

## Appendix F Marine Wildlife Contingency Plan

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Cabrillo Power I LLC  
Encina Marine Oil Terminal Decommissioning Project  
Marine Wildlife Contingency Plan

October 2015

## 1.0 INTRODUCTION

This Marine Wildlife Contingency Plan (MWCP) has been prepared in support of the proposed Cabrillo Power I LLC Encina Marine Oil Terminal Decommissioning Project (Project). The Project consists of decommissioning the existing offshore Encina Power Station (EPS) Marine Oil Terminal (MOT) and will include the following marine activities:

- Removal of the remaining seven-point mooring system (chains and anchors);
- Removal of the remaining single-point mooring (chain and anchor);
- Removal of the remaining navigation buoy (chain and clump);
- Removal of the entire fuel oil submarine pipeline, the two 14,000 pound Danforth anchors, and any remaining components of the pipeline termination marker buoy; and
- Removal of all seafloor debris associated with the MOT operations.

Although decommissioning operations are not expected to result in injury or disturbance to marine wildlife (herein defined as marine mammals and reptiles), there is the potential for incidents with marine wildlife during: vessel transit to the Project site from Oceanside (shore base); the removal of anchors, chains, and the fuel oil submarine pipeline; the transport of chains, anchors, and the fuel oil submarine pipeline by barge to recycling and disposal sites in San Diego, Long Beach, or Los Angeles; and pre- and post-decommissioning seafloor debris surveys. Additionally, there is the potential for acoustic disturbance to marine wildlife if dynamic pipe ramming (DPR) is used to remove the fuel oil submarine pipeline from the surf zone. As such, this MWCP includes measures that specify: (1) the distance, speed, and direction transiting vessels will maintain when in proximity to a marine mammal or reptile; (2) qualifications, number, location, and authority of onboard marine wildlife monitors (MWMs); and (3) reporting requirements in the event of an observed impact to marine wildlife.

## 2.0 PROPOSED PROJECT AREA AND SCHEDULE

The proposed Project is located in and offshore of the City of Carlsbad, San Diego County, California. The property under lease from the California State Lands Commission (CSLC) includes parcels of tidelands and submerged lands lying immediately west and offshore of Carlsbad State Beach south of Agua Hedionda (Figure F-1). The leased land encompasses an offshore mooring area and a pipeline corridor (Figure F-2). The offshore lease lands are located within the area represented on the San Luis Rey, California, U.S. Geological Survey (USGS) 7.5-minute quadrangle map, Township 12 South, Range 4 West, San Bernardino baseline and meridian. The address of the EPS is 4600 Carlsbad Boulevard, California 92008.

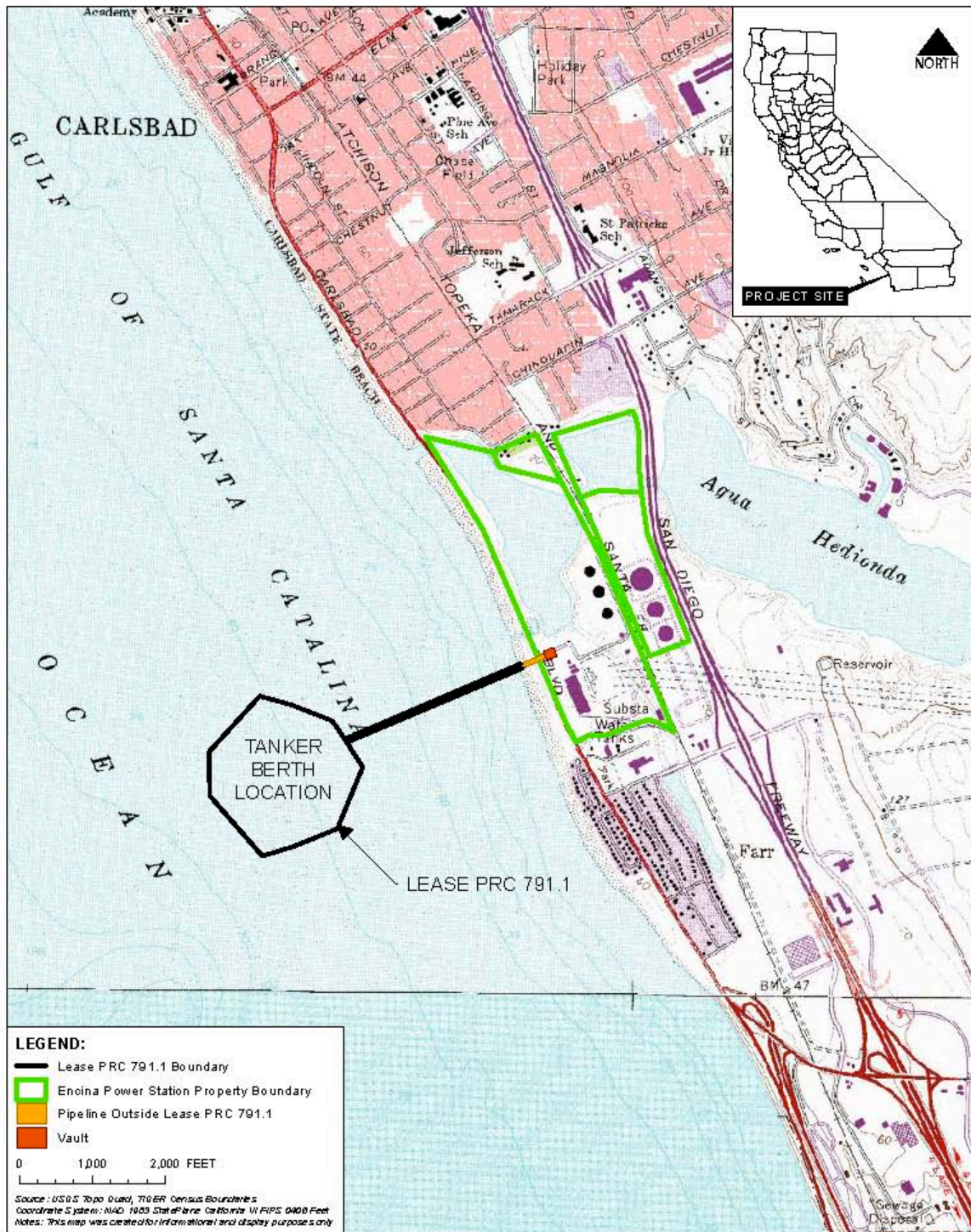
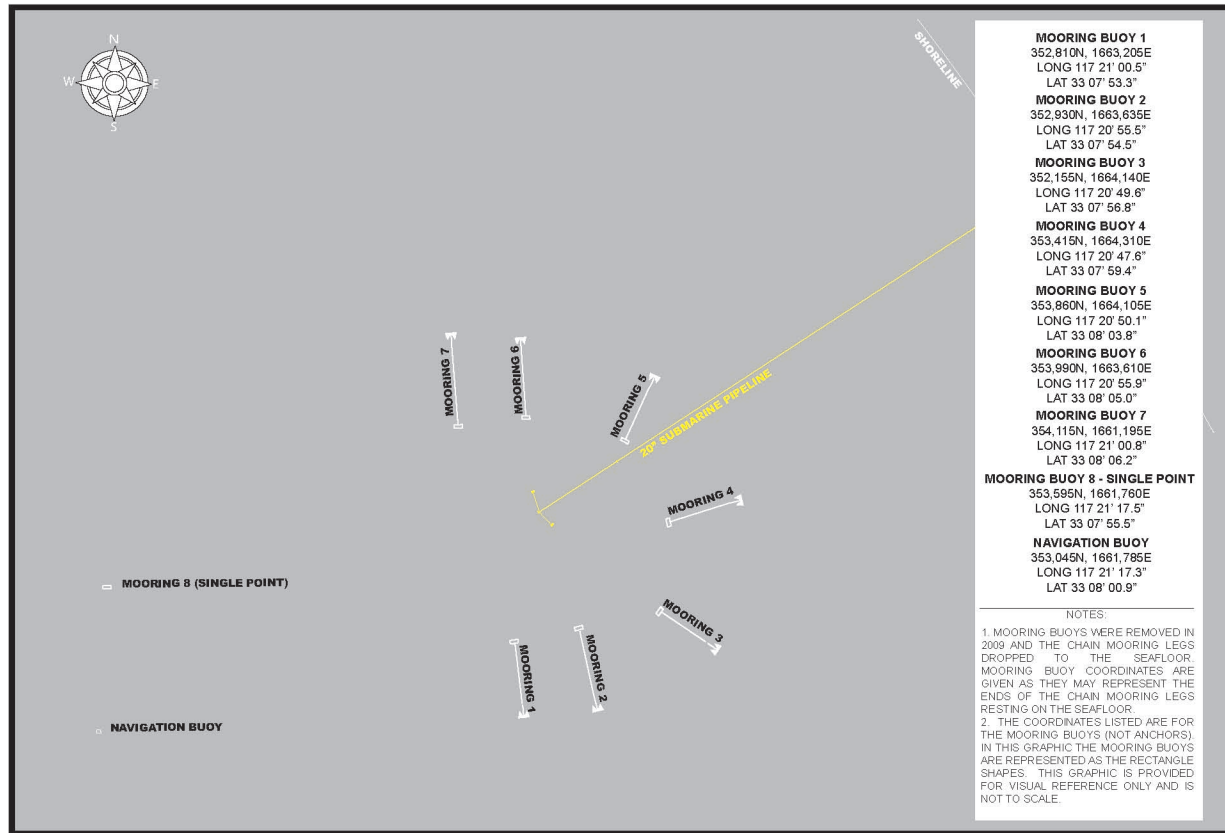


