pipeline.

Project Type C

For the structural repairs, an estimated maximum of 15 H-15 trucks of construction material would be delivered to the site. Timber materials would be stored in the construction staging area which is anticipated to be located within the existing parking lot adjacent to the pier landward of East Beach. Material would be transferred to the pier as needed during the construction phasing. An estimated maximum of 5 trucks would be used for the proposed utility line upgrades. Seal Beach experiences traffic congestion particularly during the summer and also during school spring vacations.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

IMPACT ANALYSIS

a) *Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?*

Project Type A

The proposed projects will not conflict with plans or policies relating to the performance of the circulation system. Demolition and construction materials will be stored in a temporary waste container that will be transferred to a landfill only once full. Transportation of hypochlorite solutions shall be in compliance with Title 11 of the Seal Beach Municipal Code.

T-3: Transportation of hazardous materials (e.g. hypochlorite, ACP, etc.) shall be in accordance with Title 11 of the Seal Beach Municipal Code.

Project Type B[11]

The proposed projects would not conflict with plans, ordinances, or policies for the circulation system. B-1, B-2, and B-4 are along primary and secondary ROWs and Class II Bikeways. Temporary lane reductions may be necessary during waterline replacements or relocations. Temporary material transport to and from the projects sites would avoid peak travel times as much as possible to avoid and minimize construction-related traffic and circulation effects.

T-4: The construction contractor shall schedule construction vehicles to avoid and minimize impacts to traffic and circulation. The contractor shall submit a plan with the potential routes to the project owner(s) prior to construction. Any deviation from these plans must be submitted and approved by the project owner(s) at least one week prior to alternate route use.

Project Type C

The project would result in a temporary increase in vehicular traffic when construction materials are hauled to the site. Trucks hauling the materials would be limited to the designated truck route roadways. It is not anticipated that construction will require temporary road closures during construction hours.

T-4

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

b) *Conflict with an applicable congestion management program, including, but not limited to level of service standard and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?*

Project Types A- C

The proposed projects will not conflict with a congestion management program. Orange County Transportation Authority (OCTA) prepares the Congestion Management Program (CMP) for the Orange County Region. The project's daily truck trip generations are well below the threshold of 1,600 trips per day for development projects identified in the CMP. Therefore, a CMP review would not be required.

c) *Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?*

Project Type A

Project Type A proposed projects will not change air traffic patterns.

Project Type B[11]

The proposed projects are more than 2,500 feet of the Los Alamitos Joint Forces Training Base runway, therefore no impact on air traffic or aviation safety will result from the proposed projects. Project B-1 is the only proposed project expected to use a tall crane to remove and replace the 33 inch waterline. B-1 is not within the flight path and is more than 2 miles from the Los Alamitos Joint Forces Training Base. Should a crane greater than 200 feet be used at Beverly Manor or Lampson Avenue, an airfield vehicle safety flag shall be placed at the top of the crane, in accordance with FAA obstruction requirements.

Project Type C

The project would not include changes to air traffic and is not located in an area that would affect or be affected by air traffic. Therefore, it would not result in a change of air-traffic patterns or levels, or a change in location that results in substantial safety risks.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

d) *Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?*

Project Types A-C
The proposed projects to not include the construction of any sharp curves or changes to the existing transportation system. Therefore, there would be no increase in hazards due to a design feature of any of the projects.

e) *Result in inadequate emergency access.*

Project Types A-B[11]
The proposed projects would not block emergency accesses and adequate emergency access to the project sites and surrounding areas would continue to be provided with the implementations of the projects. For projects A-1 and B-3-a, coordination with Orange County Fire will occur prior to construction and incorporated into the traffic control plan for access to and from construction sites.

T-1 and **T-2**

Project Type C
The proposed project is not anticipated to interfere with emergency access. Emergency service providers will be alerted prior to construction activities to ensure prompt emergency response.

T-2

f) *Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities?*

Project Types A-C[11]
Implementation of the project would not conflict with adopted policies supporting alternative transportation. Existing pedestrian trails, bicycle routes, bus access, and other similar features would remain accessible during the project. During construction any detours to pedestrian trails or bicycle routes would be temporary and the public shall be notified of any associated delays.

T-5: The community shall be notified of any temporary lane reduction and expected delays prior to construction activities. Examples of notifications can be via changeable message signs, posting on the City of Seal Beach website, etc.

FINDINGS
Impacts to transportation and traffic as a result of the proposed projects would be reduced to less than significant with implementation of the listed avoidance, minimization or mitigation measure.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
XVII. UTILITIES & SERVICE SYSTEMS					
Would the project:					
a)	Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☑
b)	Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☑	☐
c)	Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☑	☐
d)	Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☑
e)	Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☑
f)	Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☑	☐
g)	Comply with federal, state, and local statutes and regulation related to solid waste?	☐	☐	☐	☑

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

IMPACT ANALYSIS

a) *Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?*

Project Types A-C
Proposed projects would not result in an increase of wastewater.

b) *Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?*

Project Type A
The proposed projects involve the maintenance and upgrades to existing water facilities. Since these booster stations are essential to maintaining adequate pressure throughout the City's distribution system, improvements will result in increased performance.

Project Type B
The proposed projects involve the relocation, replacement, or extension of existing waterlines. These pipelines are reaching their useful lives and are being proposed to prevent future environmental impacts associated with deterioration or breaks. The completed projects would provide beneficial improvements to the existing systems.

Project Type C
The proposed project involves waterline upgrades that will improve upon the current in-place system. The urgency to replace the fire line itself will be an improvement that betters civilians in regards to safety during recreational activities on the pier.

c) *Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?*

Project Type A
The proposed projects do not include the construction or expansion of existing stormwater drainage facilities.

Project Type B[11]
Impacts related to the relocation of B-3-b within the Bolsa Chica Stormwater Drainage Channel will be minimized by implementing best management practices during construction.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

Project Type C
The project does not entail the construction of new or expanded storm water drainage facilities.

d) *Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?*

Project Types A-B
The proposed projects will require minimal water supply during construction to minimize dust. However, sufficient supply is expected and will not result in new or expanded entitlements.

Project Type C
The projects would not require water supply.

e) *Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?*

Project Types A-C
The projects would not be serviced by a wastewater treatment provider.

f) *Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?*

Project Type A
The commercial landfill that serves the City of Seal Beach is the Olinda Landfill, approximately 25 miles from Seal Beach. Demolition debris from A-1 and A-2 shall be recycled and managed in accordance with Title 9 of the Seal Beach Municipal Code.

Project Type B[11]
Table 11 summarizes the amount of material needing disposal from the waterline Project Type B projects. The Westminster Waterline will need to be handled as hazardous waste and disposed of in a landfill permitted to handle asbestos-containing material. Demolition debris shall be recycled and managed in accordance with Title 9 of the Seal Beach Municipal Code.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

Table 11. Project Type B Projects Linear Feet of Pipeline for Disposal

Project	Pipe Diameter (inches)	Pipe Length (linear feet)
B-1: West Orange County Connector Waterline	33	3,170
B-2: Westminster Water Main	18 and 12	4,250
B-4: Lampson Ave. Water Main	12	3,270

Disposal of utility pipes are not expected to significantly affect the capacity of the landfill serving the City.

Project Type C

Project C-1 proposed utility upgrades to replace existing fire, gas, and waterlines on the pier. Each of these lines are 2 to 8 inches in diameter and about 1,500 LF each. Therefore, approximately 4,500 LF of pipe would need to be disposed of. Structural repairs will not produce solid waste and would not need to be served by a landfill. Disposal of utility pipes are not expected to significantly affect the capacity of the landfill serving the City. Demolition debris shall be recycled and managed in accordance with Title 9 of the Seal Beach Municipal Code.

g) *Comply with federal, state, and local statutes and regulation related to solid waste?*

Project Types A-C[11]

Disposal of demolished chlorination structures and equipment will be in compliance with all federal, state, and local statutes and regulations related to solid waste. Construction best management practices will be enforced and clearly identified in the WPCP for proper disposal techniques and designated locations. Hazardous waste will comply with all regulations and disposed of in a landfill permitted to receive asbestos-containing materials. Construction waste will be recycled when possible. All solid waste will be handled and disposed in compliance with federal, state, and local statutes and regulations. Demolition debris shall be recycled and managed in accordance with Title 9 of the Seal Beach Municipal Code.

FINDINGS

Impacts to utilities and service systems as a result of the proposed projects would be reduced to less than significant with implementation of the listed avoidance, minimization or mitigation measure.

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
XVIII.	**MANDATORY FINDINGS OF SIGNIFICANCE.**				
a)	Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major period of California history or prehistory?	☐	☐	☐	☑
b)	Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☐	☑	☐
c)	Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☑

IMPACT ANALYSIS

a) <u>Project Types A-B</u>

As the proposed projects are replacing or rehabilitating existing infrastructure on developed land, the quality of the environment will not substantially reduce habitat, eliminate communities, or cultural resources of California history. Short-term effects may occur during construction, however construction best management practices and improving the project sites to a more functional and reliable facility will result in each individual project having no impact to the environment. The proposed projects

A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1
Beverly Manor Facility Rehab.	Navy Reservoir Facility Rehab.	West OC Waterline Ext.	Westminster Water Main Repl.	I-405/North Gate Waterline Ext.	I-405/Bolsa Chica Waterline Ext.	Lampson Water Main Repl.	City Pier Repairs

are not expected to degrade the quality of the environment. Minimal work is proposed to be performed within developed land, therefore would not threaten sensitive species.

Project Type C

The project proposes to repair the Seal Beach Pier. Sandy beach habitat, which may benefit sensitive wildlife species, has been found underneath the pier structure. However, the project was not identified to have potential impacts on the beach or ocean habitat under the pier. Avoidance and minimization measures would be incorporated into the project and would be designed to minimize any potential impacts.

b) Project Types A-C

Cumulative impacts to the environment are expected to be short-term and only during construction. By the project need, the functionality of each proposed project will improve by rehabilitating aging infrastructure that could pose an environmental threat if not implemented. Short-term cumulative effects would be related to disposal of solid waste and air emissions associated with construction. The previous analyses have determined that these cumulative effects are estimated to be minimal and therefore impacts will be less than significant. The proposed projects are routine maintenance and rehabilitation projects. Thus, cumulative impacts from the proposed project were found to be less than significant with the use of construction best management practices.

c) Project Types A-C

The proposed projects would potentially result in traffic, noise and recreational impacts to humans. However, with the proposed best management practices during construction, effects would be short-term and less than significant.

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APPENDIX A

Project Information Sheets

City of Seal Beach

PROJECT INFORMATION SHEET

FY 2015/16 - 2019/20

PROJECT CATEGORY	Beach & Pier
PROJECT NAME	Pier Utility Upgrade Project
PROJECT MANAGER	David Spitz, Associate Engineer
LOCATION	City Pier
PRIORITY	Medium

PROJECT No.	BP1002
TOTAL PROJECT COST	$1,200,000
WORKED PERFORMED BY	Contract
PROJECT STATUS	Not Started
ALTERNATE FUNDING SOURCE	None

DESCRIPTION

This project will replace the existing water, sewer and gas lines under the Pier which serve the restaurant, public restrooms, and pier fire protection.

JUSTIFICATION

The lines have deteriorated over the years and constant repairs have costs increasing annually. Repairs are needed to maintain pier safety. Both fire inspection and pier inspection have identified the replacement of the fire line as urgent.

On-going Operating & Maintenance Impact: This project will reduce the need for on-going maintenance by staff.

MAP

PICTURE

Funding Source	Approved 2015-2016 Budget	Approved 2016-2017 Budget	Approved 2017-20178 Budget	Approved 2018-2019 Budget	Approved 2019-2020 Budget	Approved 5-year total
Water Capital	$ 450,000					$ 450,000
Sewer Capital	$ 450,000					$ 450,000
General Fund	$ 300,000					$ 300,000
TOTAL	$ 1,200,000					$ 1,200,000
Expenditures						
Design	$ 150,000					$ 150,000
Construction	$ 1,050,000					$ 1,050,000
TOTAL	$ 1,200,000					$ 1,200,000

City of Seal Beach

PROJECT INFORMATION SHEET

FY 2015/16 - 2019/20

PROJECT CATEGORY	Water System
PROJECT NAME	Water Sta, Rehab. - Beverly Manor
PROJECT MANAGER	David Spitz, Associate Engineer
LOCATION	Beverly Manor Road
PRIORITY	High

PROJECT No.	WT0904
TOTAL PROJECT COST	$2,700,000
WORKED PERFORMED BY	Contract
PROJECT STATUS	Construction
ALTERNATE FUNDING SOURCE	None

DESCRIPTION

This project will construct upgrades and improvements to the Beverly Manor Water Well, Booster Station and Reservoir as identified in the 2003 Water System Master Plan.

JUSTIFICATION

The water system requires continual capital maintenance to maintain reliability and to meet water quality standards.

On-going Operating & Maintenance Impact: It will eliminate the existing monthly maintenance cost.

MAP

PICTURE

Funding Source	Approved 2015-2016 Budget	Approved 2016-2017 Budget	Approved 2017-2018 Budget	Approved 2018-2019 Budget	Approved 2019-2020 Budget	Approved 5-year total
Water Fund	$2,700,000					$ 2,700,000
TOTAL	$2,700,000					$ 2,700,000
Expenditures						
Design	$ 120,000					$ 120,000
Construction	$2,580,000					$ 2,580,000
TOTAL	$2,700,000					$ 2,700,000

City of Seal Beach

PROJECT INFORMATION SHEET
FY 2015/16 - 2019/20

PROJECT CATEGORY	Water System	**PROJECT No.**	WT1603
PROJECT NAME	Bolsa Chica Well Improvement Project	**TOTAL PROJECT COST**	$600,000
PROJECT MANAGER	Michael Ho, City Engineer	**WORKED PERFORMED BY**	Contract
LOCATION	Bolsa Chica Road	**PROJECT STATUS**	Design
PRIORITY	Medium	**ALTERNATE FUNDING SOURCE**	None

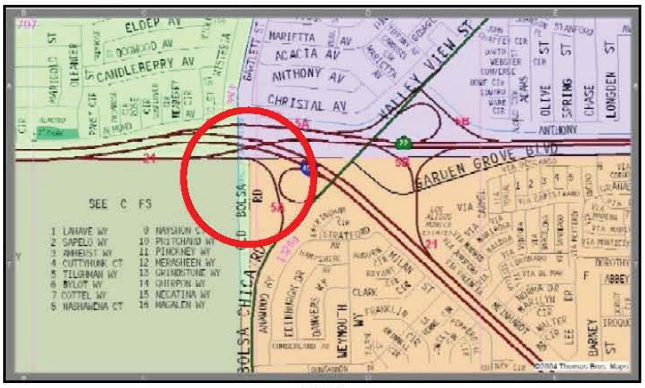
DESCRIPTION

This project will rehabilitate the well site pumps, generators, motors and water treatment equipment.

JUSTIFICATION

This project will rehabilitate the Bolsa Chica Water Well as identified in the 2003 Water System Master Plan.

On-going Operating & Maintenance Impact: Project will eliminate the maintenance of the electrical pump & equipment



MAP

PICTURE

Funding Source	Approved 2015-2016 Budget	Approved 2016-2017 Budget	Approved 2017-2018 Budget	Approved 2018-2019 Budget	Approved 2019-2020 Budget	Approved 5-year total
Water Fund	$ 600,000					$ 600,000
TOTAL	$ 600,000					$ 600,000
Expenditures						
Design	$ 60,000					$ 60,000
Construction	$ 540,000					$ 540,000
TOTAL	$ 600,000					$ 600,000

City of Seal Beach

PROJECT INFORMATION SHEET
FY 2015/16 - 2019/20

PROJECT CATEGORY	Water System
PROJECT NAME	Lampson Ave Water Main Replacement
PROJECT MANAGER	David Spitz, Associate Engineer
LOCATION	Lampson Avenue
PRIORITY	Medium

PROJECT No.	WT1604
TOTAL PROJECT COST	$2,670,000
WORKED PERFORMED BY	Contract
PROJECT STATUS	Planned
ALTERNATE FUNDING SOURCE	None

DESCRIPTION

To remove and replace the existing 12" ACP waterline on Lampson Ave from Seal Beach Blvd. to Basswood St.

JUSTIFICATION

The existing Lampson waterline has historically failed and caused numerous main line breaks. It has outlasted its useful life.

On-going Operating & Maintenance Impact: -

MAP

PICTURE

Funding Source	Approved 2015-2016 Budget	Approved 2016-2017 Budget	Approved 2017-2018 Budget	Approved 2018-2019 Budget	Approved 2019-2020 Budget	Approved 5-year total
Water Fund			$ 2,670,000			$ 2,670,000
TOTAL			$ 2,670,000			$ 2,670,000
Expenditures						
Design			$ 400,000			$ 400,000
Construction			$ 2,270,000			$ 2,270,000
TOTAL			$ 2,670,000			$ 2,670,000

City of Seal Beach

PROJECT INFORMATION SHEET

FY 2015/16 - 2019/20

PROJECT CATEGORY	Water System
PROJECT NAME	Navy Reservoir Chlorination System Upgrades
PROJECT MANAGER	Darrick Escobedo, Water Services Manager
LOCATION	Navy Reservoir
PRIORITY	High

PROJECT No.	WT1605
TOTAL PROJECT COST	$25,000
WORKED PERFORMED BY	Contract
PROJECT STATUS	Ongoing
ALTERNATE FUNDING SOURCE	None

DESCRIPTION

The Navy Reservoir is one of two reservoirs in the City. Water is stored within the reservoir and then added into the pressurized system as needed. A chlorination system is located at the reservoir and technology improvements are recommended.

JUSTIFICATION

The water system requires continual upkeep to keep it reliable. The system provides drinking water to residents and businesses as well as for fire protection. This project will insure that the drinking water in Seal Beach continues to meet requirements for distribution.

On-going Operating & Maintenance Impact: The maintenance of the system will remain unchanged with this project.

MAP

PICTURE

Funding Source	Approved 2015-2016 Budget	Approved 2016-2017 Budget	Approved 2017-2018 Budget	Approved 2018-2019 Budget	Approved 2019-2020 Budget	Approved 5-year total
Water Fund	$ 25,000					$ 25,000
TOTAL	$ 25,000					$ 25,000
Expenditures						
Construction	$ 25,000					$ 25,000
TOTAL	$ 25,000					$ 25,000

APPENDIX B

Zoning Maps

Zoning Map
(INDEX)

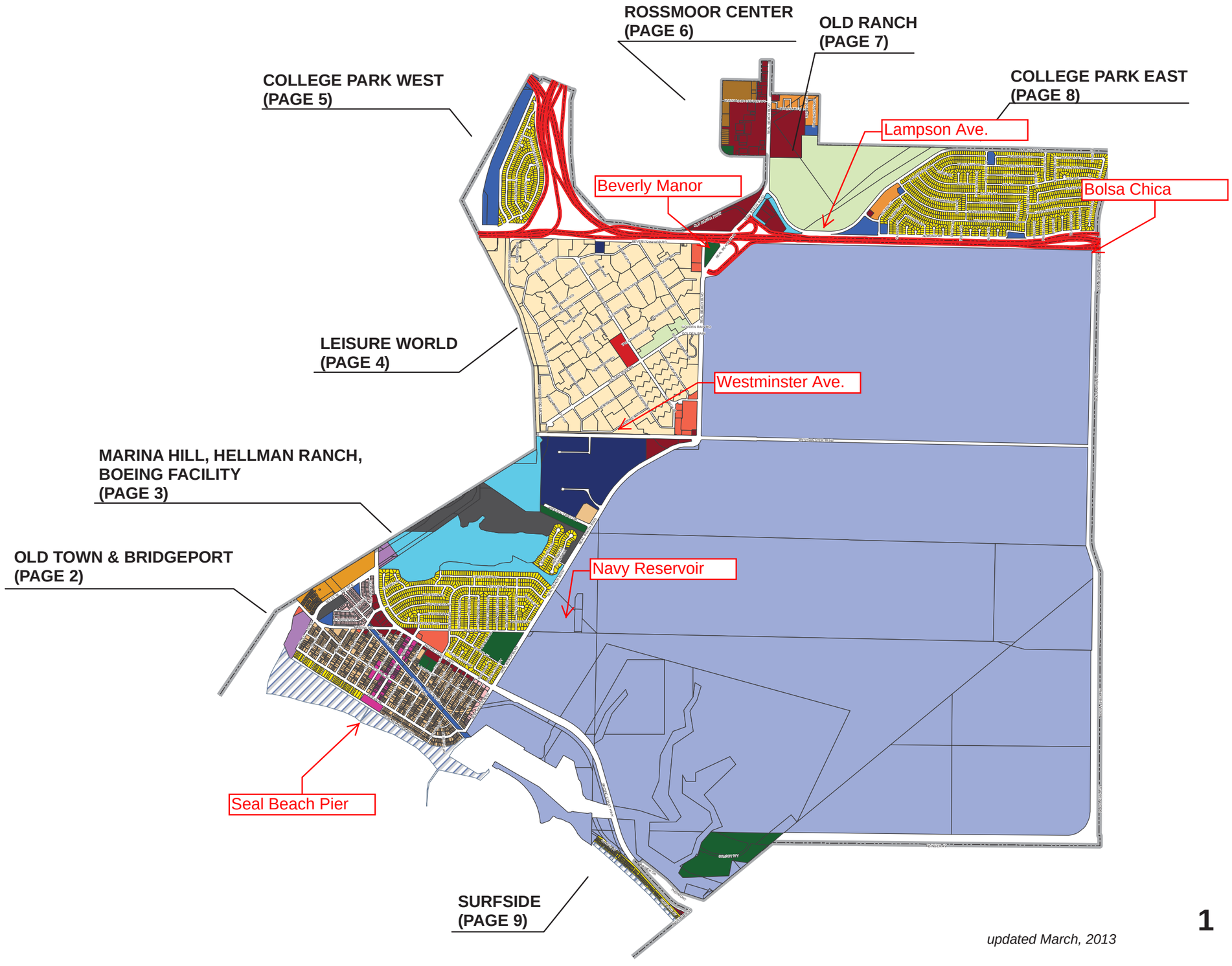
Legend

FREEWAY

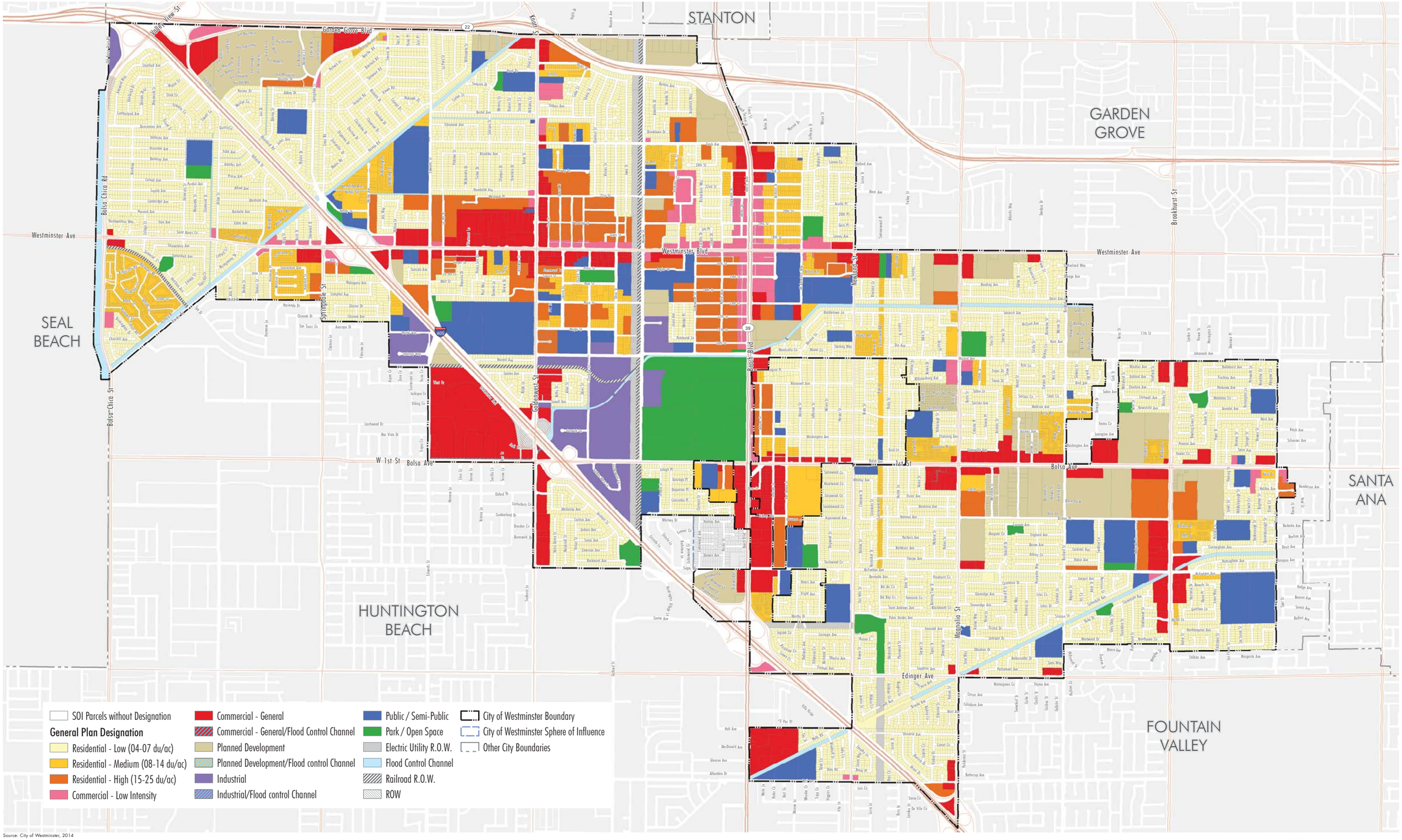
ZONING

Type

- RLD-9 (Residential Low Density-9)
- RLD-15 (Residential Low Density-15)
- RMD-18 (Residential Medium Density-18)
- RHD-20 (Residential High Density-20)
- RHD-33 (Residential High Density-33)
- RHD-PD (Residential High Density-Planned Development)
- RHD-46 (Residential High Density-46)
- LC/RMD (Limited Commercial/Residential Medium Density)
- MSSP (Main Street Specific Plan)
- PO (Professional Office)
- SC (Service Commercial)
- GC (General Commercial)
- LM (Light Manufacturing)
- OE (Oil Extraction)
- PS (Public and Semipublic Facilities)
- RG (Recreation/Golf)
- MIL (Military)
- BEA (Beach)
- OS-N (Open Space Natural)
- OS-PR (Open Space Parks and Recreation)
- SPR (Specific Plan Regulation)



updated March, 2013



Source: City of Westminster, 2014

PLACEWORKS

WESTMINSTER
General Plan Update
OPPORTUNITY. COMMUNITY. PROGRESS.