Figure F-1. Project Site Location



**Figure F-2. Mooring Area Detail**

Decommissioning is scheduled to occur in 2016 and 2017, with an estimated completion date in early 2018. The following is a summary of the tentative Project milestones:

- |  |                |
|--|----------------|
| • Receive All Regulatory Agency Permits    | June 2016      |
| • CWP Submitted                            | July 2016      |
| • MCP Submitted                            | July 2016      |
| • CWP Approved                             | August 2016    |
| • Offshore Segment Decommissioning Starts  | September 2016 |
| • Onshore Segment Decommissioning Starts   | September 2016 |
| • Beach Segment Decommissioning Starts     | September 2017 |
| • Surf Zone Segment Decommissioning Starts | September 2017 |
| • Complete Decommissioning Work            | January 2018   |
| • Complete Post-Decommissioning Reporting  | February 2018  |

### 3.0 MARINE WILDLIFE

Marine wildlife known to occur off the southern California coast include four species of sea turtles, 22 species of cetaceans (whales, dolphins, and porposies), five species of pinnipeds (seals and sea lions), and one species of fissiped (sea otter) (see Table F-1).

Specifically, the Project area and surrounding waters are known to support local populations of marine mammals including common dolphins (*Delphinus delphis*), Pacific white-sided dolphins (*Lagenorhynchus obliquidens*), bottlenose dolphins (*Tursiops truncatus*); California sea lions (*Zalophus californianus*), Pacific harbor seals (*Phoca vitulina richardsi*), southern sea otters (*Enhydra lutris nereis*), and California gray whales (*Eschrichtius robustus*). Additionally, four species of sea turtles are known to occur off the California coast, including the olive ridley (*Lepidochelys olivacea*), leatherback (*Dermochelys coriacea*), green (*Chelonia mydas*), and loggerhead (*Caretta caretta*).

Seasonal abundances of these taxa vary, as some species are considered year-round residents while others are migratory. Information on the latest abundance estimates for these species is provided in Table F-1, and a discussion of each of species is provided in Attachment 1. Table F-2 depicts the monthly/seasonal occurrences of those marine wildlife species that may occur in the Project area.

All marine mammal species are fully protected under the Marine Mammal Protection Act (MMPA), with additional protection to endangered and threatened species under the Federal Endangered Species Act (FESA) and California Endangered Species Act. Protected species statuses for marine mammals and sea turtles found in California waters are listed in Tables F-1 and F-2.

**Table F-1. Abundance Estimates for Marine Wildlife in Southern California Waters**

Common Name Scientific Name	Protected Status <sup>1</sup>	Minimum Population Estimate	Current Population Trend
<b>REPTILES</b>			
<b>Cryptodira*</b>			
Olive ridley turtle <i>Lepidochelys olivacea</i>	FT	1.15 to 1.62 million (Eastern Pacific)**	Increasing
Green turtle <i>Chelonia mydas</i>	FT	3,319 to 3,479** (Eastern Pacific)	Increasing
Loggerhead turtle <i>Caretta caretta</i>	FE	7,138 (North Pacific Distinct Population Segment)**	Decreasing
Leatherback turtle <i>Dermochelys coriacea</i>	FE	308 (Eastern Pacific)**	Increasing
<b>MAMMALS</b>			
<b>Mysticeti</b>			
California gray whale <i>Eschrichtius robustus</i>	M	18,017 (Eastern North Pacific Stock)	Fluctuating annually
Fin whale	FE, M	2,624	Increasing off California

Common Name Scientific Name	Protected Status <sup>1</sup>	Minimum Population Estimate	Current Population Trend
<i>Balaenoptera physalus</i>		(California/Oregon/Washington Stock)	
Humpback whale <i>Megaptera novaeangliae</i>	FE, M	1,878 (California/Oregon/Washington Stock)	Increasing
Blue whale <i>Balaenoptera musculus</i>	FE, M	2,046 (Eastern North Pacific Stock)	Unable to determine
Minke whale <i>Balaenoptera acutorostrata</i>	M	202 (California/Oregon/Washington Stock)	No long-term trends suggested
North Pacific right whale <i>Eubalaena japonica</i>	FE, M	17 (based on photo-identification) (Eastern North Pacific Stock)	No long-term trends suggested
Sei whale <i>Balaenoptera borealis</i>	FE, M	83 (Eastern North Pacific Stock)	No long-term trends suggested
<b>Odontoceti</b>			
Short-beaked common dolphin <i>Delphinus delphis</i>	M	343,990 (California/Oregon/Washington Stock)	Unable to determine
Long-beaked common dolphin <i>Delphinus capensis</i>	M	17,127 (California Stock)	Unable to determine
Dall's porpoise <i>Phocoenoides dalli</i>	M	32,106 (California/Oregon/Washington Stock)	Unable to determine
Pacific white-sided dolphin <i>Lagenorhynchus obliquidens</i>	M	21,406 (California/Oregon/Washington Stock)	No long-term trends suggested
Risso's dolphin <i>Grampus griseus</i>	M	4,913 (California/Oregon/Washington Stock)	No long-term trends suggested
Northern right whale dolphin <i>Lissodelphis borealis</i>	M	6,019 (California/Oregon/Washington Stock)	No long-term trends suggested
Striped dolphin <i>Stenella coeruleoalba</i>	M	8,231 (California, Oregon, Washington)	No long term trend due to rarity
Baird's beaked whale <i>Berardius bairdii</i>	M	615 (California, Oregon, Washington)	No long term trend due to rarity
Cuvier's beaked whale <i>Ziphius cavirostris</i>	M	1,298 (California, Oregon, Washington)	No long term trend due to rarity
Mesoplodont beaked whales <i>Mesoplodon</i> sp	M	576 (California, Oregon, Washington)	No long term trend due to rarity
Bottlenose dolphin <i>Tursiops truncatus</i>	M	684 (California/Oregon/Washington Offshore Stock)	No long-term trends suggested
	M	290 (California Coastal Stock)	No long-term trends suggested
Sperm whale <i>Physeter macrocephalus</i>	FE, M	751 (California/Oregon/Washington Stock)	No long-term trends suggested
Dwarf sperm whale <i>Kogia sima</i>	M	Unknown (California, Oregon, Washington)	No long term trend due to rarity
Short-finned pilot whale <i>Globicephala macrorhynchus</i>	M	465 (California/Oregon/Washington Stock)	No long-term trends suggested
Killer whale <i>Orcinus orca</i>	M	354 (West Coast Transient Stock)	Slight decrease since mid-1990s