GENERAL PLAN LAND USE

APPENDIX C

Special-Status Species Potential for Occurrence

Special-Special Status Species Determination for Potential Occurrence

Scientific Name	Common Name	Status	General Habitat	Habitat Present (HP) or Absent (A)								Rationale
				A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1	
PLANTS												
Astragalus pycnostachyus var. *lanosissimus*	Ventura marsh milk-vetch	FE SE CNPS: List 1B.1	Perennial herb. Occurs in coastal dunes and edges of coastal salt marshes and swamps. Up to 115 ft in elevation. Flowering season is June through October.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Atriplex parishii	Parish's brittlescale	CNPS: List 1B.1	Annual herb. Occurs in chenopod scrub, vernal pools, and playas, usually, on drying alkali flay with fine soils. From 10 to 6,230 ft in elevation. Flowering season is June – October.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Atriplex serenana var. *davidsonii*	Davidson's saltscale	CNPS: List 1B.2	Annual herb. Occurs in coastal bluff scrub and coastal scrub on alkaline soils. From 10 to 820 ft in elevation. Flowering season is April – October.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Camissoniopsis lewisii	Lewis' evening-primrose	CNPS List: 3	Rhizomatous perennial grass. Occurs in meadows and seeps, salt marshes, and coastal dunes. Up to 3,117 feet in elevation. Flowering season is from May through June.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Centromadia parryi ssp. *australis*	Southern tarplant	CNPS: List 1B.1	Annual herb. Occurs in vernal pools, margins of marshes and swamps, and vernally mesic valley and foothill grasslands, sometimes with saltgrass on alkaline soils. Up to 1,400 ft in elevation. Flowering season is May – November.	A	A	A	A	A	HP	A	A	**B-3-b:** Channel has water, vegetation, and sediment, such that the site could support riparian species. Alkaline soils may be present. Further survey may be necessary to determine the presence or absence of this species.
Cistanthe maritima	Seaside cistanthe	CNPS List: 4.2	Annual herb. Occurs in coastal scrub, valley and grasslands. Flowering season is March - June.	A	HP	A	A	A	A	A	A	**A-2:** Grasslands surrounding buildings and reservoir. Nearby National Refuge and near the coast. Further survey may be necessary to determine the presence or absence of this species.
Cordylanthus maritimus ssp. *Maritimus*	Salt marsh bird's-beak	FE SE CNPS: List 1B.2	Hemiparasitic annual herb. Occurs in coastal dunes and coastal salt marshes and swamps. Up to 100 ft in elevation. Flowering season is May through October.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Jancus acutus ssp. *Leopoldii*	Southwestern spiny rush	CNPS List: 4.2	Rhizomatous perennial herb. Occurs in coastal dunes, meadows and seeps, coastal salt marshes, and wetlands. Native in alkaline, wet places in the interior. Up to 3,117 ft in elevation. Flowering season is May through June.	A	A	A	A	A	HP	A	A	**B-3-b:** Channel has water, vegetation, and sediment, such that the site could support riparian species. Alkaline soils may be present. Further survey may be necessary to determine the presence or absence of this species.

Scientific Name	Common Name	Status	General Habitat	Habitat Present (HP) or Absent (A)								Rationale
				A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1	
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	CNPS: List 1B.1	Annual herb. Occurs in coastal salt marshes and swamps, valley and foothill grasslands, playas, sinks, and vernal pools. Up to 4,590 ft in elevation. Flowering season is February – June.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Lycium californicum	California box-thorn	CNPS List: 4.2	Shrub. Occurs in coastal sage scrub. Up to 820 feet in elevation. Flowering season from March through August.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Nama stenocarpum	Mud nama	CNPS: List 2.2	Annual to perennial herb. Occurs in marshes and swamps, and along lake margins and riverbanks, and intermittently wet areas. Found on damp heavy soils. From 15 to 1,640 ft in elevation. Flowering season is January – July.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Nasturtium gambelii	Gambel's water cress	FE ST CNPS: List 1B.1	Rhizomatous perennial herb. Occurs in freshwater or brackish marshes and swamps. From 15 to 1,085 ft in elevation. Flowering season is April through September.	A	A	A	A	A	HP	A	A	**B-3-b:** Channel has water, vegetation, and sediment, such that the site could support riparian species. Further survey may be necessary to determine the presence or absence of this species.
Nemacaulis denudata var. *denudata*	Coast woolly-heads	CNPS: List 1B.2	Annual herb. Occurs in coastal dunes. Up to 330 ft in elevation. Flowering season is April – September.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat. Project sites are disturbed areas, and therefore species presence is not expected.
Orcuttia californica	California Orcutt grass	FE SE CNPS: List 1B.1	Annual herb. Occurs in vernal pools. From 50 to 2,165 ft in elevation. Flowering season is April through August.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Phacelia stellaris	Brand's phacelia	CNPS: List 1B.1	Annual herb. Occurs in coastal dunes and scrub. From 15 to 4,970 ft in elevation. Flowering season is March – June.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat. Project sites are disturbed areas, and therefore species presence is not expected.
Sidalcea neomexicana	Salt spring checkerbloom	CNPS: List 2.2	Perennial herb. Occurs in coastal scrub, chaparral, lower montane coniferous forest, brackish marshes, Mohavean desert scrub, and playas on alkaline, mesic soils. Up to 5,020 ft in elevation. Flowering season is March – June.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Suaeda esteroa	Estuary seablite	CNPS: List 1B.2	Perennial herb. Occurs in coastal salt marshes and swamps. Up to 15 ft in elevation. Flowering season is May – October.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.

Scientific Name	Common Name	Status	General Habitat	Habitat Present (HP) or Absent (A)								Rationale
				A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1	
Suaeda taxifolia	Woolly seablite	CNPS List: 4.2	Shrub. Occurs in wetlands and edges of coastal salt marshes. Up to 722 ft in elevation. Flowering season January - December.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Symphyotrichum defoliatum	San Bernardino aster	CNPS: List 1B.2	Rhizomatous perennial herb. Occurs in meadows and seeps, marshes and swamps, coastal scrub, cismontane woodland, lower montane coniferous forest, and valley and foothill grasslands, often in disturbed places. Up to 6,690 ft in elevation. Flowering season is July – November.	A	HP	A	A	A	A	HP	A	**A-2:** Grasslands surrounding buildings and reservoir. **B-4:** Vegetated area between golf course and road exhibits natural woody, grassy habitat. Further survey may be necessary to determine the presence or absence of this species.
BIRDS												
Accipiter cooperii	Cooper's hawk	WL	Occurs in dense stands of live oak, riparian deciduous, or other forest habitats near water. Nesting occurs near water.	A	HP	A	A	A	A	HP	A	Habitat may be present at **A-2** and **B-3-b**, however the species will temporarily displace itself out of the project area. No impacts are expected due to short-term construction activities.
Agelaius tricolor	Tri-colored blackbird	SSC	Highly colonial. Most numerous in Central Valley, largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few miles of the colony.	A	A	A	A	A	HP	A	A	Habitat may be present at **B-3-b**, however the species will temporarily displace itself out of the project area. Species prefers tall growth and waters edge for nesting. Further survey may be necessary to determine the presence or absence of nests.
Athene cunicularia	Burrowing owl	SSC	Utilizes burrows in open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably the California ground squirrel. Found on airports, golf courses, vacant lots, industrial parks, and other open areas.	A	HP	A	A	A	A	HP	A	Habitat may be present at **A-2** and **B-4**, however the proposed work is limited to the developed area. Further survey may be necessary to determine the presence or absence of nests.
Buteo regalis	Ferruginous hawk	FP	Occurs in timber belts in barren, treeless plains, and grassy prairies; cliffs and rocky outcrops.	A	HP	A	A	A	A	HP	A	Habitat may be present at **A-2** and **B-3-b**, however the species will temporarily displace itself out of the project area. No impacts are expected due to short-term construction activities.
Charadrius alexandrinus nivosus	Western snowy plover	FT	(Nesting). Occurs on sandy beaches, salt pond levees, and shores of large alkali lakes. Requires sandy, gravelly, or friable soils for nesting. The federal listing applies only to the Pacific coastal population.	A	A	A	A	A	A	A	HP	Habitat may be present at **C-1**, however the pier is not within CDFW Western Snowy Plover critical habitat. Therefore, no impacts are expected due to short-term construction activities.

Scientific Name	Common Name	Status	General Habitat	Habitat Present (HP) or Absent (A)								Rationale
				A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1	
Charadrius montanus	Mountain plover	SSC	Occur on short grasslands, plowed fields, and foothill valleys. Frequents open plains with low, herbaceous or scattered shrub vegetation.	A	HP	A	A	A	A	A	A	Habitat may be present at **A-2**, however the proposed work is limited to the developed area. The species will temporarily displace itself out of the project area, therefore no impacts are expected due to short-term construction activities.
Cistothorus paustris clarkae	Clark's marsh wren	SSC	Occur in cattails, bulrush, sedge, and other emergent vegetation. Emergent wetland habitat.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Coccyzus americanus occidentalis	Western yellow-billed cuckoo	SE	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Also prefers thickets of willow mixed with cottonwood.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Falco columbarius	Merlin	WL	Frequents shorelines in winter and catches shorebirds. Dense tree stands close to bodies of water for cover. Uses a wide variety of habitats and usually nests close to water.	A	A	A	A	A	A	A	HP	Habitat may be present at **C-1**, however the species will temporarily displace itself out of the project area. No impacts are expected due to short-term construction activities.
Falco mexicanus	Prairie falcon	WL	Occur in open terrain for foraging; nests in open terrain with canyons, cliffs, esarpments, and rock outcrops.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Ixobrychus exilis	Least bittern	SSC	Occur in dense emergent wetlands near sources of freshwater, and in desert riparian (saltcedar shrub).Likely nests only in emergent wetlands.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Larus californicus	California gull	WL	Occur along shorelines, landfills, pastures, and on islands. Nests on islands in alkali or freshwater lakes and salt ponds.	A	A	A	A	A	HP	A	HP	Habitat may be present at **C-1** and **B-3-b**, however the species will temporarily displace itself out of the project area. No impacts are expected due to short-term construction activities.
Numenius americanus	Long-billed curlew	WL	Occur in coastal estuaries, salt marsh, pastures, and salt ponds. Upland shortgrass prairies and wet meadows for nesting. Coastal estuaries, open grasslands, and croplands used for nesting as well.	A	HP	A	A	A	A	A	A	Habitat may be present at **A-2**, however the proposed work is limited to the developed area. The species will temporarily displace itself out of the project area, therefore no impacts are expected due to short-term construction activities.

Scientific Name	Common Name	Status	General Habitat	Habitat Present (HP) or Absent (A)								Rationale
				A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1	
Oceanodroma furcata	Fork-tailed storm-petrel	SSC	Occur on nearshore waters and cold waters in the open ocean. Nests on cliffs in burrows and crevices.	A	A	A	A	A	A	A	HP	Habitat may be present at **C-1**, however the species will temporarily displace itself out of the project area. Nests in crevices, however little to no nest material used, therefore nesting within the pier is not expected. No impacts are expected due to short-term construction activities.
Passerculus sandwichensis belingi	Belding's savannah sparrow	SE	Occurs from Santa Barbara to San Diego county. Nests in pickleweed on and around the margins of tidal flats.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Passerculus sandwichensis rostratus	Large-billed savannah sparrow	SSC	Breeds in dense, moist grasslands, wet meadows, and salicornia wetlands, with or without scattered shrubs or clumps of tall herbs. Prefers dense, short ground cover; also occurs in low vegetation in croplands and along beaches and shorelines.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Pelecanus erythrohychos	American white pelican	SSC	Occur along the edge of water, beaches, sandbars, or old driftwood. Nests at large freshwater and saltwater lakes.	A	A	A	A	A	A	A	HP	Habitat may be present at **C-1**, however the species will temporarily displace itself out of the project area. No impacts are expected due to short-term construction activities.
Pelecanus occidentalis californicus	California brown pelican	FP	Occur on water or inaccessible rocks, mudflats, sandy beaches, wharfs, and jetties.	A	A	A	A	A	A	A	HP	Habitat may be present at **C-1**, however the species will temporarily displace itself out of the project area. No impacts are expected due to short-term construction activities.
Phalacrocorax auritus	Double-crested cormorant	WL	Occur on offshore rocks, islands, steep cliffs, dead branches of trees, wharfs, jetties, or transmission lines.	A	A	A	A	A	A	A	HP	Habitat may be present at **C-1**, however the species will temporarily displace itself out of the project area. No impacts are expected due to short-term construction activities.
Polioptila californica californica	Coastal California gnatcatcher	FT	Obligate, permanent resident of coastal sage scrub below 2,500 ft. in southern California.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Rallus longirostris levipes	Light-footed clapper rail	FE SE	Inhabits salt marshes traversed by tidal sloughs, where cordgrass and pickleweed are the dominant vegetation.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.

Scientific Name	Common Name	Status	General Habitat	Habitat Present (HP) or Absent (A)								Rationale
				A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1	
Riparia riparia	Bank swallow	ST	Occur in riparian areas, brushland, grassland, and cropland. Requires vertical banks and cliffs with fine-textured or sandy soils near streams, rivers, ponds, lakes, and the ocean for nesting.	A	A	A	A	A	HP	A	A	Habitat may be present at **B-3-b**, however the species will temporarily displace itself out of the project area. Species prefers tall growth and waters edge for nesting. Further survey may be necessary to determine the presence or absence of nests.
Rynchops niger	Black skimmer	SSC	Nests on gravel bars, low islets, and sandy beaches in unvegetated sites. Nesting colonies usually consist of less than 200 pairs.	A	A	A	A	A	A	A	HP	Habitat may be present at **C-1**, however the species will temporarily displace itself out of the project area. Species prefers calm conditions, therefore no impacts are expected due to short-term construction activities.
Setophaga petechia	Yellow warbler	SSC	Occur in riparian deciduous habitats, cottonwoods, willows, alders, and other small trees and shrubs typically of low, open-canopy riparian woodland. Heavy brush understory for nesting.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Sternula antillarum browni	California least tern	FE SE	Nests along the coast on bare or sparsely vegetated, flat substrates such as sandy beaches, alkali flats, landfills, or paved areas.	A	A	A	A	A	A	A	HP	Habitat may be present at **C-1**, however the species will temporarily displace itself out of the project area. No impacts are expected due to short-term construction activities.
Thalasseus elegans	Elegant tern	WL	Occur on beaches and tideflats, inshore coastal waters, bays, estuaries, and harbors. Nests on dikes between salt ponds and on undisturbed island beaches.	A	A	A	A	A	A	A	HP	Habitat may be present at **C-1**, however the species will temporarily displace itself out of the project area. No impacts are expected due to short-term construction activities.
Vireo bellii pusillus	Least Bell's vireo	FE SE	Occurs in low riparian growth in vicinity of water, or in dry river bottoms, below 2,000 ft. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, mule fat, and mesquite.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
FISH												
Catostomus santaanae	Santa Ana sucker	FT	Occur in small to medium sized streams that flow year-round and vary in depth from several centimeters to over 1 meter deep. Natal streams are subject to severe flooding.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.

Scientific Name	Common Name	Status	General Habitat	Habitat Present (HP) or Absent (A)								Rationale
				A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1	
Gila orcuttii	Arroyo chub	SSC	Adapted to survive in cool to warm streams that fluctuate between large winter storm flows and low summer flows, and the low dissolved oxygen and wide temperature fluctuations associated with this flow regime.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Eucyclogobius newberryi	Tidewater Goby	FE	Shallow marine waters, lower reaches of streams	A	A	A	A	A	A	A	HP	No potential as the species has been extirpated from the San Gabriel River Mouth.
Trhinichthys osculus ssp. *3*	Santa Ana speckled dace	SSC	Prefer habitat that is clear, well oxygenated water, with movement due to a current or waves. Small springs, streams, rivers, or lakes. Very adaptable. Thrive in areas with deep cover or overhead protection from vegetation or woody debris.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
MAMMALS												
Eumops perotis californicus	Western mastiff bat	SSC	Inhabits semiarid habitats, including coastal sage scrub, grassland, and chaparral communities with rocky crevices and hollow trees.	A	HP	A	A	A	A	A	A	Habitat may be present at **A-2**, however the species will temporarily displace itself out of the project area. No impacts are expected due to short-term construction activities.
Lasiurus xanthinus	Western yellow bat	SSC	Occur in extreme southwestern deserts. Sometimes found roosting in dense foliage of palms.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Microtus californicus stephensi	South coast marsh vole	SSC	Inhabits tidal marshes of Los Angeles, Orange, and southern Ventura counties.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Sorex ornatus salicornicus	Southern California saltmarsh shrew	SSC	Inhabits coastal marshes in Los Angeles, Orange, and Ventura counties. Requires dense vegetation and woody debris for cover.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Zalophus californianus	California sea lion	MMA	Nearshore and open ocean waters	A	A	A	A	A	A	A	HP	Habitat may be present at **C-1**, however the species will temporarily displace itself out of the project area. No impacts are expected due to short-term construction activities.
Tursiops truncatus	Bottlenose dolphin	MMA	Nearshore and open ocean waters	A	A	A	A	A	A	A	HP	Habitat may be present at **C-1**, however the species will temporarily displace itself out of the project area. No impacts are expected due to short-term construction activities.

Scientific Name	Common Name	Status	General Habitat	Habitat Present (HP) or Absent (A)								Rationale
				A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1	
Eschrichtius robustus	California gray whale	MMA	Nearshore and open ocean waters	A	A	A	A	A	A	A	HP	Habitat may be present at **C-1**, however the species will temporarily displace itself out of the project area. No impacts are expected due to short-term construction activities.
REPTILES												
Chelonias mydas	Green sea turtle	FT	Generally found in fairly shallow waters (except when migrating) inside reefs, bays, and inlets. The turtles are attracted to lagoons and shoals with an abundance of marine grass and algae. Open beaches with a sloping platform and minimal disturbance are required for nesting.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Emys marmorata	Western pond turtle	SSC	Generally found in permanent ponds, lakes, streams, irrigation ditches, or permanent pools along intermittent streams. Nests along foothill streams in many soil types.	A	A	A	A	A	HP	A	A	Habitat may be present at **B-3-b**, however the species is not expected to occur in the project area due to the lack of logs for basking.
Phrynosoma blainvillii	Horned lizard	SSC	Occurs in coastal sage scrub, open chaparral, riparian woodland, and annual grassland habitats that support adequate prey species.	A	HP	A	A	A	A	A	A	Habitat may be present at **A-2**, however the species will temporarily displace itself out of the project area. No impacts are expected due to short-term construction activities.
Thamnophis sirtalis ssp.	South coast gartersnake	SSC	Generally found near permanent or semi-permanent bodies of water in a variety of habitats.	A	A	A	A	A	HP	A	A	Habitat may be present at **B-3-b**, however the species will temporarily displace itself out of the project area. No impacts are expected due to short-term construction activities.

Status Codes

CDFW-SSC	Species of Special Concern
CDFW-FP	Fully Protected
CDFW-WL	Watch List
ESA-FE	Federally Endangered
ESA-FT	Federally Threatened
CA-SE	State Endangered
CA-ST	State Threatened
MMA	Protected under Marine Mammal Act

California Rare Plant Ranks (CNPS List)

1A	Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere
1B	Plants Rare, Threatened, or Endangered in California and Elsewhere
2A	Plants Presumed Extirpated in California, But Common Elsewhere
2B	Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
3	Plants About Which More Information is Needed - A Review List
4	Plants of Limited Distribution - A Watch List

Not Listed Special-Special Status Species Determination for Potential Occurrence

Scientific Name	Common Name	General Habitat	Habitat Present (HP) or Absent (A)								Rationale
			A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1	
BIRDS											
Ardea alba	Great egret	Occur in fresh, and saline emergent wetlands, along the margins of estuaries, lakes, and slow-moving streams, on mudflats and salt ponds, and in irrigated croplands and pastures. Nests in large trees.	A	A	A	A	A	HP	A	A	Habitat may be present at **B-3-b**, however the species will temporarily displace itself out of the project area. No impacts are expected due to short-term construction activities.
Ardea herodias	Great blue heron	Occur in shallow estuaries and fresh and saline emergent wetlands. Perches and roosts in secluded tall trees.	A	A	A	A	A	HP	A	A	Habitat may be present at **B-3-b**, however the species will temporarily displace itself out of the project area. No impacts are expected due to short-term construction activities.
Botaurus lentiginosus	American bittern	Occur in fresh emergent wetlands. Nest is a platform of matted, emergent aquatics, other herbaceous stems, sticks and/or leaves, usually in shallow water, but sometimes floating or on ground. Concealed in tall, dense, fresh emergent vegetation.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Egretta thula	Snowy egret	Occur along shores of coastal estuaries, fresh and saline emergent wetlands, ponds, slow-moving rivers, irrigation ditches, and wet fields. Dense marshes required for nesting.	A	A	A	A	A	HP	A	A	Habitat may be present at **B-3-b**, however the species will temporarily displace itself out of the project area. No impacts are expected due to short-term construction activities.
Nycticorax nycticorax	Black-crowned night heron	Roosts among dense-foliage of trees, not always near water, and in dense, fresh brackish emergent wetlands (Ginnell and Miller). Often rests on piers and pilings.	A	A	A	A	A	A	A	HP	Habitat may be present at **C-1**, however the species will temporarily displace itself out of the project area. Species prefers calm conditions, therefore no impacts are expected due to short-term construction activities.