Common Name Scientific Name	Protected Status <sup>1</sup>	Minimum Population Estimate	Current Population Trend
	M	162 (Eastern North Pacific Offshore Stock in California/Oregon/Washington waters)	No long-term trends suggested
<b>Pinnipeds</b>			
California sea lion <i>Zalophus californianus</i>	M	141,842 (U.S. Stock)	Unable to determine; increasing in most recent three year period
Northern elephant seal <i>Mirounga angustirostris</i>	M	74,913 (California Breeding Stock)	Increasing
Pacific harbor seal <i>Phoca vitulina richardsi</i>	M	31,600 (California Stock)	Stable
Northern fur seal <i>Callorhinus ursinus</i>	M	5,395 (San Miguel Island Stock)	Increasing
Guadalupe fur seal <i>Arctocephalus townsendi</i>	FT, ST, M	3,028 (Mexico Stock; undetermined in California)	Increasing

Sources: NMFS (2011a) and Allen (2011).

\* Estimates provided by NMFS (2012), NMFS (2011b), NMFS and USFWS (2007a-d).

\*\* Estimates are based on number of nesting females.

<sup>1</sup>Protected Status Codes:

(FE) Federally listed endangered species

(FT) Federally listed threatened species

(ST) State listed threatened species

(M) Protected under Marine Mammal Protection Act



**Table F-2. Marine Wildlife Species and Most Likely Periods of Occurrence within the Southern California Area (Point Conception to California/Mexico Border)**

Family Common Name	Month of Occurrence <sup>(1)</sup>											
	J	F	M	A	M	J	J	A	S	O	N	D
<b>REPTILES</b>												
<b>Cryptodira</b>												
Olive ridley turtle (FT)												
Green turtle (FT)												
Leatherback turtle (FE) <sup>(2)</sup>												
Loggerhead turtle (FE) <sup>(2)</sup>												
<b>MAMMALS</b>												
<b>Mysticeti</b>												
California gray whale												
Blue whale (FE)												
Fin whale (FE)												
Humpback whale (FE)												
Minke whale												
Sei whale (FE)												
Northern right whale (FE)												
<b>Odontoceti</b>												
Dall's porpoise												
Short-beaked common dolphin												
Long-beaked common dolphin												
Pacific white-sided dolphin												
Risso's dolphin												
Short-finned pilot whale												
Striped dolphin												
Baird's beaked whale												
Cuvier's beaked whale												
Mesoplodont beaked whales												
Bottlenose dolphin												
Northern right whale dolphin												
Sperm whale												
Dwarf sperm whale												
Pygmy sperm whale												
Killer whale												
<b>Pinnipedia</b>												
Northern fur seal <sup>(2)</sup>												
Guadalupe fur seal (ST)												
California sea lion												
Northern elephant seal <sup>(3)</sup>												
Pacific harbor seal												
<b>Fissipedia</b>												
Southern sea otter (FT)												

Rare

Not expected to occur due to seasonal distribution

More likely to occur due to seasonal distribution

Present Year Round

Sources: Bonnell and Dailey (1993), NMFS (2011 and 2012), NOAA National Centers for Coastal Ocean Science [NCCOS] (2007), Allen (2011)

- (1) Where seasonal differences occur, individuals may also be found in the "off" season. Also, depending on the species, the numbers of abundant animals present in their "off" season may be greater than the numbers of less common animals in their "on" season.
- (2) Only a small percent occur over continental shelf (except near San Miguel rookery, May-November).
- (3) Common near land during winter breeding season and spring molting season.

Protected Status Codes:

- (FE) Federally listed endangered species
- (FT) Federally listed threatened species
- (ST) State listed threatened species

## **4.0 MONITORING AND MITIGATION**

### **4.1 PRE-DECOMMISSIONING TRAINING SEMINAR**

A MWM, who will be approved by the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) or have extensive marine wildlife monitoring experience, will hold a pre-decommissioning training seminar for all Project personnel during the Project kick-off meeting. The purpose of the seminar will be to educate Project personnel on identifying marine wildlife in the Project area and to provide an overview of the wildlife mitigation measures to be implemented during Project activities. Specifically, the training seminar will include, but not be limited to, the following:

- Identification of marine wildlife expected to occur in the Project area, including periods of occurrence along the southern California coast;
- Overview of the MMPA and FESA, including the penalties associated with violating these acts;
- Procedures for mobilization/demobilization of decommissioning activities and equipment, vessel transit, and anchoring of the derrick barge(s);
- DPR procedures for the removal of the fuel oil submarine pipeline in the surf zone, including marine wildlife monitoring; and
- Reporting requirements in the event of a collision and/or injury to marine wildlife.

### **4.2 VESSEL TRANSIT**

The mobilization, demobilization, and pre- and post-decommissioning seafloor debris surveys will involve vessels transiting to and from Oceanside Harbor, located approximately 7 miles north of the Project site. Additionally, the recycling and disposal of the anchors, chains, and fuel oil submarine pipeline will require vessel transit to San Diego, Long Beach, or Los Angeles Harbors, located south of the Project site. During these transit periods, there is the potential for encountering marine wildlife and, therefore, onboard monitoring will occur.

A qualified MWM will be onboard the seafloor survey vessel to observe for marine wildlife during transit and seafloor data collection. During transit between the harbor and the survey site, the MWM will be positioned on the vessel so that he/she will have a clear view of the ocean forward of the vessel to observe for marine mammals and reptiles and institute methods to avoid potential collisions with marine wildlife. If a MWM observes a marine mammal or reptile within the path of the transiting vessel, he/she will immediately report that observation to the vessel operator who will, unless those actions will jeopardize the safety of the vessel or crew, slow the vessel and/or change course in order to avoid contact.

If whales are observed during transit periods, the vessel operator will institute the following measures:

- Maintain a minimum distance of 100 m (330 feet) from sighted whales;
- Do not cross directly in front of or across the path of sighted whales;
- Transit parallel to whales and maintain a constant speed that is not faster than the whale's speed;
- Do not position the vessel in such a manner to separate female whales from their calf(ves);
- Do not use the vessel to herd or drive whales; and
- If a whale engages in evasive or defensive action, slow the vessel and move away from the animal until the animal calms or moves out of the area.

Although resting and foraging dolphins tend to avoid boats, socializing dolphins often “run” with a boat, leaping from the water or riding the bow or stern wakes. If dolphins are observed riding the boat's wake or swimming immediately adjacent to the vessel, the vessel will slow down and keep a steady course until the dolphins lose interest.

Based on the behavioral patterns of pinnipeds, implementation of avoidance measures, and the presence of MWMs, a collision with a pinniped is unlikely. However, in the unlikely event that a pinniped is hauled-out in an area where harm may come to the animal, the NMFS (Long Beach) will be consulted for guidance on how to encourage the animal to move utilizing actions that will not be considered harassment.

#### **4.3 ANCHORING**

As indicated in the Project's Marine Safety and Anchoring Plan (Appendix E), anchoring the derrick barge will include the placement of four anchors on the seafloor at pre-designated anchor locations. Immediately prior to lowering the anchors into position, a MWM (positioned on the anchor assist vessel) will survey the Project area for the presence of marine wildlife to avoid any potential impacts associated with lowering the vessel anchors. Upon approval from the MWM, the anchoring of the derrick barge will proceed. In the event that marine wildlife are identified in the Project area, anchoring procedures will be delayed until the animal(s) move a safe distance from the Project area, as determined by the MWM.