Scientific Name	Common Name	General Habitat	Habitat Present (HP) or Absent (A)								Rationale
			A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1	
Hydroprogne caspia	Caspian tern	Occur on mudflats, boardwalks, lake shores, pilings, small islands, or occasionally on open sand beaches. Nests in dense colonies on undisturbed islands, levees, or shores.	A	A	A	A	A	A	A	HP	Habitat may be present at **C-1**, however the species will temporarily displace itself out of the project area. Species prefers calm conditions, therefore no impacts are expected due to short-term construction activities.
Sterna forsteri	Forster's tern	Occur on pilings, low boardwalks, and floating objects, or gather in small, dense flocks along open shores. Nests on open to fairly open levees and low islands in lakes, salt ponds, or lagoons.	A	A	A	A	A	A	A	HP	Habitat may be present at **C-1**, however the species will temporarily displace itself out of the project area. Species prefers calm conditions, therefore no impacts are expected due to short-term construction activities.
Selasphorus sasin	Allen's hummingbird	Occur in coastal scrub, valley foothill hardwood, and valley objects riparian habitats. Often attaches nests to more than one lateral support on eucalyptus, juniper, willow, other trees, bines, shrubs, or ferns.	A	A	A	A	A	A	HP	A	Habitat may be present at **B-4**, however the proposed work is limited to the developed area. Further survey may be necessary to determine the presence or absence of nests.
FISH											
Paralichthys californicus	California halibut	Shallow coastal waters, open ocean	A	A	A	A	A	A	A	HP	Habitat may be present at **C-1**, however the species will temporarily displace itself out of the project area. No impacts are expected due to short-term construction activities.
Leuresthes tenius	California grunion	Spawns on local beaches	A	A	A	A	A	A	A	HP	Habitat may be present at **C-1.** Impacts shall be avoided and minimized by scheduling construction outside of the expected run season. Further survey may be necessary to identify presence or absence of spawning activity for construction within the intertidal zone and during run season.

Scientific Name	Common Name	General Habitat	Habitat Present (HP) or Absent (A)								Rationale
			A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1	
INSECTS											
Cicindela gabbii	Western tidal-flat tiger beetle	Occur in salty coastal habitats including salt marshes, tidal flats, beaches.	A	A	A	A	A	A	A	HP	Habitat may be present at **C-1**, however the species will temporarily displace itself out of the project area. No impacts are expected due to short-term construction activities.
Cicindela hirticollis gravida	Sandy beach tiger beetle	Occur in moist sand near the ocean, swales behind dunes, or upper beaches beyond normal high tides.	A	A	A	A	A	A	A	HP	Habitat may be present at **C-1**, however the species will temporarily displace itself out of the project area. No impacts are expected due to short-term construction activities.
Cicindela latesignata latesignata	Western beach tiger beetle	Uses a range of coastal habitats. Expected on salt flats only around estuaries etc., not inland.	A	A	A	A	A	A	A	HP	Habitat may be present at **C-1**, however the species will temporarily displace itself out of the project area. No impacts are expected due to short-term construction activities.
Cicindela senilis frosti	Senile tiger beetle	Coastal mud flats and salt marsh edges and inland alkalai mud flats.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Trigonoscuta dorothea dorothea	Dorothy's El Segundo Dune weevil	Coastal dunes	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Panoquina errans	Wandering (saltmarsh) skipper	Butterfly. Stands in salt marshes or near beaches. Frequently found near the mouths of rivers.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
Danaus plexippus pop. *1*	Monarch - California overwintering population	Roosting on basswoods, elms, sumacs, locusts, oaks, osage-oranges, mulberries, pecans, willows, cottonwoods, and mesquites. Breeding occurs in agricultural fields, pasture land, prairie remnants, urban and suburban residential areas, gardens, trees, and roadsides.	A	HP	A	A	A	HP	HP	A	Habitat may be present, however the species will temporarily displace itself out of the project area. No impacts are expected due to short-term construction activities.

Scientific Name	Common Name	General Habitat	Habitat Present (HP) or Absent (A)								Rationale
			A-1	A-2	B-1	B-2	B-3-a	B-3-b	B-4	C-1	
Lasionycteris noctivagans	Silver-haired bat	Inhabits primarily coastal and montane forest, feeding over streams, ponds, and open brush areas. Roosts in hollow trees, loose bark, and occasionally under rocks. Requires water.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.
MOLLUSKS											
Tryonia imitator	Mimic tryonia (California brackishwater snail)	Found in brackish salt marshes.	A	A	A	A	A	A	A	A	Project sites do not support substantial habitat, therefore species presence is not expected.

Status Codes

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CDFW-FP	Fully Protected
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ESA-FT	Federally
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4	Plants of Limited Distribution - A Watch List

APPENDIX D

Seal Beach 2008 and 2015 Marine Biological Assessments

April 2nd, 2015

Ms. Tonia McMahon
Moffatt & Nichol
3780 Kilroy Airport Way, Suite 600
Long Beach, CA 90806

Re: Update of Intertidal and Subtidal Habitat Bio-assessment Information for the City of Seal Beach East Beach Nourishment Project

Dear Ms. McMahon:

Coastal Resources Management, Inc. is pleased to provide you an update of intertidal and subtidal biological conditions at Seal Beach, California relative to the City of Seal Beach's March/April 2015 beach nourishment project.

Please give me a call if you have any questions.

Sincerely,

COASTAL RESOURCES MANAGEMENT, INC.

Rick Ware

Rick Ware
President/Senior Marine Biologist

Coastal Resources Management, Inc. 144 N Loreta Walk, Long Beach, CA
(949) 412-9446 (562) 433-6991 (fax) email rware.crm@gmail.com

1.0 INTRODUCTION

Coastal Resources Management, Inc. (CRM) conducted biological surveys on Seal Beach's East Beach and in the waters offshore of East Beach to obtain site-specific data on the biological communities that have a potential to be affected by beach nourishment activities. This report presents the findings of sandy beach intertidal surveys conducted on March 3rd, 2015 and subtidal benthic biological surveys conducted on March 7th, 2015.

2.0 METHODS

The project area is shown in Figure 1. CRM marine biologists Rick Ware, Tom Gerlinger, and Nick DaSilva, accompanied by Chambers Consultants' biologist Paul Morrissey conducted sandy intertidal surveys on March 3rd, 2013 during an afternoon low tide of -0.3 ft at 1425 hrs. Subtidal benthic samples were collected during the morning of March 17th, 2015.

2.1 SAMPLING LOCATIONS

Intertidal sampling occurred along two transects, the locations of which were provided to CRM by Moffatt & Nichol: SB 13 and OC 10 (Figure 2). Sampling was conducted at a backshore elevation of +15 feet (ft) Mean Lower Low Water (MLLW), high tide (+6 and +4.5), and swash zone (+2.5) MLLW. Sampling elevations were determined in the field, and verified by Coastal Frontiers Corporation.

The lowest swash zone, low tide level (+0.0 ft) could not be sampled effectively during beach sampling so sampling was delayed until the offshore survey was conducted, on a high tide and very low wave conditions that allowed diver collection of the 0.0 ft samples.

On March 17th, CRM marine biologists collected sediment samples for biological and sediment grain analysis along Transects SB 13 and OC 10 at depths of 0.0 ft, -3 ft, -6 ft, and -18 ft MLLW. Figure 3 shows the location of the furthest offshore locations along the -18 ft isobath.

2.2 SAMPLING METHODS

Benthic Coring. At each intertidal location, four, one-liter box core samples were collected each with a surface sampling area of 0.00817 square meter (sq m). At the low tide sampling level and subtidal depths between -3 and -18 ft, SCUBA-diving biologists collected the four, one-liter box core samples. CRM's 22 ft research vessel was used during the offshore sampling. Three of the four samples at each location were collected to determine infaunal species composition and number of species (species richness). The fourth sample was collected to determine surface sediment grain size distribution and was archived for later analysis. Each of the samples penetrated 11 cm into the sediment. Biologists collected the samples by inserting the corer into the sediment to the top of the

coring device, reaching below the corer and capping the sample, and putting the sample into a collection bag. Three of the four one-liter core samples were sieved through a 1.0 mm screen using seawater, and the organisms retained on the screen were preserved in 10 percent (%) formalin solution for later laboratory analyses and stored in whirl-pack bags. The fourth sample was transferred to a storage container for sediment grain size analysis.

Intertidal and subtidal samples were processed by Osprey Marine Services, Carlsbad, California. The taxonomic team included Tom Gerlinger and Tony Phillips using procedures and taxonomic standards of the Southern California Association of Marine Invertebrate Taxonomists (SCAMIT). Species nomenclature was based upon the SCAMIT *Taxonomic Species Listing Macro and Megafauna Invertebrates for the Southern California Bight* (Edition 5, 2008).

Field-preserved samples were returned to the laboratory, re-sieved, and preserved in 70% ethanol. Invertebrates were sorted into major taxonomic groups (annelids, arthropods, mollusks, echinoderms, and miscellaneous) using a dissecting microscope and identified to the lowest possible taxa using both dissecting and compound microscopes. Following the initial sort and identification each sample, each sample was resorted to insure a high standard of sorting efficiency.

Intertidal Trenching. Larger intertidal macro-invertebrates such as clams and sand crabs are not effectively sampled by infaunal corer methods. CRM conducted additional intertidal sampling using a trenching method that increased both the surface area and the depth of penetration to augment the infaunal coring survey. At each of the sampling levels between +15 ft and +2.5 ft MLLW, biologists dug a 1 meter long by 0.5 meter wide x 0.5 meter deep trench with a shovel and screened the sand through a 6.25 mm (1/4 inch) sieve. The samples were screened in the surf line, and all trenches were immediately filled in with sand to prevent beachgoers from injury.

All data were entered into a *Windows 2003 Excel* spreadsheet by transect, sampling level, and replicate. A statistical summary for each sampling level and for the entire survey was produced. The summary included the total number of individuals per sample, mean number per sample, mean per square meter (per sq m), and percent of total abundance.

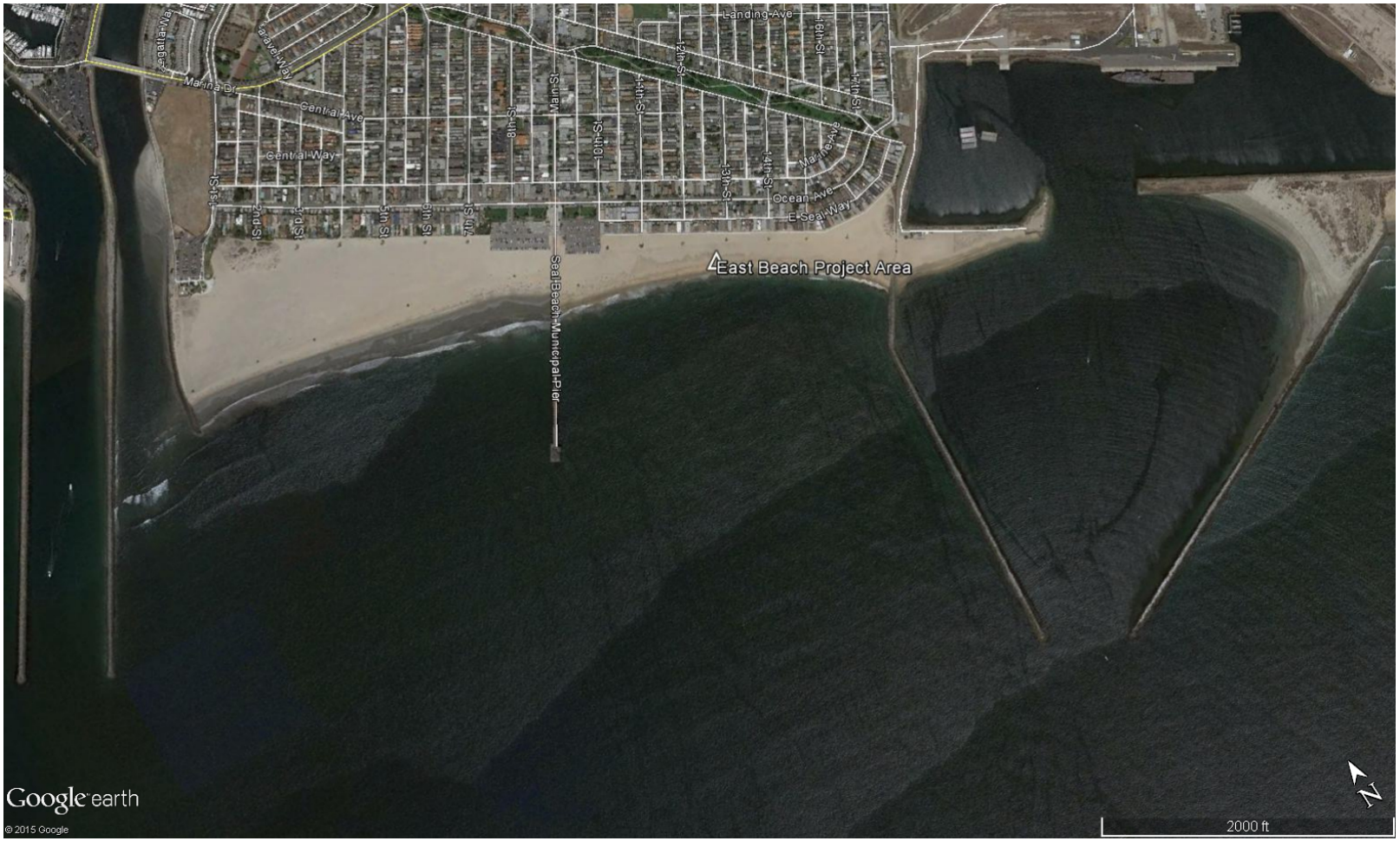

Figure 1. Project Location in Seal Beach, Orange County, California

Coastal Resources Management, Inc. 144 N Loreta Walk, Long Beach, CA
(949) 412-9446 (562) 433-6991 (fax) email rware.crm@gmail.com

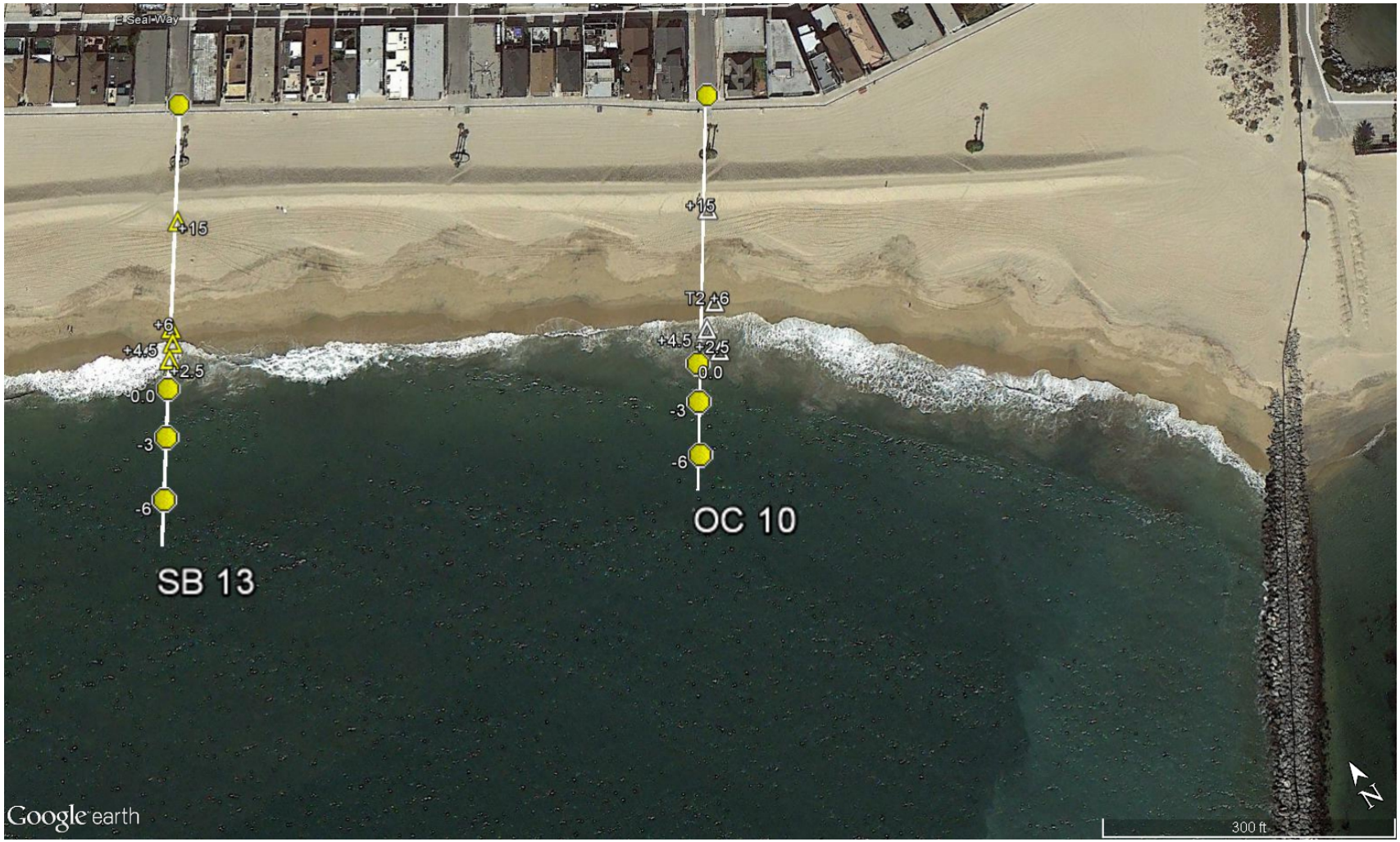

Figure 2. Location of Sampling Levels Along Transects SB 13 and OC 10 Between +15 ft and -6 ft MLLW.

Location of Offshore Sampling Level -18 ft MLLW along Transects SB 13 and OC 10

Coastal Resources Management, Inc. 144 N Loreta Walk, Long Beach, CA
(949) 412-9446 (562) 433-6991 (fax) email rware.crm@gmail.com

Photograph 1. Sandy Intertidal Sediment Coring

Photograph 2. Sandy Intertidal Sediment Trenching

Coastal Resources Management, Inc. 144 N Loreta Walk, Long Beach, CA
(949) 412-9446 (562) 433-6991 (fax) email rware.crm@gmail.com

3.0 RESULTS

3.1 PHYSICAL HABITAT DESCRIPTION

The East Beach sandy intertidal habitat consisted of coarse sand in backshore supra-tidal zone, immediately seaward of the man-made berm. Sediments were dry and hard-packed. In the high intertidal at +6 and +4.5 levels, sands were coarse and mixed with shell debris. Sediments in the swash zone were less coarse but were also mixed with shell debris. The backshore and foreshore was demarcated by a natural berm, with a moderately sloping foreshore. Sediments at -3, -6, and -18 ft were medium to fine sands, with a noticeable change in sediment types between depths of -6 and -18 ft MLLW.

3.2 SANDY INTERIDAL

Intertidal Sediment Cores. Transect data by level and survey is provided in Appendix 1. Six individuals and 4 species were collected in 30, one-liter box core samples at elevations varying between +15 and 0.0 ft MLLW). Four of the six animals were located at the upcoast SB 13 transect, while two were from the downcoast OC 10 transect. The four individuals collected at SB 13 included the polychaete *Hemipodus borealis* (2), and the amphipods *Americheledium* sp. and *Pontogeneia rostratea*. These individuals were collected between the high intertidal (+4.5 ft) and the low intertidal (0.0 ft). Only two individuals (the nemertean *Carinoma mutablis*) were collected at OC 10. These were found in the high tide samples at +6 ft MLLW. Samples lacked organisms at the +15 and +6 ft levels at SB 13, and the +15, +2.5, and 0.0 ft samples at OC 10.

Overall, the mean number of individuals collected at SB 13 ranged from 0 to 81.6 individuals per square meter with a mean density of 32.6 individuals per square meter, while at OC10, faunal density ranged between 0 and 40.8 individuals per square meter with a mean density of 16.3 individuals per square meter.

Intertidal Trenching. Trenching was successful at collecting an additional glycerid polychaete worm (*Hemipodus borealis*) in the low tide zone (0.0 ft) at SB 13 (mean density of 0.7 per square meter). Seven sand crabs (*Emerita analoga*) ranging in size from 1.5 to 2.5 cm were present in the swash zone (+2.5 ft) at the OC 10 downcoast transect (mean density of 4.7 per square meter), and *1 H. borealis* was present in the OC 10, low tide trench sample (mean density of 0.7 per square meter).

Sensitive Species. No sensitive invertebrates or grunion eggs were found in any of the sandy intertidal sediments.

3.3 SUBTIDAL BENTHIC INFAUNA

Subtidal Benthic Cores

Species Composition. Thirty two individuals and 22 species were collected at the offshore transects between depths of -6 ft and -18 ft MLLW (Table 1). Polychaete worms comprised the most number of individuals (46%) and number of species (36.4%), followed by amphipod crustaceans (25% of the abundance and 27.3 % of the number of species). All other groups comprised less than 6.4% of the abundance and 9% of the number of species.

Table 1. Subtidal Infaunal Abundance and Species Composition

Taxa	# of Individuals	% Total		# of Species	% Total
Polychaete worms	15	46.9		8	36.4
Amphipod crustaceans	8	25.0		6	27.3
Cumacean crustaceans	2	6.3		1	4.5
Nermertean worms	2	6.3		2	9.1
Anthozoan (anemone)	1	3.1		1	4.5
Gastropod (snails)	1	3.1		1	4.5
Bivalves (clams)	1	3.1		1	4.5
Enteropneust worms	1	3.1		1	4.5
Echinoids (Sand Dollars)	1	3.1		1	4.5
Total	32	100.0		22	100.0

Community Parameters. Table 2 compares the data by transect and depth. Overall, species abundance, infaunal density, and species richness was greater at the downcoast transect (SB10) than at the upcoast transect (SB 13). By depth, these community index values were also higher at the SB10 -6 and -18 sites, while at -3 ft depths no organisms were collected at SB10. Overall, abundances and species richness at both areas were low.