#### **4.4 OFFSHORE CONSTRUCTION ACTIVITIES**

During offshore construction, all marine operations will be conducted per the procedures outlined in the Project's Marine Safety and Anchoring Plan (Appendix E), which emphasizes “good mariner practices.” Every effort will be made by offshore crews to avoid approaching and disturbing marine wildlife; however, in the unlikely event that a marine mammal or reptile is

observed near decommissioning activities, the MWM will monitor the animal and request that operations be altered or ceased if the animal is being negatively affected.

#### 4.5 DYNAMIC PIPE RAMMING

If conventional removal methods are not successful in removing the surf zone segment of the fuel oil submarine pipeline, DPR may be employed, which has the potential to create noise levels that will impact marine wildlife that enter the Project vicinity. As a result, Greeneridge Sciences, Inc. (Greeneridge) was contracted to perform an evaluation of DPR's potential acoustic impacts on marine wildlife (Grebner and Kim 2015; Appendix J), which serves as the basis for the acoustic impact analysis found in the Project's Mitigated Negative Declaration.<sup>1</sup>

DPR uses a hammer that is pneumatically or hydraulically powered to drive (push) or extract (pull) an attached section of the fuel oil submarine pipeline. It's expected that much of the fuel oil submarine pipeline within the surf zone segment is buried and that the concrete coating around the pipeline will provide additional noise insulation. Additionally, Greeneridge reports that the acoustic propagation conditions at the MOT site suggest that sound levels will decrease relatively rapidly with increasing range from the DPR source. Further, DPR operations are expected to be short-term and only last approximately four hours; however, there is a potential for marine wildlife to be subjected to noise levels that may harm them or disturb their natural behavior.

The NMFS has identified acoustic threshold (received sound level) criteria above which marine mammals are predicted to experience changes in their hearing sensitivity, either permanent or temporary hearing threshold shifts. Physiological responses such as auditory or non-auditory tissue injuries are known as Level A Harassment in the MMPA and harm in the FESA. Level A Harassment becomes a concern when the sound levels from man-made sounds reach or exceed the acoustic threshold associated with auditory injury in marine species. A permanent threshold shift (PTS) is a permanent, irreversible increase in an animal's auditory threshold within a given frequency band or range of the animal's normal hearing. A temporary threshold shift (TTS) is a temporary, reversible increase in the threshold of audibility at a specific range of frequencies. While TTS is not an injury, it is considered Level B Harassment by the MMPA and harassment by the FESA. Along with TTS, Level B Harassment also includes behavioral impacts. For pinnipeds and cetaceans, NMFS has specified Level A sound pressure level (SPL) thresholds as 190 and 180 decibels (dB) referenced to (re) 1 micropascal ( $\mu\text{Pa}$ ) root mean square (rms), respectively. The Level B SPL threshold for all marine mammals is 160 dB re 1  $\mu\text{Pa}$  (rms).

The current acoustic threshold levels, used for most sound sources, consist of a single threshold for cetaceans and a single threshold for pinnipeds regardless of the sound source. That is, they do not take into account exposure, duration, sound frequency composition,

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<sup>1</sup> Greeneridge's acoustic impact analysis is based on NMFS's current acoustic thresholds. The acoustic safety zone to be implemented during DPR activities will reflect NMFS's updated and finalized acoustic thresholds (anticipated in late 2015).

repetition rate, and a species' hearing sensitivity. In 2013, NMFS proposed new acoustic threshold levels in its Draft Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing that take into account some of these factors, including dividing marine mammals into functional hearing groups. On July 23, 2015, NMFS released a second draft of its guidance document for a 45-day public comment period. NMFS anticipates that the guidance document will be finalized in late 2015, which will be used to inform the acoustic safety zone radius to be implemented during DPR activities.

Although there is no published information available on the sound levels and frequency composition of DPR, the physical characteristics of DPR are similar to vibratory pile driving, which were used by Greeneridge to provide a qualitative evaluation of potential acoustic impacts on marine wildlife. A quantitative evaluation of underwater noise impacts on marine wildlife was not provided because, even assuming vibratory pile driving is a reasonable proxy for DPR, the limited as well as highly variable acoustic measurements available for vibratory pile driving prohibit meaningful quantitative estimates of sound produced for comparison to regulatory standards for impacts to marine wildlife. Therefore, sound source characterizations will need to be conducted onsite prior to DPR operations in order to determine the distance at which marine wildlife will be safe from harm or harassment due to DPR.

Prior to DPR operations, a marine acoustics specialist will be retained to conduct underwater noise measurements during a trial operation of the equipment at the Project site. In coordination with NOAA, the results of the sound source characterization will be used to determine preclusion radii (i.e., safety zones) for marine wildlife (mammals and reptiles) safety during DPR operations based on NOAA's acoustic thresholds in place at the time of Project operations for permanent threshold shifts (PTS) and temporary threshold shifts (TTS).

Two qualified MWMs will be onsite and present throughout sound source characterization. One MWM will be positioned on the barge and one monitor will be positioned on a stand by vessel just outside the initial 1,000-foot safety zone. This safety zone is based upon a conservative model of acoustic propagation for the DPR proxy provided by Greeneridge, which indicates that the safety radii for a received level of 180 dB re 1  $\mu$ Pa is 260 meters or 853 feet. This initial safety zone will be revised to reflect new thresholds for PTS and TTS should they be finalized by NOAA prior to Project operations. Additionally, a ramp-up or soft-start of the hammer will be initiated during the sound source characterization study and DPR operations. The contractor will begin DPR at a reduced level and repeat the sound producing activity, gradually increasing the intensity of the operation prior to initiating normal construction levels. The duration of the ramp-up during DPR operations will be determined by a qualified marine biologist and based on the findings of the sound source characterization study. This procedure will be used any time DPR operations are initiated.

Once the safety zones have been determined for DPR operations, MWMs shall be located such that they have a clear view of the marine waters within the safety zone and beyond. The number of MWMs will be determined based on the size of the safety zone as determined by sound source characterization; however, at a minimum, two MWMs will be present during DPR operations. The MWMs shall indicate that a designated safety zone is clear of marine wildlife

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(mammals and reptiles) prior to the start of DPR operations and shall have the authority to stop DPR operations if marine wildlife are observed at any time within the safety zone.

On pre-printed forms, the MWMs will record all observations of marine mammals and reptiles including, but not limited to, the species, number of individuals, behavior, distance from the fuel oil submarine pipeline, and direction of movement. Actions taken when an animal is observed within the safety zone and the results of those actions will also be recorded.

#### **4.6 PRE- AND POST-DECOMMISSIONING SEAFLOOR DEBRIS SURVEYS**

Pre- and post-decommissioning seafloor debris surveys will be conducted in the Project area using geophysical survey equipment (i.e., side-scan sonar and fathometer, or multibeam echosounder). The purpose of the pre-decommissioning survey will provide a baseline image of the seafloor that can be checked against the results of the post-decommissioning survey to ensure that any decommissioning-related debris is identified and recovered.

A separate MWCP will be prepared for these surveys to meet the Low-Energy Offshore Geophysical Permit Program (OGPP) requirements set by the California State Lands Commission (CSLC). The MWCP will include, at a minimum, information on the following:

- Survey location, schedule, and proposed survey track lines;
- Survey vessel(s);
- Survey equipment (e.g., frequency, source level);
- Safety zones;
- Qualifications, number, location, and authority of onboard MWMs;
- Information on marine wildlife that may occur in the proposed survey area;
- Distance, speed, and direction transiting vessels will maintain when in proximity to a marine mammal or reptile;
- Observation recording procedures and reporting requirements in the event of an observed impact to marine wildlife; and
- Other site-specific considerations relevant to the survey design.

### **5.0 REPORTING AND RECORDING PROCEDURES**

#### **5.1 OBSERVATION RECORDING**

MWMs onboard the seafloor debris survey vessel and monitoring for marine wildlife during DPR operations will record observations of marine wildlife on pre-printed forms and photo-document observations whenever possible. The completed forms will be used as one of the primary data sources for the post-decommissioning report and will be provided to the CSLC and/or other agencies if requested.

## 5.2 COLLISION RESPONSE

If a collision with marine mammal or reptile occurs, the vessel operator must document the conditions under which the accident occurred, including the following:

- Location (latitude and longitude) of the vessel when the collision occurred;
- Date and time of collision;
- Speed and heading of the vessel at the time of collision;
- Observation conditions (e.g., wind speed and direction, swell height, visibility in miles or kilometers, and presence of rain or fog) at the time of collision;
- Species of marine wildlife contacted (if known);
- Whether a MWM was monitoring for marine wildlife at the time of collision; and,
- Name of vessel, vessel owner/operator (the company), and captain or officer in charge of the vessel at time of collision.

After a collision, the vessel will stop if safe to do so; however, the vessel is not obligated to stand by and may proceed after confirming that doing so will not further damage the animal. The vessel will then communicate by radio or telephone all details to the vessel's base of operations. From the vessel's base of operations, a telephone call will be placed to the NOAA Southwest Regional Stranding Coordinator to obtain further instructions. Alternatively, the vessel captain may contact the NOAA Stranding Coordinator directly using the marine operator or from an onboard telephone. Although NOAA has primary responsibility for marine mammals in both State and federal waters, the California Department of Fish and Wildlife (CDFW) will also be notified that an incident had occurred in State waters affecting a protected species. Reports should be communicated to the federal and State agencies listed below:

<b>Federal</b>	<b>State</b>	<b>State</b>
Justin Greenman NOAA Stranding Coordinator Southwest Region National Marine Fisheries Service Long Beach, California Phone: (562) 980-4027 Email: <a href="mailto:justin.greenman@noaa.gov">justin.greenman@noaa.gov</a>	California Department of Fish and Wildlife Field Office San Diego, California Phone: (858) 467-4201	California State Lands Commission Mineral Resources Management Division Long Beach, California Phone: (562) 590-5201

From the report, the Stranding Coordinator will coordinate subsequent action, including enlisting the aid of marine mammal rescue organizations, if appropriate. It is unlikely that the vessel will be asked to stand by until NOAA or CDFW personnel arrive; however, this will be determined by the NOAA Stranding Coordinator. Unless requested to do so by the NOAA Stranding Coordinator, the vessel operator is not allowed to aid injured marine wildlife or recover a carcass.

## **6.0 REFERENCES**

- Fahy, T. 2008. NOAA Fisheries, Long Beach, California. Telephone discussion with Ray de Wit, Padre Associates, Inc. October 3, 2008.
- Grebner, D.M. and K.H. Kim. 2015. Underwater Noise Impacts of Encina Decommissioning, Carlsbad, California, 2015. Greeneridge Sciences Rep. 518-1. Report from Greeneridge Sciences, Inc., Santa Barbara, CA for Padre Associates, Inc., Ventura, CA.



**ATTACHMENT 1      MARINE WILDLIFE BIOLOGICAL INFORMATION**

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## MARINE WILDLIFE DESCRIPTIONS

### MARINE TURTLES

*Olive ridley turtle (Lepidochelys olivacea)*. The olive ridley turtle is distributed circumglobally and is regarded as the most abundant marine turtle in the world (Eguchi 2007). Within the east Pacific, the normal range of the olive ridley turtle is from southern California to Peru (National Marine Fisheries Service [NMFS] 2012). However, they have been reported as far north as Washington and Oregon, and are rare visitors to the California coast (MFS Globenet Corp./WorldCom Network Services 2000). The olive ridley turtle is omnivorous, feeding on fish, crabs, shellfish, jellyfish, sea grasses, and algae (NMFS and U.S. Fish and Wildlife Service [USFWS] 2007a), and may dive to considerable depths (79 to 300 meters [m] [260 to 980 feet]).

Major nesting beaches are located on the Pacific coasts of Mexico and Costa Rica (MFS Globenet Corp./WorldCom Network Services 2000; Eguchi 2007). The population on Pacific beaches in Mexico has declined from an estimated 10 million adults in 1950 to less than 80,000 in 1983 due to excessive over-harvesting (Channel Islands National Marine Sanctuary 2000; MFS Globenet Corp./WorldCom Network Services 2000). Conservation measures, such as increased protection of nesting beaches and closure of the turtle fishery in 1990 have led to a dramatic increase in the once largest marine turtle nesting population in the world. The number of olive ridley nests has increased from 50,000 in 1988 to more than one million in 2000 (Márquez et al. 2002). The eastern Pacific population is estimated at 1.15 to 1.62 million, which is consistent with the dramatic increases of olive ridley nesting populations that have been reported (NMFS and USFWS 2007a; NMFS 2012a).

*Green turtle (Chelonia mydas)*. Green turtles occur worldwide in waters with temperatures above 20°C (MFS Globenet Corp./WorldCom Network Services 2000), and have been reported as far north as Redwood Creek in Humboldt County, California and off the coasts of Washington, Oregon, and British Columbia (Channel Islands National Marine Sanctuary 2000; MFS Globenet Corp./WorldCom Network Services 2000). The green turtle is thought to nest on the Pacific coasts of Mexico, Central America, South America, and on the Galapagos Islands. There are no known nesting sites along the west coast of the U.S., and the only known nesting location in the continental U.S. is on the east coast of Florida (MFS Globenet Corp./WorldCom Network Services 2000). Green turtles are sighted year-round in marine waters off southern California, with the highest concentrations occurring from July through September. Green turtles are herbivorous, feeding primarily on algae and sea grasses (MFS Globenet Corp./WorldCom Network Services 2000). Recent minimum population estimates for green turtles indicate that at least 3,319 to 3,479 individuals are known to occur in the eastern Pacific, and this population is believed to be increasing (NMFS and USFWS 2007b).

*Loggerhead turtle (Caretta caretta)*. The north Pacific distinct population segment of loggerhead turtles is listed as endangered. Loggerhead turtles primarily occur in subtropical to temperate waters and are generally found over the continental shelf (MFS Globenet Corp./WorldCom Network Services 2000, NMFS 2011c). Loggerhead turtles are omnivorous and feed on a wide variety of marine life including shellfish, jellyfish, squid, sea urchins, fish, and algae (MFS

Globenet Corp./WorldCom Network Services 2000; Channel Islands National Marine Sanctuary 2000).

Loggerhead turtles breed on beaches in Central and South America, and southern California is considered to be the northern limit of their distribution (MFS Globenet Corp./WorldCom Network Services 2000). However, loggerhead turtles have stranded on beaches as far north as Washington (Channel Islands National Marine Sanctuary 2000; MFS Globenet Corp./WorldCom Network Services 2000;). In addition, in 1978, a loggerhead turtle was captured near Santa Cruz Island in southern California (MFS Globenet Corp./WorldCom Network Services 2000). Loggerhead turtle abundance in southern California waters is higher in the winter during warm years than cold years. However, during the summer months (July through September) abundance is similar in warm and cold years. In the U.S., nesting occurs only in Florida and the worldwide population appears to be decreasing (Conant, et al., 2009). The north Pacific population of nesting females is estimated at 7,138 (NMFS, 2011c, NMFS, 2012a).

*Leatherback turtle (Dermochelys coriacea)*. The leatherback turtle is a federally endangered species, despite being the most common sea turtle off the west coast of the U.S. (NAWCWPNS Point Mugu Sea Range 2000; Channel Islands National Marine Sanctuary 2000). Leatherback turtles have been sighted as far north as Alaska and as far south as Chile (Channel Islands National Marine Sanctuary 2000; MFS Globenet Corp./WorldCom Network Services 2000; NAWCWPNS Point Mugu Sea Range 2000); their extensive latitudinal range is due to their ability to maintain warmer body temperatures in colder waters (MFS Globenet Corp./WorldCom Network Services 2000). Off the U.S. west coast, leatherback turtles are most abundant from July to September, however their presence off the U.S. west coast is "two pronged," with sightings occurring in northern California, Oregon, Washington, and southern California, and few sightings occurring along the intermediate (central California) coastline. In southern California waters, leatherback turtles are most common from July through September, and in years when water temperatures are above normal.