Table 2. Community Parameter Comparisons

Transect	Level (feet, Mean Lower Low Water)	-3	-6	-18	All Depths
SB10	Total # of Individuals Per Level	0	7	13	20
SB13	Total # of Individuals Per Level	3	1	8	12
SB10	Mean Density Per Square Meter (n=3 replicates)	0.0	285.6	530.4	816.0
SB13	Mean Density Per Square Meter (n=3 replicates)	122.4	40.8	326.4	489.6
SB10	Total Number of Taxa	0	5	9	14
SB13	Total Number of Taxa	3	1	6	9
SB10	Mean Number of Taxa Per Level (n=3 replicates)	0.0	2.3	4.3	6.7
SB13	Mean Number of Taxa Per Level (n=3 replicates)	1.0	0.3	2.7	4.0

Dominant Species. Table 3 summarizes species abundance patterns at the two transect. No one species or major group dominated species abundances. Four species (the amphipod *Americhelidium* sp., and the polychaete worms *Glycera macrobranchia Megalona hartmanae, and Paraprionospio alata* each contributed 3 individuals to the species abundance 37.5% of the total abundance. Numbers of each species were too low to determine dominance patterns between stations, although the highest ranked species (in terms of abundance) at SB 13 were the amphipod *Americhelidium* sp. and the cumacean *Leptocuma formani*, while at SB 10, the highest ranked species were the polychaetes *Glycera macrobranchia*, *Paraprionospio alata*, and *Magelona hartmanae.*

Sensitive species. Although not uncommon in Southern California, the sand dollar (*Dendraster excentricus*) is considered a species of importance in the nearshore community. Only one, juvenile individual was collected in the core samples. No sand dollar beds were observed by the SCUBA-diving biologists as they either collected benthic samples or as they were navigating to each of the 12 coring stations along the seafloor at depths between 0.0 and -18 ft MLLW.

No eelgrass (*Zostera marina* or *Z. pacifica*) or invasive algae (Caulerpa taxifolia) were observed during the survey at depths between 0.0 and -18 ft MLLW.

Table 3. Species Abundances at Transects SB13 and OC10.

SEAL BEACH SUBTIDAL						
March 17th, 2015	TRANSECT SUMMARY	SB 13	OC 10			
Common Name	Master Species List	Total	Total	Total	Mean/Transect	Mean/Sq M
Amphipod	Americhelidium sp	3	0	3	1.5	20.4
Polychaete worm	Glycera macrobranchia	0	3	3	1.5	20.4
Polychaete worm	Magelona hartmanae	1	2	3	1.5	20.4
Polychaete worm	Paraprionospio alata	0	3	3	1.5	20.4
Cumacea	Leptocuma formani	2	0	2	1	13.6
Polychaete worm	Nephtys californiensis	0	2	2	1	13.6
Amphipod	Eochelidium sp A	0	1	1	0.5	6.8
Amphipod	Gibberosus myersi	1	0	1	0.5	6.8
Amphipod	Mandibulophoxus gilesi	0	1	1	0.5	6.8
Amphipod	Pontogeneia rostrata	1	0	1	0.5	6.8
Amphipod	Rhepoxynius sp A	0	1	1	0.5	6.8
Anemone	Virgularia agassizii	0	1	1	0.5	6.8
Bivalvia	Amiantis callosa	0	1	1	0.5	6.8
Sand Dollar	Dendraster excentricus	0	1	1	0.5	6.8
Enteropneusta	Saccoglossus sp	1	0	1	0.5	6.8
Purple Olive Snail	Olivella biplicata	1	0	1	0.5	6.8
Nemertean worm	Carinoma mutabilis	1	0	1	0.5	6.8
Nemertean worm	Lineidae	0	1	1	0.5	6.8
Polychaete worm	Diopatra splendissima	1	0	1	0.5	6.8
Polychaete worm	Leitoscoloplos pugettensis	0	1	1	0.5	6.8
Polychaete worm	Lumbrineris limicola	0	1	1	0.5	6.8
Polychaete worm	Spiophanes norrissi	0	1	1	0.5	6.8

4.0 SUMMARY AND DISCUSSION

Intertidal and subtidal benthic biological sampling was conducted along Seal Beach's East Beach on March 3rd and March 17th for the City's Beach Nourishment Project. Sampling was conducted on the sandy beach's dry backshore (+15 ft), in the high tide zone (+6 and +4.5 ft), the swash zone (+2.5), low tide zone (0.0), and at subtidal depths of -3, -6, and -18 ft.

The results of the survey indicated the sandy intertidal environment exhibited very low numbers of individuals and species numbers at all sampling levels. The backshore area-between the natural berm and the man-made berm-lacked any organisms or dune vegetation. A small population of sand crabs (*Emerita analoga*) was found in the swash zone at the downcoast transects SB 10 in low density (4.5 per square meter). The

intertidal beach samples contained a few amphipods (beach hoppers), nemertean worms, and glycerid worms (bloodworms) scattered between the high and the low tide zones. The low abundance and species richness recorded during the survey was likely the result of on-going beach maintenance activities, changes in beach slope characteristics due to high-wave events, coarse sand grain sizes, and changing beach profiles.

Along most of the southern California coastline, beaches lose sand in the winter and gain sand in the summer. Consequently, they often have patchy and highly variable populations of organisms as a result of changes in beach characteristics such as the slope of the beach, beach sand temperatures, and sediment grain size (Bakus, 1989; Patterson, 1974; Straughan, 1977).

No sensitive species were found within any of the samples; no grunion eggs were present.

Subtidally, abundances and species numbers were low at depths of -18 ft MLLW along both transects compared to previous and local NPDES survey data collected by MBC Applied Environmental Sciences (MBC, 2006 *in* Coastal Resources Management, Inc., 2008). At MBC's Station B5 located near CRM's SB 13 -18 ft station, a total of 50 species were collected in June 2006, in a mean abundance of 71 individuals per 1 liter box core sample. During the present study, the number of species at SB 13 and SB 10 were six and nine respectively, with a mean abundances of 2.7 individuals per 1 liter box core sample at SB 13 and 4.3 individuals per 1 liter box core sample at SB 10. These survey differences may in part be related to the number of samples collected per station (5 replicates in MBC surveys and 3 replicates in the CRM survey) and time differences (9 years apart). The taxonomic make up however was similar, with polychaetes and amphipods being the numerically dominant taxa. A grain size comparison could not be made, since the grain size samples for the CRM survey were archived for later analysis (Tonia McMahon, Moffat & Nichol Engineers, pers. Com with R. Ware, CRM).

The present survey also included shallower sampling regimes than the MBC studies. The shallower depth regime and breaking wave activity near the shoreline at depths between -3 and -6 ft results in greater and constant bottom disturbance and coarse grain sizes that negatively affect species abundance, richness, and diversity. Abundance and species numbers were low along both transects in 2015 but the species composition was typical of the nearshore Seal Beach marine environment (Coastal Resources Management, 2008, 2010; MBC Applied Environmental Sciences, 2006).

Sensitive Species. No sensitive species of plants or invertebrates were found in the sandy beach or the nearshore subtidal environment.

5.0 CONCLUSIONS

Any beach nourishment activity that occurs on the backshore of East Beach will not adversely affect shoreline animals or dune vegetation. Beach nourishment in the high-to-low tide zone will likely result in a temporary reduction of infaunal abundance and species richness. However, the impact would be a short-term, insignificant impact based upon the low abundances and low species richness observed at the site in March 2015, and the natural ability of marine invertebrates to recolonize the benthic environment following cessation of beach nourishment activity.

6.0 LITERATURE CITED

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APPENDIX 1.
SURVEY DATA

SEAL BEACH INTERTIDAL		SB 13		Intertidal						
March 3rd, 2015										
	Level (feet, Mean Lower Low Water)	15	6	4.5	2.5	0	Total	Mean/Station	Mean/Rep	Mean/Sq M
Common Name	Master Species List									
Polychaete	Hemipodus borealis			1	1		2	0.4	0.1	16.3
Amphipoda	Americhelidium sp					1	1	0.2	0.1	8.2
Amphipoda	Pontogeneia rostrata					1	1	0.2	0.1	8.2
Bivalvia	Amiantis callosa						0	0	0.0	0.0
Nemertean	Carinoma mutabilis						0	0	0.0	0.0
Echinoderm	Dendraster excentricus						0	0	0.0	0.0
Cumacea	Diastylopsis tenuis						0	0	0.0	0.0
Polychaete	Diopatra splendissima						0	0	0.0	0.0
Amphipoda	Eochelidium sp A						0	0	0.0	0.0
Amphipoda	Gibberosus myersi						0	0	0.0	0.0
Polychaete	Glycera macrobranchia						0	0	0.0	0.0
Polychaete	Leitoscoloplos pugettensis						0	0	0.0	0.0
Cumacea	Leptocuma formani						0	0	0.0	0.0
Nemertean	Lineidae						0	0	0.0	0.0
Polychaete	Lumbrineris limicola						0	0	0.0	0.0
Polychaete	Magelona hartmanae						0	0	0.0	0.0
Amphipoda	Mandibulophoxus gilesi						0	0	0.0	0.0
Polychaete	Nephtys californiensis						0	0	0.0	0.0
Gastropoda	Olivella biplicata						0	0	0.0	0.0
Polychaete	Paraprionospio alata						0	0	0.0	0.0
Ampihpoda	Rhepoxynius sp A						0	0	0.0	0.0
Enteropneusta	Saccoglossus sp						0	0	0.0	0.0
Polychaete	Spiophanes norrissi						0	0	0.0	0.0
Anthozoa	Virgularia agassizii						0	0	0.0	0.0
	SUMMARY									
	Level (feet, Mean Lower Low Water)	15	6	4.5	2.5	0	Total	Mean	Mean/Rep	Mean/Sq M
	Total # of Individuals Per Level	0	0	1	1	2	4	0.8	0.3	32.6
	Total Number of Taxa	0	0	1	1	2	3	0.8	0.2	
	Mean Per Level (n=3 replicates)	0.00	0.00	0.33	0.33	0.67	1.33	0.3	0.1	
	Mean Per Square Meter (n=3 replicates)	0.0	0.0	40.8	40.8	81.6	163.20	32.6	10.9	

SEAL BEACH INTERTIDAL		OC 10		Intertidal						
March 3rd, 2015										
	Level (feet, Mean Lower Low Water)	15	6	4.5	2.5	0	Total	Mean/Station	Mean/Rep	Mean/Sq M
Common Name	Master Species List									
Nemertean	Carinoma mutabilis		1	1			2	0.4	0.1	16.3
Amphipoda	Americhelidium sp						0	0	0.0	0.0
Bivalvia	Amiantis callosa						0	0	0.0	0.0
Echinoderm	Dendraster excentricus						0	0	0.0	0.0
Cumacea	Diastylopsis tenuis						0	0	0.0	0.0
Polychaete	Diopatra splendissima						0	0	0.0	0.0
Amphipoda	Eochelidium sp A						0	0	0.0	0.0
Amphipoda	Gibberosus myersi						0	0	0.0	0.0
Polychaete	Glycera macrobranchia						0	0	0.0	0.0
Polychaete	Hemipodus borealis						0	0	0.0	0.0
Polychaete	Leitoscoloplos pugettensis						0	0	0.0	0.0
Cumacea	Leptocuma formani						0	0	0.0	0.0
Nemertean	Lineidae						0	0	0.0	0.0
Polychaete	Lumbrineris limicola						0	0	0.0	0.0
Polychaete	Magelona hartmanae						0	0	0.0	0.0
Amphipoda	Mandibulophoxus gilesi						0	0	0.0	0.0
Polychaete	Nephtys californiensis						0	0	0.0	0.0
Gastropoda	Olivella biplicata						0	0	0.0	0.0
Polychaete	Paraprionospio alata						0	0	0.0	0.0
Amphipoda	Pontogeneia rostrata						0	0	0.0	0.0
Ampihpoda	Rhepoxynius sp A						0	0	0.0	0.0
Enteropneusta	Saccoglossus sp						0	0	0.0	0.0
Polychaete	Spiophanes norrissi						0	0	0.0	0.0
Anthozoa	Virgularia agassizii						0	0	0.0	0.0
	SUMMARY									
	Level (feet, Mean Lower Low Water)	15	6	4.5	2.5	0	Total	Mean/Station	Mean/Rep	Mean/Sq M
	Total # of Individuals Per Level	0	1	1	0	0	2	0.4	0.1	16.3
	Total Number of Taxa	0	1	1	0	0	1	0.4		
	Mean Per Level (n=3 replicates)	0.00	0.33	0.33	0.00	0.00	0.67	0.1		
	Mean Per Square Meter (n=3 replicates)	0.0	40.8	40.8	0.0	0.0	81.60	16.3		

SEAL BEACH SUBTIDAL			Subtidal					
March 17th, 2015	SB 13							
	Level (feet, Mean Lower Low Water	-3	-6	-18	Total	Mean/Transect	Mean/Rep	Mean/Sq M
Common Name	Master Species List							
Amphipoda	Americhelidium sp	1		2	3	1.0	0.3	40.8
Bivalvia	Amiantis callosa				0	0.0	0.0	0.0
Nemertean	Carinoma mutabilis			1	1	0.3	0.1	13.6
Echinoderm	Dendraster excentricus				0	0.0	0.0	0.0
Cumacea	Diastylopsis tenuis				0	0.0	0.0	0.0
Polychaete	Diopatra splendissima			1	1	0.3	0.1	13.6
Amphipoda	Eochelidium sp A				0	0.0	0.0	0.0
Amphipoda	Gibberosus myersi			1	1	0.3	0.1	13.6
Polychaete	Glycera macrobranchia				0	0.0	0.0	0.0
Polychaete	Hemipodus borealis				0	0.0	0.0	0.0
Polychaete	Leitoscoloplos pugettensis				0	0.0	0.0	0.0
Cumacea	Leptocuma formani			2	2	0.7	0.2	27.2
Nemertean	Lineidae				0	0.0	0.0	0.0
Polychaete	Lumbrineris limicola				0	0.0	0.0	0.0
Polychaete	Magelona hartmanae		1		1	0.3	0.1	13.6
Amphipoda	Mandibulophoxus gilesi				0	0.0	0.0	0.0
Polychaete	Nephtys californiensis				0	0.0	0.0	0.0
Gastropoda	Olivella biplicata	1			1	0.3	0.1	13.6
Polychaete	Paraprionospio alata				0	0.0	0.0	0.0
Amphipoda	Pontogeneia rostrata	1			1	0.3	0.1	13.6
Ampihpoda	Rhepoxynius sp A				0	0.0	0.0	0.0
Enteropneusta	Saccoglossus sp			1	1	0.3	0.1	13.6
Polychaete	Spiophanes norrissi				0	0.0	0.0	0.0
Anthozoa	Virgularia agassizii				0	0.0	0.0	0.0
	SUMMARY							
	Level (feet, Mean Lower Low Water)	-3	-6	-18	Total	Mean/Transect	Mean/Rep	Mean/Sq M
	Total # of Individuals Per Level	3	1	8	12	4.0	1.3	163.2
	Total Number of Taxa	3	1	6	9	3.3		
	Mean Per Level (n=3 replicates)	1.0	0.3	2.7	4.0	1.3		
	Mean Per Square Meter (n=3 replicates)	122.4	40.8	326.4	489.6	163.2		

SEAL BEACH SUBTIDAL			Subtidal					
March 17th, 2015	0C 10							
	Level (feet, Mean Lower Low Water)	-3	-6	-18	Total	Mean/Transect	Mean/Rep	Mean/Sq M
Common Name	Master Species List							
Amphipoda	Americhelidium sp				0	0.0	0.0	0.0
Bivalvia	Amiantis callosa			1	1	0.3	0.1	13.6
Nemertean	Carinoma mutabilis				0	0.0	0.0	0.0
Echinoderm	Dendraster excentricus		1		1	0.3	0.1	13.6
Cumacea	Diastylopsis tenuis				0	0.0	0.0	0.0
Polychaete	Diopatra splendissima				0	0.0	0.0	0.0
Amphipoda	Eochelidium sp A			1	1	0.3	0.1	13.6
Amphipoda	Gibberosus myersi				0	0.0	0.0	0.0
Polychaete	Glycera macrobranchia			3	3	1.0	0.3	40.8
Polychaete	Hemipodus borealis				0	0.0	0.0	0.0
Polychaete	Leitoscoloplos pugettensis			1	1	0.3	0.1	13.6
Cumacea	Leptocuma formani				0	0.0	0.0	0.0
Nemertean	Lineidae		1		1	0.3	0.1	13.6
Polychaete	Lumbrineris limicola			1	1	0.3	0.1	13.6
Polychaete	Magelona hartmanae		2		2	0.7	0.2	27.2
Amphipoda	Mandibulophoxus gilesi		1		1	0.3	0.1	13.6
Polychaete	Nephtys californiensis		2		2	0.7	0.2	27.2
Gastropoda	Olivella biplicata				0	0.0	0.0	0.0
Polychaete	Paraprionospio alata			3	3	1.0	0.3	40.8
Amphipoda	Pontogeneia rostrata				0	0.0	0.0	0.0
Ampihpoda	Rhepoxynius sp A			1	1	0.3	0.1	13.6
Enteropneusta	Saccoglossus sp				0	0.0	0.0	0.0
Polychaete	Spiophanes norrissi			1	1	0.3	0.1	13.6
Anthozoa	Virgularia agassizii			1	1	0.3	0.1	13.6
	SUMMARY							
	Level (feet, Mean Lower Low Water)	-3	-6	-18	Total	Mean/Transect	Mean/Rep	Mean/Sq M
	Total # of Individuals Per Level	0	7	13	20	6.7	2.2	272.0
	Total Number of Taxa	0	2	4	4	1.3		
	Mean Per Level (n=3 replicates)	0.0	2.3	4.3	6.7	2.2		
	Mean Per Square Meter (n=3 replicates)	0.0	285.6	530.4	816.0	272.0		

MARINE BIOLOGICAL ASSESSMENT FOR THE EAST BEACH SAND NOURISHMENT PROJECT SEAL BEACH, CALIFORNIA

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EAST BEACH SAND NOURISHMENT PROJECT

1.0 INTRODUCTION

The City of Seal Beach, California is proposing to conduct a beach nourishment project on East Beach to resurrect declining beach use, provide improved protection to public infrastructure, the pier, the public promenade and parking lots, and private residences within the vicinity. The project is being conducted in association with the U.S. Army Corps of Engineers Surfside/Sunset Beach Nourishment Project.

This report (1) identifies the existing marine biological resources within the project area, (2) analyzes the potential project impacts of transporting dredge material within slurry pipes from the Surfside/Sunset sand borrow site to the Seal Beach shoreline and onshore beach nourishment activities, and (3) provides mitigation measures and Best Management Practices (BMPs) to lessen potential adverse environmental impacts on marine resources. The East Beach sand nourishment project marine biological impact assessment contained in this report specifically covers slurry discharge line construction and operations and beach replenishment activities on East Beach. The USACE is preparing the impact analysis and permitting for discharge activities at the Surfside/Sunset sand borrow site.

1.1 PROJECT LOCATION AND BACKGROUND

Seal Beach is located within the Seal Beach Littoral Cell of the larger San Pedro Littoral Cell and forms a pocket beach bounded by the Anaheim Bay west jetty to the east, and the San Gabriel River east jetty to the west (Figure 1). Approximately one mile of coastline lies along the southwest City boundary. The beach is divided by a 750-foot long concrete sheet pile groin immediately west of the Seal Beach Pier. The groin extends to approximately the -12 foot Mean Lower Low Water (MLLW) depth contour. The west segment (West Beach) of Seal Beach extends from the pier to the San Gabriel River jetties. It is approximately 2,600 feet long, and varies in width from approximately 1,200 feet at the west end to 250 feet at the east end adjacent to the groin. The eastern segment of Seal Beach (East Beach) extends from the pier to the Anaheim Bay West Jetty. This segment is 2,400 feet long and varies in width from 500 feet at the west end (adjacent to the groin) to 100 feet at Dolphin Street, and back to 500 feet at the east end adjacent to the Anaheim Bay West Jetty.

Historically, the stability of the shoreline in Seal Beach was dependent upon the delicate natural balance between the erosive forces of the wind, the surf, and the tide and the replenishment of sand brought down the Los Angeles and San Gabriel Rivers. Replenishment sands from rivers have been traditionally transported southeastward by the littoral (shoreline) currents. When the federal offshore breakwater, the First Street jetty, and the breakwaters at Anaheim Bay were constructed in the 1940s, the littoral currents in the general area were partially blocked and altered. Instead of transporting material in a southeasterly direction, the shoreline currents were reversed and flowed in a northwesterly direction.

In 1958-1959, a concrete groin was constructed at the base of Seal Beach Pier to restrict the erosion on the East and West Beaches. However, the groin did not eliminate the erosion problem. Currently, the erosion rate at East Beach is approximately 1.75 to 3.25 feet per year (Moffatt & Nichol 2007). To offset this loss of sand, the City has conducted periodic beach nourishment at East Beach in the past, with the most recent nourishment cycle occurring approximately 10 years ago in 1997. This nourishment effort utilized suitable material obtained from an inland quarry source.

With the proposed East Beach Sand Nourishment Project (proposed project), the City of Seal Beach would receive up to 200,000 cubic yards (cy) of suitable material from an offshore borrow site, located about 0.4 mile seaward in the vicinity of Surfside Colony/Sunset Beach (Surfside-Sunset). The borrow material would be obtained through a modification of the United States Army Corps of Engineers (USACE) Surfside-Sunset Stage 12 project. Environmental impacts, permits and regulatory approvals associated with the Stage 12 project, including dredging operations and the removal of all material from the offshore borrow site, would be completed by the USACE as a part of the National Environmental Policy Act (NEPA) processing of the federal project. Stage 12 is an approved continuing construction project and a Supplemental EA for Stage 12 is underway by the USACE which will cover all dredging at the offshore borrow site. For purposes of analysis, this IS/MND will evaluate the environmental impacts associated with the transport of up to 200,000 cy of material from the approved borrow site to East Beach for nourishment, and associated onshore spreading activities at East Beach needed to facilitate nourishment operations.