Leatherback turtles feed principally on soft prey items such as jellyfish and planktonic chordates (e.g., salps) (Channel Islands National Marine Sanctuary 2000; MFS Globenet Corp./WorldCom Network Services 2000). Recent leatherback turtle eastern Pacific population estimates indicate that at least 308 nesting females are known to occur (NMFS and USFWS 2007d). This population is believed to be decreasing worldwide, however nesting trends on U.S. beaches have been increasing in recent years (NMFS 2012b).

Critical habitat was proposed in 2010 (NMFS 2012b), and a Final Rule was issued in the Federal Register on January 26, 2012 for the eastern Pacific Ocean population (NMFS 2011d). Critical habitat extends to a depth of 80 m (262.5 feet) from the ocean surface and out to the 3000 m (9842.5 feet) isobath. The Project area is not within designated critical habitat.

## MARINE MAMMALS

### Baleen Whales

*Gray whale (Eschrichtius robustus)*. The gray whale population breeds and calves in lagoons along the west coast of Baja California and in the Gulf of California in the winter (Rice and Wolman 1971). At the end of the season, the population begins an 8,000 km (5,000 mi) coastal migration to summer feeding grounds to the north. Migrating gray whales generally travel within 3.0 kilometers (km) (1.9 miles) of the shoreline over most of the route, unless crossing mouths of rivers and straits (Dohl et al. 1983). The southward migration generally occurs from December through February and peaks in January; the northward migration generally occurs from February through May in the Project area and peaks in March. The most recent population estimates for the eastern North Pacific gray whale indicates that approximately 18,017 individuals are known to occur (NMFS 2011a). The gray whale population growth rate was about 3.3 percent per year between 1968 and 1988 (NMFS 1993) and, following three years of review, was removed from the endangered species list on June 15, 1994.

*Fin whale (Balaenoptera physalus)*. The fin whale is listed as a federally endangered species due to a severe worldwide population decline due to historically intensive commercial whaling. During the summer months, individuals in the North Pacific population are found from the Chukchi Sea to California. Winter populations range from California southward (Gambell 1985). Aggregations of fin whales are found year-round off southern and central California (Dohl et al. 1983; Forney et al. 1995; Barlow 1997). The most recent estimates of the fin whale population indicate that at least 2,624 individuals occur off California, Oregon, and Washington (NMFS 2011a). There is some evidence that recent increases in fin whale abundance have occurred in California waters (Barlow 1994; Barlow and Gerodette 1996; NMFS 2011a), but these increases have not been significant (Barlow et al. 1997).

*Humpback whale (Megaptera novaeangliae)*. The humpback whale is a federally endangered species due to historically intensive commercial whaling. Humpback whales are distributed worldwide and undertake extensive migration within their zoogeographic range (Leatherwood et al. 1982). Humpback whales spend the winter and spring months offshore Central America and Mexico for breeding and calving, and then migrate to their summer and fall range between California and southern British Columbia to feed (NMFS 2011a). Although humpback whales typically travel over deep, oceanic waters during their migration, their feeding and breeding habitats are in shallow, coastal waters over continental shelves (Clapham and Mead 1999). Shallow banks or ledges with high seafloor relief characterize feeding grounds (Payne et al. 1990; Hamazaki 2002). Humpback whales are mainly found in the southern California from December through June (Calambokidis et al. 2001). During late summer, more humpback whales are sighted north of the Channel Islands than to the south of the island chain (San Miguel, Santa Rosa, Santa Cruz) (Carretta et al. 2000). The most recent population estimates of humpback whales indicate that at least 1,878 individuals occur off California, Oregon, and Washington (NMFS 2011a). This population appears to be increasing (NMFS 2011a).

*Blue whale (Balaenoptera musculus)*. The blue whale is a federally endangered species due to historically intensive commercial whaling. Blue whales are distributed worldwide in circumpolar and temperate waters, and inhabit both coastal and pelagic (offshore open water) environments (Leatherwood et al 1982; Reeves et al. 1998). Like most baleen whales, they migrate between warmer water breeding and calving areas in winter and high-latitude feeding grounds in the summer. Blue whales that use the coastal waters of California are present primarily between June and November, with a peak abundance usually in September (Burtenshaw et al. 2004), however, blue whales can be observed offshore California as early as April. Feeding grounds have been identified in coastal upwelling zones off the coast of California (Croll et al. 1998; Fiedler et al. 1998; Burtenshaw et al. 2004) and Baja California (Reilly and Thayer 1990). The most recent estimates of the eastern north Pacific blue whale population indicate that at a minimum of 2,046 individuals exist there (NMFS 2011a).

*Minke whale (Balaenoptera acutorostrata)*. The Minke whale is a coastal species that is widely distributed over the continental shelf throughout the eastern North Pacific (Allen et al. 2011). This species occurs year-round off the coast of California. In southern California, Minke whales could be found throughout the year but in higher numbers from June through December (Bonnell and Dailey 1993). This species favors shallow water and ventures nearshore more often than other baleen whales (Allen et al. 2011); they seem to be curious about shipping and approach moving vessels. The most recent population estimates of Minke whales indicate that at least 202 individuals are known to occur off California, Oregon, and Washington. No long-term trend for the population has been identified at this time (NMFS 2011a).

*North Pacific right whale (Eubalaena japonica)*. The North Pacific right whale is federally endangered due to historically intensive commercial whaling. Like other baleen whales, this species migrates from high-latitude summer feeding grounds toward more temperate waters in the fall and winter, although seasonal migration routes are unknown (Scarff 1986). The usual wintering ground of northern Pacific right whales extended from northern California to Washington, although sightings have been recorded as far south as Baja California and near the Hawaiian Islands (Scarff 1986; Gendron et al. 1999). Estimates of the regional population are not available; however, in 2002, two of the 13 individuals observed between 1999 and 2001 were “re-observed” (NMFS 2008a). It is believed that the north Pacific population is between 100 to 200 individuals (Braham 1984). Populations estimates based on photographic recapture for this species remain low, with only 17 individuals being photographed (NMFS 2011a). No long-term population trends have been determined at this time (NMFS 2011a).

*Sei whale (Balaenoptera borealis)*. The sei whale is a federally endangered species. Sei whales were historically abundant off the California coast and were the fourth most common whale taken by California coastal whalers in the 1950s and 1960s. However, due to intensive whaling, they are now considered “extraordinarily” rare (NMFS 2011a; Allen et al. 2011). The most recent estimates of the eastern northern Pacific stock population of sei whales indicate that at least 83 individuals are known to occur off California, Oregon, and Washington (NMFS 2011a). Sei whales occur throughout most temperate and subtropical oceans of the world, however, the northern Pacific stock rarely ventures above 55° N or south of California (Allen et al. 2011). Like most baleen whales, the sei whale migrates between warmer waters used for breeding and

calving in winter and high-latitude feeding grounds in the summer. The northern Pacific stock ranges almost exclusively in pelagic waters and rarely ventures into nearshore, coastal waters (Allen et al. 2011). Sei whales are most common offshore southern California from May through October (Department of the Navy 1998).

## Toothed Whales

*Common dolphins (Delphinus spp.)*. Common dolphins are found worldwide and are the most abundant cetaceans in California waters (Bonnell and Dailey 1993). Two recognized species of common dolphin are found in southern California waters: the long-beaked common dolphin (*D. capensis*) and short-beaked common dolphin (*D. delphis*). The long-beaked species is commonly found within about 90 km (56 mi) from the coastline. Its relative abundance changes both seasonally and annually, with the highest densities observed during warm water events (Heyning and Perrin 1994). A recent population estimate for the California stock is about 17,127 individuals (NMFS 2011a).

The more numerous short-beaked species ranges from the coast to 550 km (341 mi) offshore. The most recent population estimate for individuals recorded offshore the California to Washington coastline is 343,990 individuals, making it the most abundant cetacean off California (NMFS 2011a). Common dolphins tend to be gregarious and are frequently encountered in pods of 1,000 or more. Because populations tend to vary with water temperature, no long-term population trends have been determined at this time (NMFS 2011a).

*Dall's porpoise (Phocoenoides dalli)*. Dall's porpoise is one of the most abundant small cetaceans in the north Pacific and are found in shelf, slope, and offshore waters throughout their range (Koski et al. 1998). Dall's porpoise are common off southern California in the winter and probably range south into Mexican waters during cold-water periods (Leatherwood et al. 1982; Bonnell and Daily 1993). Dall's porpoise feed on Pacific hake (*Merluccius productus*), northern anchovy (*Engraulis mordax*), Pacific saury (*Cololabis saira*), juvenile rockfish (*Sebastes* spp), and cephalopods (NOAA National Centers for Coastal Ocean Science [NCCOS] 2007). The most recent population estimates indicate that at least 32,106 individuals are present off California, Oregon, and Washington (NMFS 2011a). The population trend for this species has not yet been determined (NMFS 2011a).

*Pacific white-sided dolphin (Lagenorhynchus obliquidens)*. Pacific white-sided dolphins primarily range along the coasts of California, Oregon, and Washington. This species frequents deep water foraging areas, but may move into nearshore areas in search of prey. Analysis of sighting patterns suggest that Pacific white-sided dolphins move north-south, occurring primarily off California in cold water months and moving northward to Oregon and Washington as waters warm in the late spring and summer (Leatherwood et al. 1994; Forney et al. 2000). Pacific white-sided dolphins can be found offshore southern California throughout the year, with peak abundance from November to April (Leatherwood et al. 1984). Pacific white-sided dolphin populations are not showing any long-term abundance trends, but have a current minimum estimated population size of 21,406 off California, Oregon, and Washington (NMFS 2011a).

*Risso's dolphin (Grampus griseus)*. Risso's dolphins are distributed worldwide in tropical and warm-temperate waters. Off the U.S. west coast, Risso's dolphins are commonly seen over the continental shelf within the Southern California Bight (between Point Conception and the U.S./Mexico border) and in slope and offshore waters of California, Oregon and Washington (NMFS 2011a). Off southern California, Risso's dolphins are present year-round (Dohl et al. 1981, 1983; Bonnell and Dailey 1993). Risso's dolphins occur individually or in small to moderate-sized pods, normally ranging from two to nearly 250 individuals. The most recent population estimates of Risso's dolphin indicate that at least 4,913 individuals occur off California, Oregon, and Washington (NMFS 2011a). No long-term population trends have been determined at this time.

*Northern right whale dolphin (Lissodelphis borealis)*. Northern right whale dolphins are endemic to temperate waters of the North Pacific, where they range from the Mexican border to British Columbia (Leatherwood and Walker 1979; Leatherwood et al. 1982). They are primarily found over the continental shelf and slope in U.S. coastal waters and are known to make seasonal north-south movements (Forney et al. 2000). Northern right whale dolphins are found primarily off California during colder-water months and move northward offshore Oregon and Washington as water temperatures increase in late spring and summer (NCCOS 2007). Northern right whale dolphins are most abundant offshore southern California in December and January. The most recent population estimates indicate that at least 6,019 individuals occur off California, Oregon, and Washington (NMFS 2011a). No long-term population trends have been determined at this time (NMFS 2011a).

*Striped dolphin (Stenella coeruleoalba)*. Striped dolphins are distributed worldwide in tropical and warm-temperate pelagic waters. Striped dolphins are gregarious and are often observed in pods ranging from 28 to 83 individuals (Allen et al. 2011). Most sightings of striped dolphins occur within 185 to 556 km (115 to 345 mi) of the shoreline. Based on sighting records off California and Mexico, striped dolphins appear to have a continuous distribution in offshore waters of these two regions. The most recent population estimates indicate that at least 8,231 individuals occur off California, Oregon, and Washington (NMFS 2011a). No long-term population trends have been determined at this time (NMFS 2011a).

*Baird's beaked whale (Berardius bairdii)*. Baird's beaked whale is the largest member of the beaked whale family and is distributed along continental slopes and throughout deep waters of the North Pacific (NCCOS 2007). Baird's beaked whales range from the offshore waters of Baja California to as far as the Pribilof Islands, Alaska. Surveys indicate Baird's beaked whales are most common off the west coast of the U.S. during the summer and fall and they tend to migrate further offshore in the winter (Allen et al. 2011). They are often observed in pods of from three to 30 or more individuals. The most recent population estimates indicate that at least 615 individuals occur off California, Oregon, and Washington (NMFS 2011a). No long-term population trends have been determined at this time (NMFS 2011a).

*Cuvier's beaked whale (Ziphius cavirostris)*. Cuvier's beaked whales are generally sighted offshore in water depths over 200 m (656 feet) and as deep as 1,000 m (3,281 feet) (Gannier 2000; MacLeod et al. 2004). They are commonly sighted around seamounts, escarpments, and

canyons. The distribution and abundance of beaked whales off southern California are not well known and the species of many of the sighted beaked whales have not been verified. Based on those that were identified off the U.S. west coast, this species is the most commonly encountered beaked whale (NMFS 2011a). While they are sighted only during the cold-water season, it is unknown if Cuvier's beaked whales are found in southern California year-round or whether their distribution varies. The most recent population estimates indicate that at least 1,298 individuals occur off California, Oregon, and Washington (NMFS 2011a).

*Mesoplodont beaked whales (Mesoplodon sp.)*. Mesoplodont beaked whales are distributed throughout the deeper water areas and along the continental slopes of the North Pacific. Five species known to occur in this region include: Blainville's beaked whale (*M. densirostris*), Perrin's beaked whale (*M. perrini*), lesser beaked whale (*M. peruvianus*), ginkgo-toothed beaked whale (*M. ginkgodens*), and Hubbs' beaked whale (*M. carlhubbsi*) (NMFS 2011a). However, due to the rarity of records and the difficulty in identifying these animals in the field, virtually no species-specific information is available, so these species have been grouped to include all in the *Mesoplodont* stocks for this region. The most recent estimates indicate that at least 576 individuals occur off California, Oregon, and Washington (NMFS 2011a).

*Bottlenose dolphin (Tursiops truncatus)*. The bottlenose dolphin is probably more widely distributed than any other species of small cetacean in the eastern North Pacific (Leatherwood et al. 1982). Individuals of this species that occur offshore California have been tentatively separated into coastal and offshore forms. The coastal bottlenose dolphin is generally found within 1.0 km (0.6 mi) of the shoreline and often enters the surf zone, bays, inlets, and river mouths (Leatherwood et al. 1987). The California coastal population is estimated at 290 and appears in small resident groups that range along the coastline, especially off Orange and San Diego counties (NMFS 2009).

Offshore bottlenose dolphins are believed to have a relatively continuous distribution offshore California (Mangels and Gerrodette 1994). Recent population estimates for the offshore bottlenose dolphin suggest a minimum of 684 individuals offshore California, Oregon, and Washington (NMFS 2011a). No long-term population trend has been determined at this time (NMFS 2011a).

*Sperm whale (Physeter macrocephalus)*. The sperm whale is a federally endangered species due to historically intensive commercial whaling. The sperm whale is the largest of the toothed whales and is found predominately in temperate to tropical waters in both hemispheres (Gosho et al. 1984). Off California, sperm whales are present in offshore waters year-round, with peak abundance from April to mid-June and from late August through November (Dohl et al. 1981, 1983; Gosho et al. 1984; Barlow et al. 1997). Sperm whales are primarily pelagic species and are generally found in waters with depths of greater than 1,000 m (3,281 feet) (Watkins and Schevill 1977), although their distribution does suggest a preference for continental shelf margins and seamounts, which are areas of upwelling and high productivity (Allen et al. 2011). The sperm whale was reported to be rare over the continental shelf, but abundant directly offshore of the Southern California Bight (Bonnell and Dailey 1993). The most recent estimates



indicate that at least 751 individuals occur off California, Oregon, and Washington (NMFS 2011a). No long-term population trend has been determined at this time (NMFS 2011a).