The location of the offshore borrow site is shown in Figure 1. Sand will be dredged and pumped in a sediment/water slurry through a submerged discharge line toward East Beach. The approximate location of the discharge line is shown in Figure 1 and Figure 2. The discharge line will be set up in at least two segments, with one extending west from the dredge to a barge off East Beach that holds a booster pump, and the other extending north from the booster pump to East Beach. The two segments of pipeline would lie on the ocean bottom. A more complete description of the project construction methods is provided in Section 3.1

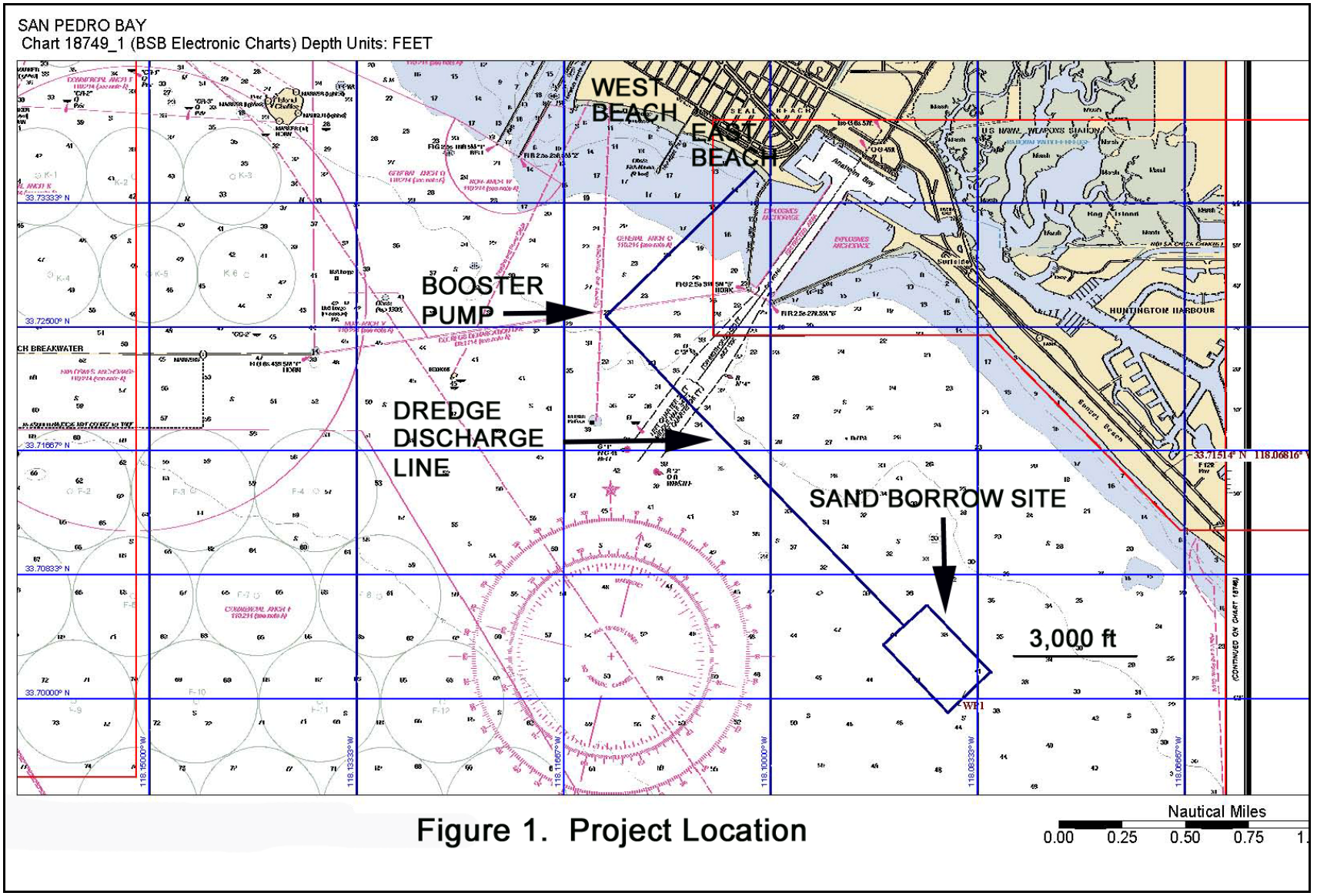

Figure 1. Project Location

Figure 2. Beach Nourishment Area and Location of Dredge Discharge Line

2.0 EXISTING CONDITIONS

Existing biological conditions discussed in this study are based upon intertidal site field investigations conducted by Coastal Resources Management, Inc. (CRM) on 14 October, 2004 for the Seal Beach Pier Groin repair project (CRM, 2004), subtidal surveys in the vicinity of the Seal Beach Pier conducted by CRM on 5 November 2004, a sandy intertidal beach reconnaissance survey conducted by CRM on East Beach for the proposed beach nourishment project on 18 January, 2008 and applicable scientific literature and NPDES monitoring studies reports for the Haynes Alamitos Generation Station (MBC Applied Environmental Sciences, 1998; 2006).

2.1 HABITAT TYPES AND BIOLOGICAL COMMUNITIES IN THE PROJECT AREA

2.1.1 Sandy Beach

Shoreline Characteristics. The shoreline along Seal Beach is a pocket sand beach that has been affected by historical construction of shoreline protective structures (Moffatt & Nichol, 2004). This beach extends along the entire one mile shoreline of Seal Beach. Its width is greatest along the northwest section of the City, and gradually narrows to the southeast. Beach width is a function of seasonal sand loss and accretion, relative to the shoreline stabilizing structures upcoast and downcoast of Seal Beach, including the jetties of the San Gabriel River, Alamitos Bay, and Anaheim Bay, as well as the 750 foot long groin immediately west of the Seal Beach Pier. Photographs of East Beach, taken on 18 January, 2008 are shown in Figures 3 and 4.

The beach is a fine-grained, moderately sloping beach with a wide low-tide terrace. Sand grain sizes vary dramatically from East Beach to West Beach, being far coarser at East Beach. Generally, Seal Beach consists of poorly graded, fine (0.06 to 0.11 millimeters, or mm) silty sand on the deeper, flatter portions of both beaches near the -6 ft MLLW contour and deeper. The higher steeper portions of the beach above mean sea level consist of poorly graded, coarser sands (0.12 to 0.6 mm). The sand on the higher part of East Beach is coarser than the sand on the higher part of West Beach, however sand found offshore at East beach is very similar in grain diameter to the sand on the higher portions of West Beach. East Beach sand average grain sizes of between 0.3 mm to 0.5 mm due to the high incident wave energy there. This high wave energy from wave amplification readily removes finer-grained sand from East Beach and transports it to West Beach, leaving the coarser sand behind and creating a clear distinction of sand conditions from one side of the groin to the other (City of Seal Beach, 2007).

The finer sand that exists at West Beach tends to be blown by the daily sea breeze toward the back of the beach and buries palm tree rings and deposits in residential beach front lots as a nuisance. City efforts are directed at removing this “blow sand” from near the rear property lines of the homes and from tree rings and placing it elsewhere to abate the nuisance. Sand composing the finer fraction of the sediment budget represents this blow sand and is an undesirable addition to the City.

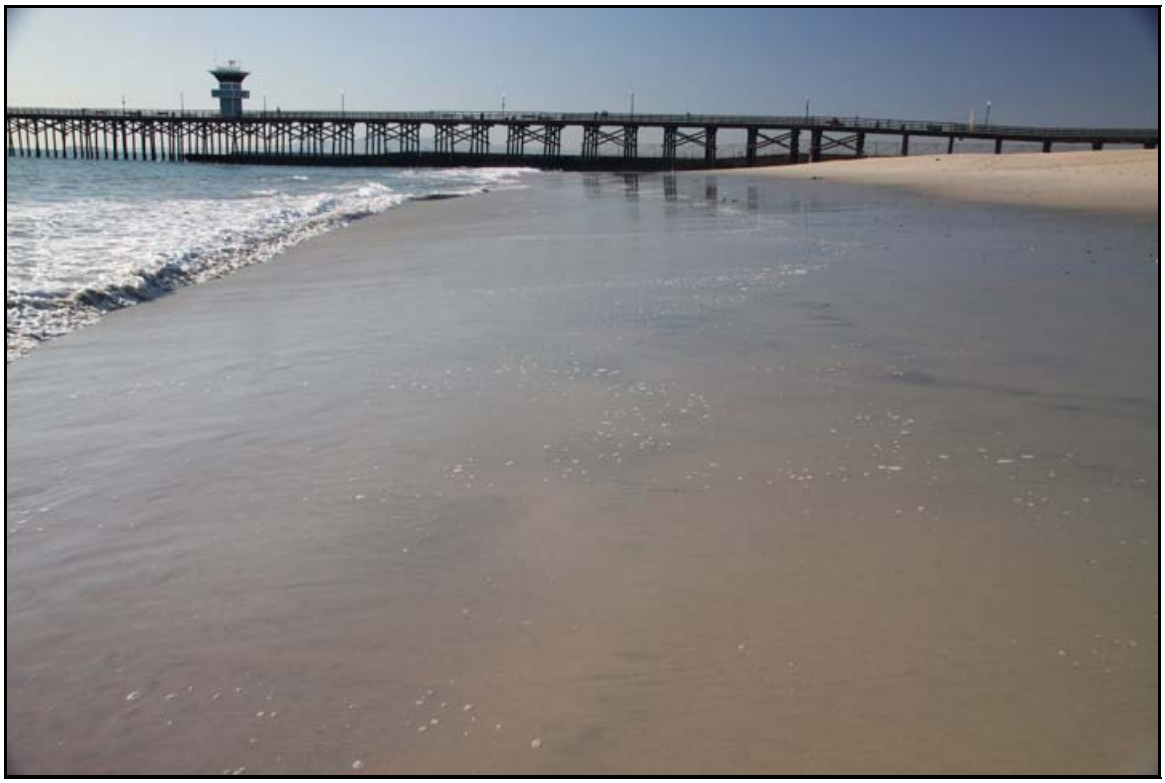

Figure 3. East Beach, Foreshore during -0.6 ft MLLW Tide
18 January 2008 (Facing West)

Figure 4. East Beach, Foreshore at -0.6 ft Tide, 18 January, 2008 (Facing East). Note the change in beach slope between high tide and berm.

During a low tide (-0.5 to -0.7 ft MLLW) site reconnaissance survey at the East Beach project site on 18 January, 2008 the beach was gently sloping between the swash and high tide line (+5 ft, MLLW), while the slope between the swash zone and the berm doubled to 7-8% (CRM, Inc., pers. observations). The low-to-high tide zones were characterized by clean, fine-to-medium sands. There were few noticeable beach cusps present during the survey and the beaches were clean of debris.

Biological Characteristics. Along most of the southern California coastline, beaches lose sand in the winter and gain sand in the summer. Consequently, they often have patchy and highly variable populations of organisms as a result of changes in beach characteristics such as the slope of the beach, beach sand temperatures, and sediment grain size (Bakus, 1989; Patterson, 1974; Straughan, 1977). Seal Beach is a semi-protected sand beach and is more protected from northwest and west swells than south and southwest swells due to the presence of the Long Beach Breakwater.

Sandy intertidal organisms are generally quite motile, and often change positions with changes in tidal level (Thompson et al., 1993). These organisms either burrow into the sands or live amongst decaying organic debris. Although the types and abundances of organisms vary between tidal levels, there are some consistent patterns in the types of organisms that will be found higher or lower than others. In the upper intertidal zone (Mean Tide Level to Mean High Water, +0.9 to 1.5 m, MLLW), several species of beach hoppers (*Orchestoidea* spp., isopods [pill bugs] (*Exocirolina chiltoni*), and predatory bloodworms (*Euzonus mucronata*) are found. The middle tide zone (Mean Low Water to Mean Tide Level, 0.3 m to 0.9 m, MLLW) is dominated by sand crabs (*Emerita analoga* and *Lepidopa californica),* the polychaete worm *Nephtys californica*, the purple olive snail *Olivella biplicata*, and the bean clam *Donax gouldi*. Of these, sand crabs are by far the most common although purple olive snails and bean clams are likely as abundant but not as easily sampled due to more patchy distributions. In the low intertidal (-0.6 to 0.3 m MLLW), polychaete worms (*Eteone, Dispio, Glycera, Hemipodus, Lumbrineris, Magelona,* and *Scolelepis*) are the dominant forms. Other common organisms include purple olive snails, bean clams, the clams *Tellina* spp and *Tivela stultorum*, sand crabs (*Blepharipoda occidentalis*), and amphipod crustaceans (*Grandifoxus* and *Eohaustorius*).

Many of these species are fed upon by foraging shorebirds and by fishes that are found in the surf zone along sandy beaches. Bloodworms and sand crabs are favorite bait for shore fishermen that fish for California corbina (*Menticirrhus undulatus*) in the surf zone. California grunion (*Leuresthes tenuis*) use the shoreline as a spawning habitat (Karen Martin, Pepperdine University, pers. comm. to R. Ware, CRM, 2004, 2008).

Beach wrack will collect on the backshore of the beach after a high tide and attracts an array of crustaceans and insects that feed upon decaying terrestrial vegetation washed into the ocean, surfgrass, seaweed, and giant kelp.

No macrofaunal organisms (larger invertebrates) were present on East Beach during the January 2008 survey, however, shorebirds were observed foraging within the low tide zones.

California Grunion. California grunion (*Leuresthes tenuis*) are fish that are associated with many beaches in southern California, including the shoreline of Seal Beach. Grunion lay their eggs in the wet beach sands during the highest spring tides between late February or early March, to as late as early September (Walker, 1952). See Section 2.2 for a discussion of this sensitive species of fish.

2.1.2 Subtidal Benthos

Below the tide line, the nearshore seafloor consists of unconsolidated sands and silts. The distribution of these sediments is affected by several factors, including input of sediments from the San Gabriel River, normal longshore current patterns, the obstruction and alternation of longshore current patterns by the Alamitos Bay and Anaheim Bay jetties, the Seal Beach Pier groin, and the Long Beach Breakwater that modifies patterns of water and sediment movement within San Pedro Bay

Subtidal soft bottom benthic habitat is the dominant feature within San Pedro Bay. Within the project area, this habitat type is present from the East Beach shoreline to the offshore dredge slurry discharge line pipeline route (Figure 1, Figure 5). Project area subtidal depths vary from -2 ft MLLW immediately offshore of East Beach to depths between -30 and -40 ft along the proposed route for the dredge slurry discharge pipeline.

MBC Applied Environmental Sciences (MBC) has conducted nearshore marine biological surveys for the Haynes Alamitos Generating Station NPDES Surveys since 1972. Recent data (winter and summer 2006) were provided to CRM by MBC to characterize the nearshore marine biological community. Their data sets include sedimentology, sediment chemistry, benthic infauna (organisms that live in the sediments), benthic macrofauna (organisms leaving at the interface between the sediments and the water column), and fishes capture by otter trawl nets. Several of the NPDES stations are located within or immediately nearby the project zone and can be used to characterize the types and abundances of organism living within nearshore beach nourishment activity zone. Their survey locations are shown in Figure 5. Water quality and benthic stations B2, B5, and B9 are located on the -12, -20, and -40 ft isobaths off of East Beach and the Seal Beach Pier. Fish trawl stations T3 and t6 are located along the -18 and -40 ft isobaths offshore of Seal Beach Pier.

Sediment Characteristics. Since 1990, sediments in the region ranged from silts to fine sands depending upon the amount of silt deposition during wet winter years (MBC Applied Environmental Sciences, 2006). Sediments within the project area (B2, B5, and B9) tend to be dominated by sandy material at depths between -12 and -20 ft, whereas sediments at deeper stations at -40 ft depths are primarily composed of silts and clays.

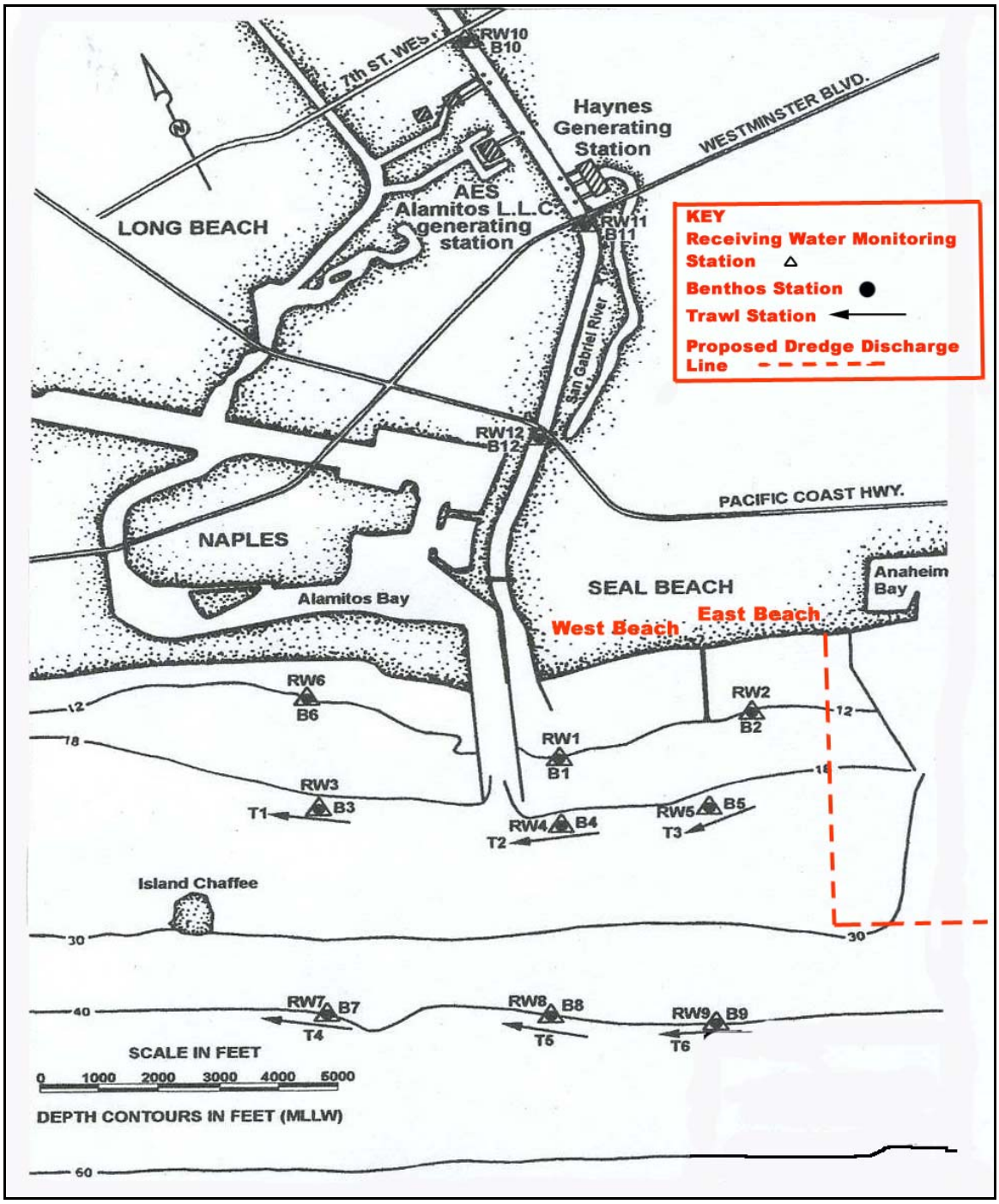

Figure 5. NPDES Monitoring Stations, Haynes and Alamitos Generating Stations, 2006 Surveys and Location of East Beach Nourishment Dredge Discharge Line. Map Source: MBC Applied Environmental Sciences. Dredge Discharge Line information provided by Moffatt & Nichol Engineers.

Sediment metal concentrations (zinc, and nickel) were elevated offshore compared to the San Gabriel River. Concentrations were highest upcoast of the San Gabriel River and lowest at the downcoast stations. All metal concentrations increased with depth, correlated to the observed decrease in sediment particle size. Sediment metal concentrations observed in the nearshore areas offshore of the Seal Beach Pier fall below the "Effects Range-low" (ERL), toxic limit where adverse effects to biota are rarely observed (Long et al., 1995).

Biological Characteristics. Benthic infauna are marine invertebrates that live on or in sediments. They are an important component of the marine ecosystems because they are preyed upon by fish and macroinvertebrates, and they play a critical important role in cycling organics into nutrients. Infauna are routinely used in marine monitoring programs because various species and associations are indicative of change, and sensitive to disturbances-either man induced or natural- while other species are indicative of less stressful conditions. Infaunal distributions are highly dependent on sediment types, the amount of organics, and disturbances to the seafloor from wave motion (Gray, 1974).

Benthic infaunal and data collected during the 2006 NPDES surveys are summarized in Tables 1 and 2. The benthic infaunal community offshore of Seal Beach is dominated by polychaete worms, microcrustaceans, and nematode worms (round worms). In 2006, 258 species representing 12 phyla and 10,701 individuals were collected from nine sites between Belmont Shore and Seal Beach. Offshore of Seal Beach at sampling stations B2, B5, and B9, the number of species ranged between 40 (B2) to 72 (B9) and the abundances varied from 207 (B5) to 285 (B9). Abundances were generally lower offshore of Seal Beach than offshore the San Gabriel River or upcoast of Belmont Shore. While polychaetes and arthropods were co-dominant phyla in the San Gabriel River, polychaetes accounted for 77% of the total benthic abundance offshore of Seal Beach. Similar polychaete dominance was observed upcoast of the San Gabriel River and at the River mouth.

Sediments offshore of Seal Beach exhibit either uncontaminated or Response Level 1 Response Index (BRI) scores (an abundance-weighted average pollution tolerance index used for studies within the Southern California Bight). Dominant species that occur within the project area include the polychaetes *Mediomastus acutus, M. ambiseta*, and *Apoprionospio pygmaea*. Generally, abundances and species richness increased with depth. MBC concluded that the infaunal community in the offshore study area between Belmont Shore and Seal Beach exhibited similar trends in 2006 to those observed in prior surveys conducted since 1988.

Table 1. Benthic Infaunal Community Parameters. June 2006 Surveys. Haynes and Alamitos Generating Station NPDES Surveys. Source: MBC Applied Environmental Sciences, 2006. Stations B2, B5, and B9 are located near East Beach at depths between -12 and -40 ft MLLW.

	Upcoast			River Mouth Area			Downcoast			Offshore		San Gabriel River					Overall Station	
Parameter	B6	B3	B7	B1	B4	B8	B2	B5	B9	Total	Mean	B10	B11	B12	Total	Mean	Total	Mean
Number of species																		
Total	38	72	94	68	76	65	49	50	72	203	65	33	58	52	90	48	258	61
Mean	17	30	44	29	34	32	24	24	34			21	34	32				30
S.D.	1	8	8	5	9	4	9	6	2			3	12	1				
Number of individuals																		
Total	195	282	690	423	276	258	256	207	285	2,872	319	5,727	2,554	2,548	10,829	3,610	13,701	1,142
Mean	49	71	173	106	69	65	64	52	71			1,432	639	637				285.7
S.D.	14	30	40	30	28	17	18	14	6			736	415	118				
Density (#/m^2)											7,978					90,242		28,544
Diversity (H')																		
Total	2.81	3.61	3.31	2.77	3.68	3.62	3.24	3.24	3.59	4.03	3.32	1.86	2.64	2.38	2.55	2.29		3.06
Mean	2.39	3.06	3.00	2.49	3.14	3.14	2.78	2.81	3.14			0.48	2.39	2.28				2.59
S.D.	0.14	0.25	0.23	0.18	0.22	0.16	0.32	0.17	0.16			0.13	0.41	0.10				
Benthic Response Index (BRI)																		
Total	40.6	29.8	40.1	39.5	32.7	26.0	20.8	27.1	32.4	29.8	32.1							
Biomass (g)																		
Total	3.84	3.32	4.57	4.35	2.60	1.47	3.69	1.40	1.44	26.68	2.96	1.47	12.28	16.85	30.60	10.20	57.28	4.77
Mean	0.96	0.83	1.14	1.09	0.65	0.37	0.92	0.35	0.36			0.37	3.07	4.21				1.19
S.D.	0.68	0.23	0.88	0.35	0.20	0.11	0.50	0.28	0.24			0.22	1.86	8.13				
Density (g/m^2)										74.11					255.00		119.33	

Table 2. Seventeen Most Abundant Benthic Infaunal Species. June 2006 Surveys. Haynes and Alamitos Generating Station NPDES Surveys. Source: MBC Applied Environmental Sciences, 2006.

		Upcoast			River Mouth Area			Downcoast			Offshore	San Gabriel River			River	Overall
Phy	Species	B6	B3	B7	B1	B4	B8	B2	B5	B9	Subtotal	B10	B11	B12	Subtotal	Total
AR	*Monocorophium insidiosum*	-	-	1	-	5	-	3	-	-	9	2858	261	127	3246	3255
AN	*Capitella capitata* Cmplx	-	-	1	1	-	-	-	-	-	2	545	221	525	1291	1293
NT	Nematoda	14	17	46	1	1	11	1	2	9	102	131	333	594	1058	1160
AR	*Monocorophium acherusicum*	-	-	-	-	-	-	-	-	-	-	114	595	148	857	857
AR	*Grandidierella japonica*	-	-	-	1	-	-	-	-	-	1	459	239	103	801	802
AN	*Streblospio benedicti*	-	-	-	-	1	-	-	-	-	1	335	25	362	722	723
AN	*Mediomastus ambiseta*	24	39	120	156	36	16	9	16	36	452	-	2	-	2	454
AN	*Polydora cornuta*	-	-	-	-	-	-	-	-	-	-	417	4	10	431	431
AN	*Polydora nuchalis*	-	-	-	-	-	-	-	-	-	-	326	3	6	335	335
AR	Harpacticoida	-	-	-	1	-	-	-	-	-	1	238	12	36	286	287
AN	*Syllides* sp	-	-	-	-	-	-	-	-	-	-	-	-	271	271	271
AN	*Cirriformia* sp MBC 1	-	-	-	-	-	-	-	-	-	-	-	147	113	260	260
AN	*Apoprionospio pygmaea*	7	17	11	31	35	31	26	32	38	228	2	1	2	5	233
AN	*Mediomastus acutus*	52	17	-	35	16	4	22	22	15	183	-	3	6	9	192
AN	*Sphaerosyllis californiensis*	-	-	2	-	-	-	-	-	-	2	1	125	55	181	183
AN	*Pseudopolydora paucibranchiata*	-	-	-	-	-	-	-	-	-	-	111	3	18	132	132
AN	*Cossura* sp A Phillips 1987	1	3	125	-	1	-	-	-	1	131	-	-	-	-	131

Key: Phy = Phylum, AN = Annelida, AR = Arthropoda, NT = Nematoda

Benthic Macrofauna. The benthic macrofaunal community was sampled during the NPDES otter trawl surveys. A total of 2, 660 individuals representing 31 species were collected during winter and summer surveys (Table 3). Common larger, motile macroinvertebrates living on the surface of the sediments in the general vicinity of Seal Beach Pier include blackspotted bay shrimp (*Crangon nigromaculata*), graceful crab (Cancer *gracilis*), sand stars (*Astropecten armatus* and *A. verrilli*), swimming crabs (*Portunus xantussi*), and tuberculate pea crab (*Pyromaia tuberculata*). The dominant species, the blackspotted bay shrimp, comprised the majority of individuals. This species is very common through nearshore southern California habitats, feeds on small benthic infauna and epifauna, and is preyed upon by several species of fish.