*Dwarf sperm whale (Kogia sima)*. Dwarf sperm whales are distributed throughout deep waters and along the continental slopes of the North Pacific and other ocean basins. According to NMFS, no at-sea sightings of this species have been reported, which may be due to their pelagic distribution, small body size, and cryptic behavior (NMFS 2011a). A few sightings of animals identified only as *Kogia* sp. have been reported, and some of these may have been dwarf sperm whales. At least five dwarf sperm whales have been stranded on the California shoreline between 1967 and 2000 (NMFS 2011a). In the water, they are often observed as individual animals, but do form pods of up to 10 individuals (Allen et al. 2011). No information is available on the minimum population for dwarf sperm whales off of California, Oregon, and Washington (NMFS 2011a).

*Short finned pilot whale (Globicephala macrorhynchus)*. The range of the short-finned pilot whale in the eastern North Pacific extends from the tropics to the Gulf of Alaska. However, sightings north of Point Conception are uncommon (Forney 2000). Pilot whales were common off southern California until the early 1980's (Dohl et al. 1983), but disappeared from area waters following the 1982 to 1983 El Niño (Bonnell and Dailey 1993; Forney et al. 2000). Recently, pilot whales have begun reappearing in California waters, possibly in response to long-term changes in oceanographic conditions, but sightings are still rare (Forney et al. 2000). The most recent estimates indicate that at least 465 individuals occur off California, Oregon, and Washington (NMFS 2011a). No long-term population trend has been determined at this time.

*Killer whale (Orcinus orca)*. The killer whales occurring off the coast of California have been tentatively separated into transient, offshore, and resident forms. The transient form is most frequently-sighted off California, and has been observed from southern California to Alaska. This form feeds on marine mammals, travels in small pods, often over long ranges, and is usually quiet (NCCOS 2007). Individuals of this form occur year-round offshore southern California and are most common from January to May and from September through November. The most recent population estimate for the West Coast transient stock of killer whales is 354 (NMFS 2011a).

The offshore form has more recently been identified off the coasts of California and Oregon, and rarely off southeast Alaska (Carretta et al. 2008), and could occur in the Project area. They apparently do not mix with the transient and resident forms found in these regions. The offshore form is more vocal, travels in larger pods, and feeds on fishes and squid (NMFS 2011a). The estimated number of the offshore form of the killer whale along the U.S. West Coast, Canada, and Alaska is 162 animals (NMFS 2011a).

Individuals of the southern resident stock of killer whale are most commonly seen in the inland waters of Washington and southern Vancouver Island; however, individuals from this stock were observed in Monterey Bay, California in January 2000 and March 2003, near the Farallon Islands in February 2005, and off Point Reyes in January 2006 (NMFS 2011a). Based on the

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zoogeographic distribution of this form, this stock is not likely to be present offshore southern California. Of the three forms of killer whales, only the Eastern North Pacific southern resident stock is listed as federally endangered.

## Seals and Sea Lions

*California sea lion (Zalophus californianus)*. The California sea lion is the most abundant pinniped in California, representing 50 to 93 percent of all pinnipeds on land and about 95 percent of all sightings at sea (Bonnell et al. 1981; Bonnell and Ford 1987). This species ranges from Baja California, Mexico to British Columbia, Canada. Individuals tend to occupy coastal rookeries from mid-May to late July (NCCOS 2007). Over 95 percent of the U.S. stock breeds and gives birth on San Miguel, San Nicolas, and Santa Barbara Islands. The most recent population estimates for the California sea lion stock indicate that at least 141,842 individuals occur in California (NMFS 2011a). This number is believed to be increasing despite fewer pups being born during El Niño events in the late 1990's (NMFS 2011a). No haul-outs or rookeries have been documented within the Project area (NMFS 2011b) (Figure 1).

*Northern fur seal (Callorhinus ursinus)*. The northern fur seal is the most abundant otariid in the Northern Hemisphere. Most of the population is associated with rookery islands in the Bering Sea and the Sea of Okhotsk, although a small population of northern fur seals has existed on San Miguel Island since the late 1950s (NMFS 2003). The eastern Pacific stock spends May to November in northern waters and at northern breeding colonies. In late November, females and young begin to arrive offshore California, with some animals moving south into continental shelf and slope waters. The most recent population estimates for the San Miguel Island stock indicate that at least 5,395 individuals occur there (NMFS 2011a). The population trend is increasing (NMFS 2011a).

*Guadalupe fur seal (Arctocephalus townsendi)*. The Guadalupe fur seal is a federally threatened species due to historical commercial seal hunting in the 19<sup>th</sup> century. The Guadalupe fur seal ranges from Guadalupe Island, Mexico north to the California Channel Islands, but individuals are occasionally sighted as far south as Tapachula near the Mexico-Guatemala border and as far north as Mendocino, California (Allen et al. 2011). As their numbers increase, Guadalupe fur seals are expanding their range and are regularly seen on San Miguel and San Nicolas Islands, and, occasionally on the Farallon Islands. Presently, the species breeds only on Isla de Guadalupe off the coast of Baja California, Mexico, although individual animals are appearing more regularly on the Channel Islands and a single pup was born on San Miguel Island in 1997 (Allen et al. 2011). The at-sea distribution is unknown (Reeves et al. 1992), but Guadalupe fur seals may migrate at least 600 km (372 mi) from the rookery sites, based on observations of individuals in the Southern California Bight (Seagars 1984). At San Nicolas Island, male Guadalupe fur seals have occasionally established territories among breeding California sea lions. Researchers suspect that water temperature and prey availability would affect fur seal movements to the north of Guadalupe Island (Le Boeuf and Crocker 2005). The most recent Mexico population estimates for the Guadalupe fur seal is 3,028 individuals. Overall, the annual population is increasing at a relatively rapid estimate of 13 percent (NMFS 2011a).

*Northern elephant seal (Mirounga angustirostris)*. Northern elephant seals breed along the coast from Baja California north to Point Reyes, California. Northern elephant seals typically haul-out only to breed and molt and then disperse widely at sea. Northern elephant seals molt, breed, and give birth primarily on islands off Baja California, Mexico and California, although rookeries are found as far north as the Farallon Islands and Point Reyes (Barlow et al. 1993). The breeding period is generally from December through March and molting occurs between April and August; females and juveniles molt in April to May, sub-adult males molt from May to June, and adult males molt from July to August. Yearlings tend to molt in the fall. The northern elephant seal is present year-round off of southern California; however, because they spend very little time at the surface and forage mostly offshore, at-sea sightings are rare (NCCOS 2007). The most recent population estimates for the California breeding stock of northern elephant seals indicate that at least 74,913 individuals occur in California and the stock appears to be increasing (NMFS 2011a). No haul-outs or rookeries have been documented within the Project area (NMFS 2011b).

*Pacific harbor seal (Phoca vitulina richardsi)*. Pacific harbor seals range from Mexico to the Aleutian Islands, Alaska (Hoover 1988) and are year-round residents off southern California. Unlike most pinnipeds occurring off California, Pacific harbor seals maintain rookeries on the mainland where they breed and pup (Rambo 1978; Bowland 1978). Rookeries can also serve as haul-out sites that may be occupied at any time of year for resting. Pupping generally occurs between March and June and molting occurs from May to July (NCCOS 2007). The most recent population estimates of the California stock indicate that at least 31,600 individuals occur within that area (NMFS 2011a). After increases in the 1990s, this population is believed to be stable and possibly reaching its carrying capacity (NMFS 2011a). No haul-outs or rookeries have been documented within the Project area (NMFS 2011b).

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