Table 3. Epibenthic Macrofauna Collected in Otter Trawls, March and June 2006 Surveys. Haynes and Alamitos Generating Station NPDES Surveys. Source: MBC Applied Environmental Sciences, 2006).

	Winter							Summer							Annual	Percent
Species	T1	T2	T3	T4	T5	T6	Total	T1	T2	T3	T4	T5	T6	Total	Total	Total
blackspotted bay shrimp	98	278	648	76	321	134	1,555	-	2	-	29	11	24	66	1,621	60.9
tuberculate pear crab	22	4	3	4	7	2	42	23	76	36	14	180	9	338	380	14.3
spiny sand star	5	19	28	8	16	19	95	6	28	18	8	22	13	95	190	7.1
graceful crab	4	80	38	-	1	18	141	-	-	-	1	-	-	1	142	5.3
sand star	-	19	4	4	8	10	45	-	13	5	5	8	6	37	82	3.1
Xantus swimming crab	15	1	22	2	29	1	70	-	-	-	-	-	1	1	71	2.7
New Zealand snail	-	-	-	37	14	-	51	-	-	-	1	-	-	1	52	2.0
giant-frond-aeolis	-	-	-	17	6	-	23	-	-	-	-	-	-	-	23	0.9
hermit crab	-	-	-	3	1	-	4	-	1	2	2	4	6	15	19	0.7
Pacific rock crab	2	2	2	-	1	1	8	-	2	-	1	-	-	3	11	0.4
sheep crab	-	-	2	-	-	-	2	-	1	-	3	2	1	7	9	0.3
red jellyfish	6	1	1	-	-	-	8	-	-	-	-	-	-	-	8	0.3
Stimpson coastal shrimp	-	-	2	1	2	3	8	-	-	-	-	-	-	-	8	0.3
globose sand crab	-	1	-	-	1	4	6	-	-	-	-	-	-	-	6	0.2
fat western nassa	-	-	-	-	-	-	-	-	-	-	1	-	4	5	5	0.2
sea pansy	-	-	3	-	-	-	3	-	-	1	-	1	-	2	5	0.2
sandflat elbow crab	-	-	-	1	3	-	4	-	-	-	-	-	-	-	4	0.2
California two-spot octopus	-	-	-	-	3	-	3	-	-	-	-	-	-	-	3	0.1
Kellet's whelk	-	-	-	-	-	-	-	-	-	-	-	3	-	3	3	0.1
moon snail	-	-	-	1	2	-	3	-	-	-	-	-	-	-	3	0.1
California spiny lobster	2	-	-	-	-	-	2	-	-	-	-	-	-	-	2	0.1
hermissenda	-	-	-	2	-	-	2	-	-	-	-	-	-	-	2	0.1
short-spined sea star	-	-	-	-	-	-	-	-	-	-	1	-	1	2	2	0.1
slender sea pen	-	-	-	-	-	1	1	-	-	-	1	-	-	1	2	0.1
Alaska bay shrimp	-	-	-	-	1	-	1	-	-	-	-	-	-	-	1	0.0
bat star	-	-	-	-	1	-	1	-	-	-	-	-	-	-	1	0.0
festive murex	-	-	-	-	-	-	-	-	-	-	1	-	-	1	1	0.0
moon jelly	-	-	-	1	-	-	1	-	-	-	-	-	-	-	1	0.0
northern kelp crab	-	-	-	-	-	1	1	-	-	-	-	-	-	-	1	0.0
sea mouse	-	-	-	-	1	-	1	-	-	-	-	-	-	-	1	0.0
yellowleg shrimp	-	-	-	-	-	1	1	-	-	-	-	-	-	-	1	0.0
Station Totals																
Total Abundance	154	405	753	157	418	195	2,082	29	123	62	68	231	65	578	2,660	
Number of Species	8	9	11	13	18	12	27	2	7	5	13	8	9	16	31	
Diversity (H')	1.23	0.98	0.64	1.55	1.05	1.18	1.13	0.54	1.08	1.04	1.78	0.87	1.72	1.35	1.46	
Evenness (J')	0.59	0.45	0.27	0.61	0.36	0.47	0.34	0.78	0.55	0.64	0.70	0.42	0.78	0.49	0.42	
Biomass (kg)	1.63	2.82	3.04	0.99	2.14	1.20	11.81	0.14	0.92	0.24	0.86	1.46	0.75	4.37	16.19	

2.1.3 Rock and Concrete Structures

Jetty quarry stone (Anaheim Bay West Jetty) and concrete groins (Seal Beach Pier) are located at opposite ends of East Beach and provide a stable biological habitat for many coastal species. The apex of the jetty provides perching sites for birds such as pelicans, cormorants, and sea gulls, while the surfaces of these structures within the littoral (tide) zone provide attachment area for intertidal and subtidal algae and invertebrates, cryptic habitat for resident fishes, and foraging areas for fish that prey on small invertebrates and graze on algae that attach to the structure. Sand movement will alternately expose and cover lower areas at the base of these rocks, creating stressful conditions for invertebrates and plants resulting in highly variable abundances over the course of a season and between years.

During low tide surveys conducted on 18 January, 2008, quarry rock habitat on the West Jetty of the Anaheim Bay Navy Weapons Station exhibited a low species diversity. This area was colonized only by the barnacles *Balanus crenatus and B. glandula*.

On the downcoast side of the Seal Beach Pier groin and on the pier pilings (Figures 6 and 7), species diversity was higher. A summary the dominant plants and animals found on the Seal Beach Pier groin observed during 2004 and 2008 CRM field surveys is provided in Table 4. Species present, by zones, are discussed below.

Splash and high tide zone groin habitat. The splash zone is colonized by organisms that can withstand long periods of drying (desiccation) and are covered only during extremely high tides or are wetted by sea-spray. Site-specific surveys conducted in 2004 and 2008 documented the presence of periwinkle snails (*Littorina* spp), barnacles (*Chthamalus fissus/dalli*), sea lettuce algae (*Ulva californica*) and blue green algae (Figure 5).

Barnacles (*Balanus glandula* and *Chthamalus* spp.), and limpets (*Collisella digitalis, Collisella scabra, and Lottia gigantea*) were common in the high tide zone.. Small clumps of rockweed (*Silvetia compressa*) are present particularly in the protected overhang habitats underneath the groin cap.

Mid to low intertidal groin habitat. The mid and low intertidal zones support a far greater number of plants and animals due to their greater periods of inundation by the tides. These zones are also affected by constant surge and wave action. California mussels (*Mytilus californianus)* and gooseneck barnacles (*Pollicipes polymerus*) form the dominant biomass on the groin and account for up to 90% of the biological cover. Mussel bands begin as narrow, one-foot wide bands at the base of the groin/sand interface and progressively increase in size with an increase in depth.

Figure 6. Concrete groin on the east side of the pier, covered by barnacles, mussels, limpets, and chitons.

Figure 7. Pier piling community of mussels, gooseneck barnacles, barnacles, and limpets

Table 4. Summary of Dominant Species Observed on the Seal Beach Groin 14 October and 5 November 2004 and January 18, 2008. (Source: CRM, unpublished data, CRM 2004).

Species	Common Name	Splash Zone	High Tide Zone	Mid Tide Zone	Low Tide to Shallow Subtidal
Green Algae					
Ulva latuca	green algae	x	x		
Brown Algae					
Selvetia compressa	rockweed		x		
Sargassum sp.	sargassum weed				x
Cnidaria					
Aglaophenia sp.	hydroid				x
Anthopleura xanthogrammica	green anemone			x	x
Porifera					
Haliclona sp.				x	x
Annelida					
Phragmatopoma californica	sand castle worm				
Mollusca-Gastropods					
Acanthina spirata	snail			x	
Collisella digitalis	limpet		x	x	
Collisella scabra	limpet		x		
Lottia gigantea	limpet		x		
Serpulorbis squamigerus	tube-snail				x
Mollusca-Pelecypoda					
Mytilus californiensis	mussel			x	x
Pseudochama exogyra	reverse chama			x	
Arthropoda-Crustacea					
Balanus glandula	barnacle		x		
Chthamalus fissus/dalli	barnacle	x	x		
Pachygrapsus crassipes	lined shore crab		x	x	
Pollicipes polymerus	goose-neck barnacle			x	
Ectoprocta					
Bugula neritina	moss animal				x
Hipplodoplosia insculpta	moss animal				x
Echinodermata					
Pisaster ochraceus					x
Urochordata					
Botryllus/Botrylloides spp	colonial tunicates			x	x
Styela montereyensis	stalked tunicate				x
Chordata					
Neoclinus sp.	fringe head clinid				x

Within the mussel mass, several species of invertebrates congregate in high numbers. These include anemones (*Anthopleura xanthogrammica*), snails *(Acanthina spirata*), chitons (*Mopalia muscosa, Nutallina californica*), limpets (*Lottia gigantea, L. limatula*) and polychaete worms. The mussel mass also provides habitat for many microcrustaceans and polychaete worms.

Shallow subtidal groin habitat. Mussels also dominate the cover on pier and groin habitat in the shallow subtidal zone. Other species observed during subtidal field surveys included a sea stars (*Pisaster ochraceus*), the clinid fish (*Neoclinus* sp.), ectoprocts (*Hipplodoplosia insculpta*), colonies of the tube snail *Serpulorbis squamigerus,* sand castle worms *Phragmatopoma californica,* and encrusting and solitary tunicates (*Botrylloides/Botryllus* spp., and *Styela montereyensis*). The dominant algae living on hard substrate in the project vicinity is the seaweed *Sargassum muticum*.

2.1.4 Open Water

Open waters in the project support resident and migrant fishes, marine mammals, and seabirds. Within the project area, depths range from 0.0 ft MLLW at the shoreline to approximately -40 ft MLLW near the proposed sand borrow site offshore of Sunset/Surfside Beach.

The types of fishes known from the nearshore waters in the project vicinity were documented in otter trawl surveys conducted between during the March and June 2006 NPDES monitoring surveys for the Haynes and Alamitos Generating Stations (MBC, 2006). Collectively, 18 species of fish were identified offshore of the Seal Beach Pier at Stations B3 and B6 during the winter and summer surveys (Table 5). Seasonal variation within the fish community was high, with more individuals, a higher number of species, and higher biomass generally occurring during the summer months than during winter.

Numerically dominant species collected offshore of Seal Beach along the B3, 20 ft isobath included northern anchovy (*Engraulis mordax*), speckled sand dab (*Citharichthys stigmaeus)*, California halibut (*Paralichthys californicus*), midshipmen (*Porichthys* spp.), and Pacific staghorn sculpin (*Leptocottus armatus*).

Along the 40 ft isobath, the numerical dominants collected northern anchovy, white croaker (*Genyonemus lineatus*), speckled sand dab, horny head turbot (*Pleuronichthys verticalis*), and California tonguefish (*Symphurus atricauda*). Both the 20 ft and 40 ft stations during summer were dominated by high numbers of northern anchovy.

Table 5. Annual Abundance and Catch Parameters for Fish Species Collected in Otter Trawls, March and June 2006 Surveys. Haynes and Alamitos Generating Station NPDES Surveys. Source: MBC Applied Environmental Sciences, 2006

	Winter							Summer							Annual	Percent
Species	T1	T2	T3	T4	T5	T6	Total	T1	T2	T3	T4	T5	T6	Total	Total	Total
northern anchovy	-	-	-	-	-	-	-	57	217	350	18	13	61	716	716	27.1
speckled sanddab	32	16	25	42	62	22	199	4	22	35	55	97	60	273	472	17.9
white croaker	63	17	9	3	2	6	100	4	3	9	18	11	143	188	288	10.9
California tonguefish	15	15	3	24	17	21	95	-	-	-	57	21	58	136	231	8.7
California halibut	45	31	26	8	14	12	136	12	10	5	3	12	13	55	191	7.2
hornyhead turbot	13	9	3	8	9	6	48	5	4	12	38	22	59	140	188	7.1
California lizardfish	1	-	-	71	19	7	98	1	-	1	18	17	2	39	137	5.2
spotted turbot	8	2	3	5	10	3	31	7	2	4	10	2	9	34	65	2.5
fantail sole	9	-	-	1	8	-	18	5	6	8	3	6	3	31	49	1.9
Pacific staghorn sculpin	1	1	1	-	-	-	3	2	8	30	1	1	4	46	49	1.9
queenfish	20	4	3	-	-	4	31	3	-	-	-	-	12	15	46	1.7
shiner perch	-	-	-	-	2	-	2	-	6	4	3	4	14	31	33	1.2
thornback	-	4	28	-	-	-	32	-	-	-	-	1	-	1	33	1.2
specklefin midshipman	1	-	-	7	4	2	14	-	-	1	8	4	5	18	32	1.2
barred sand bass	3	-	-	13	1	-	17	4	-	-	2	3	-	9	26	1.0
diamond turbot	5	2	3	-	-	2	12	1	1	3	-	2	3	10	22	0.8
white seaperch	-	-	-	-	-	-	-	-	-	-	18	2	-	20	20	0.8
English sole	-	-	-	-	-	-	-	-	-	-	7	5	1	13	13	0.5
shovelnose guitarfish	1	6	1	-	-	-	8	1	-	-	-	-	-	1	9	0.3
round stingray	1	5	1	-	1	-	8	-	-	-	-	-	-	-	8	0.3
kelp pipefish	1	2	-	-	1	1	5	1	-	-	-	-	1	2	7	0.3
California scorpionfish	-	-	-	-	-	-	-	-	-	-	2	-	-	2	2	0.1
bat ray	-	-	-	-	-	-	-	-	-	-	1	-	-	1	1	0.0
bay goby	-	-	-	-	-	1	1	-	-	-	-	-	-	-	1	0.0
big skate	-	1	-	-	-	-	1	-	-	-	-	-	-	-	1	0.0
California corbina	1	-	-	-	-	-	1	-	-	-	-	-	-	-	1	0.0
California skate	-	-	-	-	1	-	1	-	-	-	-	-	-	-	1	0.0
Total Abundance	220	115	106	182	151	87	861	107	279	462	262	223	448	1,781	2,642	
Number of Species	17	14	12	10	14	12	22	14	10	12	17	17	16	22	27	
Diversity (H')	2.10	2.19	1.88	1.76	1.94	2.07	2.36	1.76	0.95	1.02	2.27	2.04	2.03	2.05	2.34	
Evenness (J')	0.74	0.83	0.76	0.76	0.74	0.83	0.76	0.67	0.41	0.41	0.80	0.72	0.73	0.66	0.71	

Note: "-" = absent

2.2 SPECIAL STATUS SPECIES

Table 6 lists species of special status that have a potential to be in the project area.

2.2.1 Plants

Eelgrass. While there is no formal special status for eelgrass (*Zostera marina*), it provides protective habitat for numerous invertebrates (including lobsters), nursery habitat for marine fishes, and a foraging habitat within eelgrass beds for fishes and seabirds. California least turn *(Sterna albifrons brownii*) will forage on baitfish that congregate within eelgrass meadows. This species is a true marine flowering plant that forms beds and meadows in the low intertidal and shallow subtidal sediments of bays, harbors, and nearshore marine environments at depths between 0.0 and -55 ft MLLW. This species is not expected to occur within the project area, but it is extremely abundant within Alamitos Bay and Anaheim Bay/Sunset/Huntington Harbour (CRM, 2001; R. Ware, pers. observations, 1982-2007). During dive surveys conducted at depths between the surf zone to -18 ft MLLW offshore of West Beach in 2004, CRM did not find any evidence of its presence along the length of the existing pier groin. It is unlikely to be present offshore of East Beach.

Surfgrass. Surfgrass (*Phyllospadix torreyi*) is a true marine flowering plant that grows in rocky intertidal and shallow subtidal habitats at depths between approximately +1 to -20 ft MLLW. Like eelgrass, it is an important nursery and protective habitat for marine invertebrates and fishes. While it grows in shallow offshore intertidal and rocky habitats there is no rocky intertidal or subtidal reef along the Seal Beach Shoreline. Surfgrass was not observed during beach reconnaissance surveys in either 2004 or 2008 on either the pier groin or the West Anaheim Bay.

2.2.2 Invertebrates

There are no sensitive species of invertebrates within the project area.

2.2.3 Fishes

Three special status fish species are known to have historically occurred, or could potentially occur in the general region of the proposed beach nourishment project. Table 2 describes the potential for each species to occur in the project area. These species are briefly discussed below.

Tidewater Goby. The tidewater goby (*Eucyclogobius newberryi*) has been expatriated from the San Gabriel River Mouth. It is currently found in shallow marine areas and lower reaches of streams between San Diego northward to Humboldt County waters where the salinity is less than 10 parts per thousand. The population of the tidewater goby is depleted due to lowering or elimination of flows in the lower reaches of coastal streams, pollution, and the filling in, channelization, or physical alterations of their habitats. The population disappeared from about 74 percent of the coastal lagoons from Morro Bay southward to San Diego (U.S. Fish and Wildlife, 1994).

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 Seal Beach (Karen Martin, pers. comm. with R. Ware, CRM, 2004 and 2008). 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.

TABLE 6
SPECIAL STATUS ANIMAL SPECIES KNOWN TO OCCUR
IN THE REGION OF THE PROPOSED EAST BEACH SAND NOURISHMENT PROJECT

Scientific Name	Common Name	Status		Habitat	Potential to Occur
		USFWS	CDFG		
Plants	surfgrass	--	--	rocky intertidal/subtidal	low potential
	eelgrass	--	--	bay/harbor/nearshore sediments	low potential
Fishes					
Eucyclogobius newberryi	Tidewater goby	FE	--	shallow marine waters, lower reaches of streams	No potential, extirpated
Leuresthes tenuis	California grunion	--	--	spawns on local beaches	High potential, Late March through Aug
Paralichthys californicus	California halibut	--	--	shallow coastal waters, open ocean	High potential year around
Reptiles					
Chelonia mydas	Green turtle	FE	--	Nearshore and open ocean waters	Rare visitor
Eretmochelys imbricata	Hawksbill sea turtle	FE	--	Nearshore and open ocean waters	Rare visitor
Birds					
Pelecanus occidentalis	Brown pelican	FE	SE	Bays, estuaries, nearshore waters	Forages and rests in the project area
Sterna antillarum browni	California least tern	FE	CE	Nests on sparsely vegetated flat substrates forages in nearby waters	No suitable nesting habitat onsite. Breeds at nesting sites in the Seal Beach Wildlife Refuge, Bolsa Chica, and forages in the waters offshore of Seal Beach
Charadrius alexandrinus nivosus	Western snowy plover	FT	SSC	Nests on sandy beaches and shores	No suitable nesting habitat present onsite, potential for individuals to occur
Mammals					
Zalophus californianus	California sea lion	MMA		Nearshore and open ocean waters	common visitor
Tursiops truncatus	bottlenose dolphin	MMA		Nearshore and open ocean waters	occasional visitor
Eschrichtius robustus	California gray whale	MMA		Nearshore and open ocean waters	rare visitor inshore of pier

Scientific Name	Common Name	Status		Habitat	Potential to Occur
		USFWS	CDFG		

KEY:

U.S. Fish and Wildlife Service

- FE Federal Endangered
- FT Federal Threatened
- PE Proposed Endangered
- FC Federal Candidate
- FSC Federal Species of Concern
- MMA Protected under Marine Mammal Act

California Department of Fish and Game

- CE California Endangered
- CT California Threatened
- SSC Species of Special Concern
- FP Fully Protected
- * Considered sensitive by the California Natural Diversity DataBase.

The grunion is a non-migratory species (http://www.dfg.ca.gov/mrd/gruschd.html). Grunion use the energy of waves to strand themselves onto sandy beaches generally over a 3-4 night period following the highest semi lunar tides. Typically, grunion "runs" last about 1 to 2 hours (Walker, 1952). Female dig themselves tail-first into wet sand. The males then curl around the females and deposit milt. Normally, the eggs develop above the water line buried in moist sands and are triggered to hatch in nine days at the high tide of the next new or full moon by waves that reach high enough on shore to wash out the sand and carry the eggs into the ocean (Walker, 1952; Middaugh et al., 1983 in Darken et al., 1998). If the eggs are washed out to sea during the next high tides, they hatch rapidly into free-swimming larvae (Walker, 1952). If the waves do not reach the eggs, as happens frequently along the southern California coast, the eggs are able to remain viable for at least two more weeks (Walker, 1952) and up to 35 days (Darken et al., 1998). This period encompasses the next two highest semi lunar tides. However, hatching success decreases over time (Darken et al., 1998).

Spawning occurs from March through August, and occasionally in February and September. Peak spawning period is between late March and early June. After July, spawning is erratic, and the number of fish observed in a grunion run greatly decreases. (Walker, 1952; California Department of Fish and Game, Appendix 1).

Seal Beach is a major spawning beach for grunion (Karen Martin, pers. comm. with R. Ware, CRM, 30 January 2008). In general, they run on both sides of the pier with the largest numbers usually toward the north jetty end by Alamitos Bay. During summer 2004, grunion spawned along the shoreline starting in April through early June (Karen Martin, Pepperdine University, pers. comm. with R. Ware, CRM, 2004). The runs varied in strength but spawning was reported all along the beach, particularly around the pier and extending downcoast to the Anaheim Bay West Jetty.

While the California grunion is not a formally listed federal-or-state rare, threatened, or endangered species, grunion spawning habitat it is considered "sensitive" because of the overlap between beach spawning activity and shoreline management activities such as (1) the removal of debris and grooming beaches by mechanical means that rake, remove, or crush eggs (2) beach erosion; 3) harbor construction; and (4) pollution (Martin, 2002, http://www.dfg.ca.gov/mrd/gruschd.html), as well as beach nourishment activities.

California Halibut. Although the California halibut (*Paralichthys californicus*) does not have a formal special species status, this species is considered a sensitive species by resource agencies because of its commercial and sport fish value and a 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 embayments such as Alamitos Bay, Anaheim Bay, Outer Bolsa Chica, and Newport Bay. Halibut are distributed throughout the waters offshore of Seal Beach. Young-Of-The-Year (YOTY) prefer shallow waters between about –0.45 meters (1.5 feet) and –1.0 meter (3.5 feet) Mean Lower Low Water (MLLW), whereas juveniles prefer deeper channel bottoms to a maximum depth of approximately 4.5 meters (15 feet) MLLW. After spending nearly nine months in coastal embayments, juveniles will move out into the open coastal environment. They

commonly occur in the nearshore waters offshore of the East Beach project area (MBC Applied Environmental Sciences, 2006).

2.2.4 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 adjacent to the East Beach project site.

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 the River. According to the Long Beach Lifeguards and Marine Bureau staff, green sea turtles have been seen in Alamitos Bay and appear to be curious (Vivian Cook, Marine Bureau; Allen Powder, Long Beach Lifeguards pers. comm. with R. Ware, CRM, 27 July 2007). However, no records are kept as to where they have been seen, the time of year of occurrence, or the numbers observed.

There is no evidence that these species breed in the project area. Green turtles are mostly herbivorous. They spend most of their time feeding on algae in the sea and the grass that grow in shallow waters. As juveniles, they eat plants and other organisms such as: jellyfish, crabs, sponges, snails, and worms. As adults, they are strictly herbivorous (Ernst, 1994; Crite, J., 2000). Because Alamitos Bay has a productive eelgrass system, green sea turtles may be utilizing the seagrass beds located throughout the bay as one source of their nutritional requirements, which are found throughout Alamitos Bay, extending into the Cerritos Channel (CRM, 2007, pers. com with Eric Wilson, EDAW, Inc). There are no known offshore eelgrass beds that would make the East Beach project area a foraging area for sea turtles.

Green sea turtles have stranded in the Long Beach area. For example, in October, 2004, three green sea turtles stranded in the Belmont Shore area and one green sea turtle stranded in the Treasure Island Marina area. In addition, over the years, the National Marine Fisheries Service (NMFS) received numerous reports of sightings of sea turtles in the area. In October, 2006, the Long Beach Aquarium attached a satellite transmitter to a green sea turtle that had live-stranded in Long Beach. The turtle was tracked south to the San Clemente area and then turned around and headed back north to the Long Beach area, where it remained for several weeks, presumably foraging on eelgrass or algae in the area (EDAW, 2007; Christina Fahy, National Marine Fisheries pers. comm. with EDAW, Inc. July 2007).

2.2.5 Marine Mammals

Three species of marine mammals have a potential to occur within the project site; the California sea lion (*Zalophus californica*), the bottlenose dolphin (*Tursiops truncatus*) and the California gray whale (*Eschrichtius robustus.* In June 1994, the 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 (Foster and Schiel 1985). Gray whales migrate within 125 miles (200 km) of the shoreline and many are sighted within 9 miles (15 km) of shore (Dailey et al. 1993). On the northbound migration, cow-calf pairs are believed to more closely follow the shoreline rather than the offshore route (Dailey et al. 1993).

Bottlenose dolphin and sea lions will occur periodically within the project area waters. Gray whales are also present on a seasonal basis in the San Pedro Channel and offshore Seal Beach. However, they usually occur farther offshore in the channel, as their migration pattern tends to head offshore as they migrate towards and away from the Palos Verdes Peninsula. On rare occasions, they have been known to enter the San Gabriel River and Alamitos Bay.

2.3 FISH MANAGEMENT PLAN SPECIES

This assessment of Essential Fish Habitat (EFH) for the East Beach Beach Nourishment Project 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)]

The proposed project is located within an area designated as EFH for the Coastal Pelagics Management Plan and the Groundfish Management Plan. Four coastal pelagic species potentially occur in the waters offshore of Seal Beach and six groundfish species potentially occur within the local Seal Beach Project Area Plan (Tables 7 and 8).

Of the four coastal pelagic species, the northern anchovy comprises a significant portion of fish that occur, and contribute moderate-to-heavy abundances to the nearshore fish

Table 7. Coastal Pelagic Management Plan Species Potentially Affected By the Seal Beach East Beach Nourishment Project

Common Name	Scientific Name	Comment
Northern anchovy	*Engraulis mordax*	Common to abundant during each of 19 surveys between 1972 and 2006. Second most abundant species overall; most abundant species in NPDES surveys in 2006 summer surveys. Specimens collected during Haynes Alamitos heat treatment operations Adult and larvae present in area. [1,2,3,4]
Pacific sardine	*Sardinops sagax*	Mostly adults in the general area. [1,2] Present in 11 of 19 NPDES surveys offshore of Seal Beach between 1972 and 2006, but in extremely low abundances. Less than 0.01% total abundance. several were collected during heat treatments at the Haynes Alamitos Generating Station [4]
Pacific mackerel	*Scomber japonicus*	Incidental catch at depths shallower than 30 feet. Present in one survey (1997) Predominantly adults in project area [1,2,3] Not present during 2006 winter and summer NPDES surveys; only 1 individual caught between 1972 and 2007 in NPDES monitoring surveys offshore of Seal Beach[4]
Jack mackerel	*Trachurus symmetricus*	Incidental catch at depths shallower than 30 feet. Present during one survey (1994). Predominantly adults in project area [1,2,3] Not present during 2006 winter and summer NPDES surveys although several individuals were collected during Haynes Alamitos heat treatments and normal operations in 2006[4]

[1] MBC 1997
[2] MEC 1988
[3] MEC 1999
4 MBC 2006

Table 8. Groundfish Management Plan Species Potentially Affected By the Seal Beach East Beach Nourishment Project

Common Name	Scientific Name	Comment
California scorpion fish	Scorpaeana guttata	<0.01% of fish taken in NPDES monitoring surveys offshore of Seal Beach between 1972 and 2006[4]
Vermillion rockfish	*Sebastes miniatus*	<0.01% of fish taken in NPDES monitoring surveys offshore of Seal Beach between 1972 and 2006[4;] Incidental catch of impinged species at Haynes Alamitos Generating Station
Calico rockfish	*Sebastes dalli*	<0.01% of fish taken in NPDES monitoring surveys offshore of Seal Beach between 1972 and 2006[4]
California skate	*Raja inornata*	<0.01% of fish taken in NPDES monitoring surveys offshore of Seal Beach between 1972 and 2006[4]
spiny dogfish shark	*Squalus acanthias*	<0.01% of fish taken in NPDES monitoring surveys offshore of Seal Beach between 1972 and 2006
leopard shark	*Triakis semifasciata*	<0.01% of fish taken in NPDES monitoring surveys offshore of Seal Beach between 1972 and 2006[4]

4 MBC 2006

biomass of the nearshore area of San Pedro Bay, as well as the nearshore Seal Beach waters (MBC Applied Environmental Sciences, 2006). It was the highest ranking species in 19 monitoring surveys between 1972 and 2006 offshore of the San Gabriel River and was never ranked lower than the 5th most abundant species. In 2006, it was the most abundant species in NPDES summer surveys. Adult and larvae present in area.

Northern anchovy comprise a portion of the commercial bait fishery in San Pedro Bay. This species is a planktivore, and is preyed upon by larger fish and seabirds. Larvae of northern anchovy are also part of the Alamitos Bay ichthyofauna and icthyoplankton community.

Although several other coastal pelagic and groundfish FMP 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.

2.4 SENSITIVE HABITATS

2.4.1 Reefs and Kelp Beds

There are no known reefs or kelp beds within the project area.

2.4.2 Marine Protected Areas.

There are no State or Federal Marine Protected Areas within the project area.

2.5 INVASIVE ALGAE

2.5.1 *Caulerpa taxifolia*

Invasive algae (Figure 8) 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 to subtropical species that is bought for use in aquariums.

Figure 8. The invasive algae, *Caulerpa taxifolia*. Source: NOAA/NMFS

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.

2.5.2 *Undaria pinnatifida (wakame)*

Undaria pinnatifida (Figure 9) is a golden brown kelp native to the Japan Sea. It has been introduced in Australia, New Zealand, and Europe and has now spread to the California coastline. It has been found in several bodies of water including Monterey Harbor, Santa Barbara Harbor, Port Hueneme, Channel Islands Harbor, Ventura Harbor, Long Beach Harbor, Anaheim Bay, San Diego Bay, and the waters surrounding Catalina Island (Silva et al., 2002, R. Ware, pers. observations). In Japan it is known as wakame and is extensively cultivated as a fresh and dried food plant. However, it has the potential to become a major pest in our coastal waters. *Undaria* grows to between 3 to 7 feet (1 and 2 m) tall and is found in sheltered harbor waters on rocks, breakwaters, and marine debris from the low-tide mark to 50 feet (15 m). A mature plant has a distinctive, spiraled (frilly), spore-producing structure at its base. It also has an obvious central stem to 4 inches (10 cm) wide that extends for the length of the plant (Figure 8). The blade may be up to 3.1 feet (1 m) wide and extends from the tip of the plant for half the length of the plant.

Figure 9. *Undaria pinnatifida* (Source: CRM, Inc.)

3.0 POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

3.1 DESCRIPTION OF PREFERRED PROJECT ALTERNATIVE

The concept design of the East Beach nourishment project is shown in Figure 1, that illustrates the location of the sand borrow site to the beach nourishment area on East Beach. Figure 10 illustrates a plan view of the beach nourishment site. The outermost line represents the maximum probable footprint of the beach fill. The plan view graphic also shows the location of the fill berm (level finished beach surface of the fill) and the foreshore slope toward the water. The maximum fill footprint would be approximately 2,300 feet long and a maximum of 510 feet wide, including the berm and slope components of the fill. The cross-section shows pre-project existing conditions of the beach profile, and post-construction conditions of the beach fill profile (Figure 11). The fill will be level as a berm, then slope to the seafloor to a depth of -11 ft MLLW at a ratio of 10 (horizontal) to 1 (vertical).

Construction will occur using a 27-inch hydraulic cutter-suction dredge operating off Surfside Colony. The dredge will feed material into a discharge line at a depth of between 30 and 40 ft that will supply material to the beach. A work boat will be needed to tend the dredge, the submerged discharge line, and the booster pump on the barge. The barge will be anchored off East Beach and will also be used to install and remove the discharge pipe. The sand quantity to be dredged and placed on the beach will be a maximum of 200,000 cubic yards. The dredge will pump 24 hours a day, and seven days a week. Outside of the beach equipment operation hours (see below), the slurry material will build up on the beach until the construction equipment can operate to spread the sands over the beach.

Equipment working on the beach will consist of one loader, one excavator, and two bulldozers. Earthmoving equipment on the beach will create a containment dike to contain the slurry and allow drainage of the water in the slurry off the beach and into the ocean, leaving the sand behind as fill. The equipment will then be used to move and extend the discharge line progressively along the beach within the fill footprint, and then to eventually grade the beach fill to the dimensions of the concept design.

Construction equipment will operate on the beach between 7 am to 8 pm on Monday through Friday, and from 8 am to 8 pm on Saturday for a period of approximately 2 weeks to one month. No beach construction equipment will be operated on the beach outside of these hours.

Figure 10. Plan View of Proposed Beach Fill. Source: Moffatt & Nichol Engineers

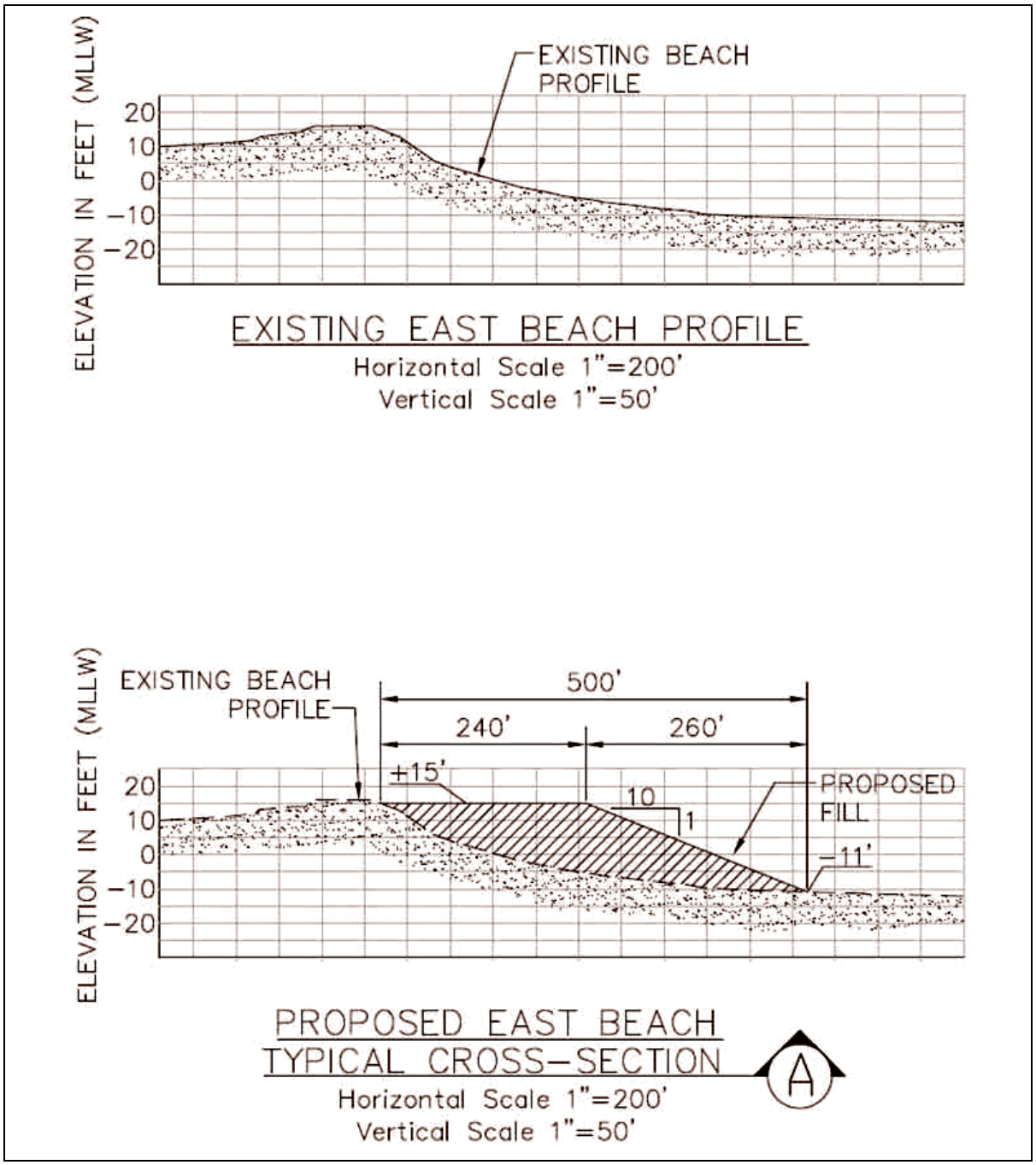

Figure 11. Existing and Proposed Beach Profiles, East Beach.
Source: Moffatt & Nichol Engineers

3.2 DEFINITIONS OF SIGNIFICANT IMPACTS

Potential impacts to marine resources are classified into several categories; significant and unmitigable, significant but mitigable, adverse but not significant, and beneficial.

Several factors were taken into account when identifying the level of impact: duration of impact, rates of recovery of habitat and populations, and how an impact might affect habitats, communities, or individuals of a population.

Significant impacts are defined as:

- The populations of an endangered species, threatened species, fully protected species, or species identified by state and federal resource agency as "sensitive" is directly affected, its breeding habitat impaired, or critical foraging or breeding habitat is lost or substantially affected;

- The movement of any resident species of fish or wildlife is impeded;

- Sensitive resources such as reefs, surfgrass beds, and kelp beds are affected for a period of time that will substantially reduce the ability of resources to recover.

Significant impacts are considered mitigable if the resources can be returned to its previous level of structure and function through a viable restoration program and if the restoration of the resource is considered feasible by resource agencies.

Impacts are considered adverse but not-significant if (1) the project would disturb habitats and individuals but would not result in long-term population effects, (2) non-sensitive resources or non-protected species would be temporarily disturbed; and (3) beach fill sand movement would result in a short-term sedimentation increase but not persistent burial of the resource.

3.3 WATER AND SEDIMENT QUALITY IMPACTS

3.3.1 Turbidity

Dredge slurry material will be pumped via submerged pipelines to onshore containment areas on East Beach. This material will then be moved by tractors and other heavy equipment to the foreshore. As newly emplaced beach material is agitated by waves and currents, fine materials will be dispersed into the waves and will create a localized turbidity plume within the littoral drift zone. The extent of the plume is expected to remain within the 20 to 30 ft isobath over the course of the 2 to 4 week construction period and for a period of time following the completion of beach nourishment. The intensity and the degree to which dispersion will occur will be a function of tides, wave activity, localized storm events, and the amount of silt content in the dredged material. The silt content of the material is expected to be less than 15%, (Chris Webb, Moffatt &

Nichol Engineers pers. com with R. Ware, CRM Inc., 30 January 2008) which will limit the degree to which turbidity will affect the nearshore waters and the length of time sediments will remain in suspension following the completion of beach nourishment.

Because beach nourishment activity will occur during winter or early spring, natural turbidity is expected to be elevated and the difference between the turbidity caused by local runoff, normal mixing processes, and storm events and the proposed beach nourishment activity will be minimal.

Level of Impact. The turbidity plume created during beach nourishment is expected to have an adverse but not-significant short-term effect on local water quality. Some localized turbidity will continue until the nourished shoreline reaches an equilibrium profile.

Mitigation. No mitigation is required. Although not required, implementation of the following mitigation measure would ensure that turbidity levels associated with the proposed project do not exceed ambient levels.

1. During construction, daily monitoring of turbidity during sand placement shall be conducted to ensure turbidity levels do not exceed ambient levels as measured (beyond one-quarter mile offshore at or downcoast of the placement site) for a prolonged period, assumed to be 5 days. If ambient turbidity levels within one-quarter mile are exceeded, the condition will be documented and placement may be modified to reduce turbidity. Turbidity plume observations shall be documented with photographs, and maps of maximum daily plumes shall be reported to the City after construction. Observations of swell, wind, and tide conditions shall also be recorded to correlate with turbidity conditions.

3.3.2 Release of Sediment Contaminants into the Water Column.

Based upon sediment quality studies by MBC Applied Environmental Sciences (2006), contaminant levels in the sediments adjacent to the proposed beach sand borrow site are low, and the sediments in the sand borrow area are also expected to contain minimal concentrations of metals and chlorinated hydrocarbons. Therefore, the potential for adverse water quality and/or sediment quality impacts related to the shoreline disposal of sand material is low. New beach material or turbidity plumes created during the project will contain very low levels of contaminants harmful to marine organisms or humans.

Level of Impact. Under normal beach nourishment operations, no impacts will occur on local water quality related to potential increases in sediment and/or water column contaminants.

Mitigation. No mitigation is required.

3.3.3 Construction Runoff and Discharges

At the beach construction staging area spills or leaks from heavy equipment could enter runoff and or be washed into the nearshore waters, releasing petroleum products such as fuel, oil and grease, and heavy metals into the environment. Unexpected leakages of oil, hydraulic fluid, and other hazardous material associated with dredge slurry pipeline installation and maintenance could also release toxic and/or hazardous materials on the beach and/or the nearshore open waters. Debris (trash and other macro debris) could wash off the beach in storm water run off, as well as be thrown overboard from vessels.

Level of Impact. The project will have a potential for adverse, and but mitigable impacts on water quality.

Mitigation. Potential impacts would be reduced with implementation of the following mitigation measures.

1. Adhere to applicable local, state, and federal regulations including Best Management Practices for construction vehicle fueling.

2. Debris generated would be placed in trash receptacles to prevent any contamination of surface runoff.

3. Fully comply with applicable local, state, and federal water quality regulations.

4. Reasonable and prudent measures shall be taken to prevent all discharge of fuel or oily waste or other hazardous materials from heavy machinery or construction equipment or power tools on East Beach or in the nearshore project area. The City of Seal Beach and its contractors shall maintain current contingency planning guidelines and protocols at the project site, and have adequate equipment available to contain and clean up hazardous materials spills.

3.4 IMPACTS ON MARINE RESOURCES

Potential, direct adverse impacts to marine resources could occur as a result of (1) the direct burial of sandy intertidal habitats and organisms when beach and (2) the burial of subtidal benthic invertebrates located in the pathway of the proposed dredge slurry line between the offshore sand borrow pit and East Beach.

Potential adverse secondary effects of related to beach nourishment are related to the movement of beach fill material within the littoral drift zone that could (1) increase the depth of sediment cover and bury subtidal benthic organisms and (2) increase water column turbidity created by the resuspension and transport of the fine particle constituent of the beach fill material to nearshore waters that could reduce primary productivity (plankton), interrupt feeding mechanisms of filter feeding fishes, and reduce the ability of sight-foraging fishes to see their prey.

3.4.1 Beach Nourishment Impacts on Sandy Intertidal and Shallow Subtidal Soft Bottom Benthic Infauna (non-sensitive species)

Beach operations. Beach fill material will be placed at elevations between +15 and -11 ft MLLW along 2,300 linear feet of shoreline. The beach nourishment site is sand beach habitat. Animals that live in the high-to-low beach sands such as worms, clams, crustaceans, and insects are naturally adapted to living within environments that undergo seasonal environmental changes in order to feed, burrow, and reproduce. They are adapted to living deep in the sands to depths of about 2-3 feet, capable of withstanding normal fluctuations of waves, currents, erosion, and accretion cycles of storms, and are generally tolerant of extreme ranges in temperature and oxygen. If the replenishment occurs gradually, over time, many forms such as bivalves and crustaceans will be able to migrate vertically and survive. Quick and direct burial of non-motile forms however, will smother and kill the organisms.

Beach fill operations will occur over a relative short time frame, between two weeks to one month. Several feet of beach fill material will be placed over the existing beach slope that will smother sandy beach and infaunal organisms.

Once beach nourishment activities are completed, planktonic larvae will resettle the beach and shallow subtidal sand habitat through tidal and wave transport mechanisms. Full recovery of the beach and shallow subtidal benthic infauna is expected to occur within one to three months.

Level of Impact. The effect of beach replenishment on beach fauna and shallow bottom benthic invertebrates is expected to be adverse, but not-significant, resulting in a temporary loss of intertidal sandy beach and benthic soft bottom infauna and non-motile macrofauna along 2,300 ft length of shoreline and a shoreline width of 305 ft between approximately -7 and -11 ft MLLW. The total amount of productive marine habitat temporarily affected by the project is approximately 16 acres. Once the project is completed, sandy beach and benthic soft bottom organisms will begin to recolonize the sediments. Full recovery is expected to occur within one to three months.

Mitigation. No mitigation is required. Although no mitigation is required, implementation of Best Management Practices related to turbidity and other impacts on water quality would ensure that no adverse effects on biological resources will occur (Section 3.3.1-3.3.3).

Dredge Slurry Line Construction and Operations. In order to transport sand from the Sunset/Surfside Beach sand borrow pit to East Beach, it will be necessary to hydraulically pump the sands from a dredge barge at the borrow pit to a barge containing a booster pump through a dredge slurry discharge pipe that will be conduit for placing dredge material onto East Beach. The slurry pipe diameter is three feet and the distance to shore from the sand borrow pit is 16,000 ft. Assuming that laying and removing the pipe will result in temporary disturbances to 3 ft of seafloor on each side of the pipeline, the total amount of seafloor temporarily affected during lay down and retrieval of the

pipeline will be approximately 80,000 sq ft (2.2 acres). The length of time that dredge equipment and pipes will be impacting the seafloor is expected to be about 1 month.

The soft bottom benthic community, composed primarily of polychaete worms, microcrustaceans, mollusks, and slow moving, or non-motile benthic macrofauna (i.e., snails, sea stars, sand stars, and crabs) will be temporarily disturbed through (1) the physical abrasion of the pipe laying operation, or (2) being buried underneath the pipe for of a maximum period of one month. Once the pipeline is removed, benthic invertebrate populations will recolonized the impacted zones.

Level of Impact: This action will result in a short-term disturbance to soft bottom benthic habitat and a short-term decrease in benthic invertebrate populations resulting in an adverse, but not significant impact to benthic resources.

Mitigation: No mitigation is required.

3.4.2 Impacts on Intertidal and Subtidal Hard Substrate Habitat

Beach Activities. The biological community on the jetty, groins, and pier pilings at opposite ends of the beach nourishment zone consist of mussels, barnacles, limpets, chitons, tunicates, sponges, tube snails, sea stars, and other invertebrates common to southern California hard-substrate habitats.

Direct burial of hard substrate and associated marine organisms is not expected since the limits of beach fill will stop short of the Seal Beach Groin and the West Anaheim Bay Jetty. Some redistribution of the beach fill material is expected to occur through longer-term and natural wave processes that have a low-potential to affect mussel communities on pilings and on the groins. However, rocky intertidal organisms are adapted to shifting sand levels and the structures nearby the beach nourishment area are constantly subjected to shifting sand levels such as those that might occur during beach nourishment projects.

Level of Impact. This action will cause a short-term disturbance to hard substrate benthic habitat and a short-term decrease in benthic invertebrate populations, resulting in an adverse, but not significant impact.

Mitigation. No mitigation is required.

Dredge Slurry Line Construction and Operations. There are no known natural reefs within or nearby the beach fill area.

Level of Impact. None.

Mitigation. No mitigation is required.

3.4.3 Open Water Habitat

Turbidity Effects from Beach Activities. Based upon an analysis of several beach nourishment projects in Orange and San Diego counties, the extent and concentration of turbidity plumes are directly proportional to the silt/clay content of the sediments (MEC, 2000). At higher silt/clay content levels, the turbidity plume has a higher potential to extend farther offshore and downcoast, depending on wave, current, tide, and wind conditions. Assuming that the beach fill sediments are less than 15 % silts (Chris Webb, Moffatt & Nichol Engineers pers. comm. with R. Ware, CRM Inc., 30 January 2008), it is unlikely that a turbidity plume would spread farther than one-third to one-half mile, outside of the 20 to 30 ft isobath.

Beach nourishment on East Beach will create a turbidity plume in the shallow nearshore waters as beach fill material is moved to the water line and is agitated and redistributed by wave action and tidal surge. Since the project will be conducted during winter or early spring when turbidity tends to be naturally elevated, the chances that the beach nourishment project will contribute to higher-than-ambient suspended sediment concentrations are minimal. This reduces the risk to marine organisms compared to if the project was to be completed in summer -when natural turbidity levels are much lower and the differential between summer periods of lower turbidity and beach nourishment-induced turbidity would be larger.

While the spread of a turbidity plume could temporarily reduce phytoplankton primary production due to lowered submarine light intensity, the impact would be neglible since the project will be conducted over a short period of time (two weeks to one month) and it would occur when plankton productivity is naturally low (winter/early spring).

Demersal (bottom) and water column fishes that live in the project area are accustomed to turbid conditions and are not expected to be substantially affected by short-term increases in turbidity. The most likely response to a turbidity plume that exceeds their threshold for being able to find prey, or their threshold to respond to water quality degradation would be an avoidance behavior. Some species (i.e., anchovy, sardines, and grunion) are planktivores that rely upon their gills as filtering mechanisms. High levels of suspended sediments can clog their gills and impair their ability to feed as well as breathe. Since the turbidity plume is expected to be short-term and confined within a relatively small offshore zone, fishes would swim out of the higher turbid areas to seek prey and less stressful conditions. Such behavioral changes, while adverse, would not result in mortality or impacts at a population level.

Turbidity Associated with the Pipeline Lay Down Activity, Operation, and Retrieval of the Dredge Slurry Pipeline. Minor and short-term increases in bottom-water turbidity will accompany pipeline lay down and retrieval operations by the resuspension of bottom sediments. Fishes may be initially attracted to the bottom disturbances that will stir up sediments and expose potential prey items such as polychaete worms and amphipod crustaceans. Alternatively, seafloor disturbances from the lay down and retrieval process could startle fish populations, resulting in their swimming to waters outside the project area. No mortality or population-level impacts on fishes will occur.

Level of Impact. Short-term adverse, but not significant resulting in short-term stressed to fishes.

Mitigation. None required. Although no mitigation is required, the implementation of Best Management Practices related to turbidity and other impacts on water quality would ensure that no adverse effects on biological resources will occur (Section 3.3.1-3.3.3).

3.4.4 Special Status Species

Eelgrass. Eelgrass is not known to occur within the project area nearshore habitats.

Level of Impact. None.

Mitigation. No mitigation is required.

Tidewater Goby. Tidewater gobies are not known to occur within the local San Gabriel River habitat or the East Beach project area.

Level of Impact. None.

Mitigation. No mitigation is required.

California Halibut. Juvenile and adult halibut are common offshore of Seal Beach. This species was the 7th most abundant species collected in otter trawl surveys offshore of Seal Beach between 1972 and 2006 (MBC Applied Environmental Sciences, 2006). It is considered a sensitive resource because of its value as sports fish and commercial species. Proposed beach nourishment and dredge slurry pipe installation, operation, and retrieval activities could temporarily affect individuals as a consequence of disturbing shallow water habitat, since both juveniles and adults frequent offshore of the project area. Individuals that are disturbed will migrate out the zone of effects. No mortality or long-term impacts on a population level will occur.

Level of Impact. Short-term adverse, but not significant resulting in short-term stressed to halibut populations.

Mitigation. None required.

California Grunion. California grunion are expected to spawn on East and West beaches periodically between March and September each year, although total numbers of grunion, and the degree of spawning success is highly variable on a year-to-year basis. In general, grunion tend to be attracted to areas where waves are refracted, including piers and jetties (Karen Martin, Pepperdine University, pers. com with R. Ware 1/30/08) and appear to favor both West Beach and the sandy habitat at the base of the pier. However, East Beach should be considered as an important spawning habitat as well.

Beach nourishment operations will occur between winter and early spring and include (1) the placement of dredge slurry on the beach within containment areas via offshore pipelines (2) moving material from the backshore to the foreshore with tractors and front-end loaders incrementally along the beach.

Vehicular movement and moving beach material to the foreshore will result in temporary, adverse impacts to grunion spawning habitat as new beach is built seaward of the existing berm, and intertidal habitat (-2 to +7 ft MLLW) is buried and transformed into supra-tidal +7 to +15 ft habitat. This will temporarily degrade grunion spawning habitat until the project is completed and new beach slopes have stabilized. Beach slopes will be initially steeper (10% or more) than existing foreshore slopes (4% to 8%), but wave action will tend to flatten the slope over time, promoting a more conducive grunion spawning zone.

While the entire East Beach area is potentially grunion spawning habitat, it will not be known to what degree grunion will use portions of East Beach until the grunion season is underway. The degree of impact to spawning grunion during beach nourishment activity will be related to the intensity and site-specific use of East Beach while operations are in progress. Every possible means will be implemented to ensure that grunion spawning habitat is protected and spawning success is achieved if it occurs during construction.

Level of Impact. If grunion habitat is impacted, there will be short-term adverse, but mitigable impacts on this sensitive species.

Mitigation.

Should construction occur during the grunion spawning season (as defined by the California Department of Fish Game grunion calendar), prior to start of construction activities on the project site, the City of Seal Beach shall prepare and implement a beach nourishment grunion habitat protection plan to include:

1. Temporal BMPs, such as avoidance of known spawning area during grunion runs, to avoid disturbances to grunion spawning activity and to minimize damage to grunion spawning habitat;

2. conduct pre-construction monitoring surveys within 3 weeks of proposed construction to determine the potential for grunion to use East Beach during beach nourishment activities;

3. conduct grunion monitoring during known grunion run activities while beach nourishment activities are in progress to assess if specific sites on East Beach will be impacted;

4. implement avoidance measures, if feasible, to minimize impacts to specific areas of the beach if construction-period spawning is observed by berming off beach habitat within 100 ft of where spawning is observed; and

5. conduct post-beach nourishment grunion spawning success monitoring surveys at any sites on East Beach that appear to be temporarily impacted by beach nourishment activity. The survey will be conducted at the first grunion run following completion of the nourishment activities. The survey results will be included in a report that be submitted to the City of Seal Beach, National Marine Fisheries Service, CDFG, and California Coastal Commission within 30 days after the grunion run.

Marine Reptiles (Sea Turtles). Offshore beach nourishment operations will occur where green sea turtles have been occasionally sighted. Therefore, there is a potential that green sea turtles may be in the general project area during the short time period when beach nourishment operations will be occurring or vessels are transiting to-and-from the work site.

Although an occasional green sea turtle may be present, the potential for adverse impacts to an individual is low. Vessel movements would potentially result in a behavioral modification to this species that would include a change in swimming behavior to avoid excessive noise, turbidity, or the vessel movements. No mortality is anticipated to occur as a result of the proposed project.

If a sea turtle is present on the beach while beach nourishment is underwater, any attempt to remove or modify the behavior of the sea turtle without a federal permit would be a "take" of an endangered species.

Level of Impact. The unauthorized take of an endangered species would constitute a short term adverse, but mitigable impact on an endangered species.

Mitigation. If a sea turtle is present in the project area during beach nourishment, the mitigation measure identified below would reduce potential short-term, significant but mitigable to adverse and not-significant.

1. During construction activities, if a sea turtle is on the beach, pumping operations may continue but beach construction activities on the beach shall be halted until the turtle is either removed only by a National Marine Fisheries Service approved biologist or is at least 100 yards offshore of the beach.

2. Vessel crews should be cognizant of the potential for sea turtles to be present within the project area. Crews should be trained to spot and avoid sea turtles while transiting to and from the slurry pipeline project area.

Marine Mammals. All marine mammals are protected by the Federal Marine Mammal Protection Act of 1972 (MMPA). The MMPA prohibits the intentional taking, import, or export of marine mammals without a permit. Several of the species that occur within the SCB are also protected under the Federal Endangered Species Act of 1973 (ESA). A species that is listed as threatened or endangered under the ESA is categorized as depleted under the MMPA. Unintentional take of a depleted species is allowed by permit

only if the activity is determined to have a negligible impact. Intentional take of a depleted species is only allowed under a scientific research permit.

Vessel traffic transiting to and from the dredge slurry pipeline area (barges, tugs, work vessels) would be operating in waters where California sea lion, Pacific harbor seal, California gray whale, bottlenose dolphin, and other marine mammals occur. Hypothetically, work vessels could collide with marine mammals (and sea turtles), or could expose these resource groups to contaminants and interfere with foraging. However, marine mammals are mobile and are generally capable of avoiding boat traffic (American Petroleum Institute, 1983) especially at the speeds the vessels would likely be transiting. Also, marine mammals in the local waters have likely habituated, to some degree, to vessel traffic since vessels commonly transit the waters offshore Seal Beach going to and from oil platforms, and from naval vessels coming to and leaving Anaheim Bay. Vessel operators are also trained to recognize the presence of marine mammals which reduces the potential for adverse impacts. In the event a single gray whale is killed as consequence of a collision, the impact would be a locally significant impact, but it would not result in a population-level impact. The potential for this occurrence however, is very low.

Marine mammals can sense underwater noise and vibrations coming from onshore and offshore sources, although moving sound sources from vessels and aircraft seem to be more disturbing than stationary sources such as drilling rigs, drill ships, and dredging operations (American Petroleum Institute, 1983). Over time, marine mammals in the region would acclimate to dredge-operation noises. Marine mammals could come within a close range slurry pipeline operations, and although they would likely able to "sense" the noise, the magnitude and intensity of the source sounds are unlikely to result in any significant changes in behavior. Such types of sounds and their intensity levels are common throughout the range in which these marine mammals live.

Level of Impact. The "taking" of a marine mammal as a consequence of vessel operations would be a short term, adverse but mitigable impact if vessel operators approach within 100 yards of a marine mammal or vessel operations result in the death of a marine mammal.

Mitigation. If a protected marine mammal is present in the nearshore project area, the mitigation measure identified below would reduce potential short-term, significant but mitigable to adverse and not-significant.

1. Vessel crews should be cognizant of the potential for marine mammals, including seal lions, whales, and dolphins to be present within the project area. Crews should be trained to spot and avoid marine mammals while transiting to and from the slurry pipeline project area.

3.4.5 Fishery Management Plan Species

Project-related turbidity could potentially affect identified FMP species during a two-to-four week period in winter or early spring. This could result in FMP species temporarily avoiding the project area, and a minimal potential for mortality of larval forms. Of the 10 FMP species known from the project region, only the northern anchovy is expected to be in the nearshore Seal Beach waters in substantial numbers. However, the temporary nature of the turbidity plume offshore of Seal Beach is expected to have an adverse, but not-significant impact on this species. No mortality is expected. This species will likely avoid any sediment plume originating from the project, which would constitute a schooling behavioral change. However, implementation of BMPs to minimize water quality degradation would further reduce effects

Level of Impact. Turbidity related to beach nourishment activities is expected to be adverse, but not-significant resulting in temporary, minor behavior disturbances FMP species.

Mitigation. None required.

3.4.6 Sensitive Habitats

Reef Habitat. There are no reefs within the project area; no impacts to this resource would occur. No mitigation required.

3.4.7 Marine Protected Areas. No Marine Protected Areas occur in the local project area, precluding impacts to MPAs. No mitigation required.

3.4.8 Invasive Species

Caulerpa taxifolia. While outbreaks of *Caulerpa taxifolia* have been contained, the Water Resources Board, through the National Marine Fisheries Service and the California Department of Fish and Game, requires that projects having the 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 (http://swr.ucsd.edu/hcd/CaulerpaControlProtocol.htm).

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Level of Impact. Because the spread of *Caulerpa* would be ecologically damaging, any project activities that result in the spread of Caulerpa would be considered adverse but mitigable.

Mitigation. The following mitigation measure would reduce the level of significance to not significant.

1. Prior to initiation of construction activities, the City shall have a qualified marine biologist conduct a *Caulerpa* survey for the proposed pipeline route. The survey results and recommendations shall be documented in a report and submitted to the

City, National Marine Fisheries Service, the California Department of Fish and Game, and California Coastal Commission within five days of completion of the field survey. The City shall ensure that all recommendations in the report will be implemented.

3.5 LONG TERM OPERATIONAL IMPACTS

3.5.1 Water Quality and Sediment Quality

The proposed project will have no long-term impacts on water quality.

3.5.2 Sand Beach and Nearshore Benthic Soft Bottom Habitat Communities

The proposed project will have no long-term impacts on sand beach or nearshore soft bottom benthic communities.

3.5.3 Rocky Intertidal/Hardscape

The proposed project will have no long-term impacts on rocky intertidal or subtidal marine organisms or rock habitat.

3.5.4 Open Water

The proposed project will have no long-term impacts on open water habitats or biological resources.

3.5.5 Special Status Species

The proposed project will have no long-term impacts on species that have special biological status.

3.5.6 Fisheries Management Plan Species

The proposed project will have no long-term impacts on FMP species.

3.5.7 Sensitive Habitats

The proposed project will have no long-term impacts on sensitive habitats.

3.5.8 Invasive Species

The proposed project will have no long-term impacts on invasive species.

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APPENDIX 1.

CALIFORNIA GRUNION FACT SHEET AND 2008 PROJECTED GRUNION RUN DATES
Source: California Department of Fish and Game

http://www.dfg.ca.gov/marine/gruschd.asp#runs

CALIFORNIA GRUNION FACTS

Grunion (*Leuresthes tenuis)* are members of the New World silversides family, Atherinopsidae, 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 Tomales Bay, California and south to San Juanico Bay, Baja California. They inhabit the nearshore waters from the surf to a depth of 60 feet. Tagging studies indicate that they are nonmigratory.

Grunion are the object of a unique recreational fishery. These fish are famous for their spawning behavior that is so remarkable that it evokes an "I don't believe it" response from someone who hears about it for the first time.

Grunion leave the water at night to spawn on the beach in the spring and summer months for four consecutive nights starting the nights of the full and new moons. Spawning begins after high tide and continues for several hours. As a wave breaks on the beach, grunion swim as far up the slope as possible. The female arches her body and excavates the semifluid sand with her tail to create a nest. She twists her body and digs until she is half buried in the sand with her head sticking up. She then deposits her eggs in the nest. Males curve around the female and release milt. The milt flows down the female's body until it reaches and fertilizes the eggs. As many as eight males may fertilize the eggs in a nest. After spawning, the males immediately retreat toward the water while the female twists free and returns with the next wave. While spawning may take only 30 seconds, some fish remain stranded on the beach for several minutes.

Spawning occurs from March through August, and occasionally in February and September. Peak spawning is late March to early June. Mature individuals may spawn during successive runs at about 15-day intervals. Females can spawn up to six times each season. Females lay between 1,600 and 3,600 eggs during one spawn, with larger females producing more eggs.

The eggs are deposited during the highest tides of the month and incubate in the sand during the lower tide levels, safe from the disturbance of wave action. The eggs are kept moist by residual water in the sand. The eggs hatch during the next high tide series when they are inundated with sea water and agitated by rising surf. This occurs after about 10 days.

You can watch grunion eggs hatch by collecting a cluster of eggs after a grunion run and keeping them in a loosely covered container of damp sand in a cool spot for 10-15 days. Then, add one teaspoon of sand and eggs to one cup of sea water and shake gently; the eggs will hatch before your eyes in a few minutes.

Most grunion seen on southland beaches are between 5 and 6 inches long. Some are as long as 7 inches. An average one-year old male is 4.5 inches long while a female is slightly larger at 5.0 inches. At the end of two years, males average 5.5 inches and females are about 5.8 inches long. By the end of three years, an average male is 5.9 inches and a female is 6.3 inches in length. Few live to be older than 3 years. Grunion mature and spawn at the end of the first year.

Grunion food habits are not well known. They have no teeth, so they are presumed to feed on very small organisms. Shore birds, isopods, flies, sand worms, and beetles eat grunion eggs. Humans, larger fish, and other animals prey upon the grunion itself.

Despite local concentrations, grunion are not abundant. The most critical problem facing the grunion resource is the loss of spawning habitat caused by beach erosion, harbor construction, and pollution. By the 1920's the fishery was showing definite signs of depletion and a regulation was passed in 1927 establishing a closed season of three months, April through June. The fishery improved and in 1947 the closure was shortened to April through May. This closure is still in effect to protect grunion during the peak spawning period.

The best time to observe a grunion run is the peak spawning period during the April-May closure, when no take is permitted and the fish come ashore undisturbed.

During the open season a fishing license is required for persons 16 years and older to capture grunion. Grunion may be taken by sport fishers using their hands only. No holes may be dug in the beach to entrap them. There is no limit, but take only what you can use. It is unlawful to waste fish. With these regulations, the resource seems to be maintaining itself at a fairly constant level. While the population size is not known, all research points to a rather restricted resource that is appropriately harvested under existing law.

While grunion spawn on many beaches in southern California, the Department of Fish and Game does not recommend any particular beach because of changing safety conditions and local curfews. One of the best ways to find out which beaches have had recent runs is to call the state and county beach lifeguards who can often tell if spawning has taken place. There is a grunion program offered to the public at the Cabrillo Marine Aquarium in San Pedro on several nights of the season. Visit their web site for more information: www.cabrilloaq.org/grunion.html

Additional grunion information, including run updates and volunteer grunion observer programs may be found at: www.grunion.org

Research and management of the grunion by the California Department of Fish and Game is supported, in part, by the Federal Aid in Sport Fish Restoration Program.

EXPECTED GRUNION RUNS FOR 2008

OPEN SEASON

MARCH	7	Fr	9:15 PM	-	11:15 PM
	8	Sa	9:45 PM	-	11:45 PM
	9	Su	11:15 PM	-	1:15 AM*
	10	Mo	11:50 PM	-	1:50 AM*
	21	Fr	10:05 PM	-	12:05 AM*
	22	Sa	10:30 PM	-	12:30 AM*
	23	Su	10:50 PM	-	12:50 AM*
	24	Mo	11:15 PM	-	1:15 AM*
			>>>----------->>>		
JUNE	3	Tu	9:15 PM	-	11:15 PM
	4	We	10:05 PM	-	12:05 AM*
	5	Th	10:55 PM	-	12:55 AM*
	6	Fr	11:50 PM	-	1:50 AM*
	18	We	9:25 PM	-	11:25 PM
	19	Th	10:00 PM	-	12:00 AM*
	20	Fr	10:35 PM	-	12:35 AM*
	21	Sa	11:10 PM	-	1:10 AM*
JULY	2	We	9:10 PM	-	11:10 PM
	3	Th	10:00 PM	-	12:00 AM*
	4	Fr	10:45 PM	-	12:45 AM*
	5	Sa	11:35 PM	-	1:35 AM*
	18	Fr	9:50 PM	-	11:50 PM
	19	Sa	10:25 PM	-	12:25 AM*
	20	Su	11:00 PM	-	1:00 AM*
	21	Mo	11:35 PM	-	1:35 AM*
AUG	1	Fr	9:50 PM	-	11:50 PM
	2	Sa	10:35 PM	-	12:35 AM*
	3	Su	11:15 PM	-	1:15 AM*
	16	Sa	9:35 PM	-	11:35 PM
	17	Su	10:10 PM	-	12:10 AM*
	30	Sa	9:40 PM	-	11:40 PM
	31	Su	10:20 PM	-	12:20 AM*

* Where the time relating to the expected run is after midnight, the date of the previous evening is shown.

CLOSED SEASON-OBSERVATION ONLY

APRIL	6	Su	10:05 PM	-	12:05 AM*
	7	Mo	10:40 PM	-	12:40 AM*
	8	Tu	11:20 PM	-	1:20 AM*
	9	We	12:10 AM*	-	2:10 AM*
	20	Su	9:45 PM	-	11:45 PM
	21	Mo	10:05 PM	-	12:05 AM*
	22	Tu	10:35 PM	-	12:35 AM*
	23	We	11:00 PM	-	1:00 AM*
MAY	5	Mo	9:35 PM	-	11:35 PM
	6	Tu	10:15 PM	-	12:15 AM*
	7	We	11:05 PM	-	1:05 AM*
	8	Th	11:55 PM	-	1:55 AM*
	19	Mo	9:10 PM	-	11:10 PM
	20	Tu	9:40 PM	-	11:40 PM
	21	We	10:10 PM	-	12:10 AM*
	22	Th	10:45 PM	-	12:45 AM*

Note: The times given for each date reflect the **probable** two-hour interval during which a spawning run may occur. The second hour is usually better. The best runs normally occur on the second and third nights of the four-night period.

The times refer to the grunion runs **at Cabrillo Beach** near the Los Angeles Harbor entrance. The times of the runs vary along the coast. San Diego is about 5 minutes earlier and Santa Barbara is about 25 minutes later.

Times through **March 9** are Pacific Standard Time. Thereafter, times are Pacific Daylight Saving Time.

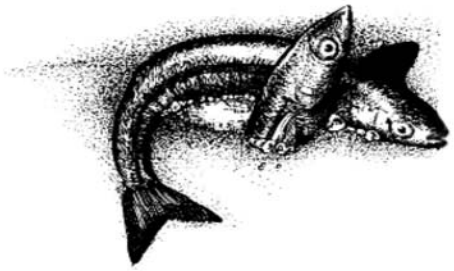
During the open season, a fishing license is required for persons **16 years and older**. Grunion may be taken by hand only. No holes may be dug in the beach to entrap them. There is no limit, but take only what you can use - it is unlawful and unethical to waste fish.

Turn In Poachers!

Call DFG's toll-free poaching hotline 24 hrs a day, 7 days a week

1-888-DFG-CALTIP
CALIFORNIA

GRUNION FACTS AND EXPECTED RUNS FOR 2008



For a current schedule, send a self addressed stamped envelope to:

GRUNION
California Department of Fish and Game
Marine Region
4665 Lampson Ave. Suite C
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www.dfg.ca.gov/marine