

MARINE WILDLIFE MONITORING REPORT

BATHYMETRIC SURVEY FOR FIBER OPTIC COMMUNICATIONS UNDERWATER SYSTEM-II CHANNEL ISLANDS, CALIFORNIA

Project No. 1602-1480

Prepared for:

Fugro Pelagos, Inc.
3574 Ruffin Road
San Diego, California 92123

Prepared by:

Padre Associates, Inc.
369 Pacific Street
San Luis Obispo, California 93401

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1.0 INTRODUCTION

This Marine Wildlife Monitoring Report (Report) has been prepared for Fugro Pelagos, Inc. (Fugro) to document the permit compliance and associated observations of marine mammals and turtles (marine wildlife) during a bathymetric survey (Project) offshore Oxnard, and between Santa Cruz and San Nicholas Islands, California. The monitoring methods and avoidance measures detailed in this Report were implemented in accordance with the requirements in the existing Low-Energy Offshore Geophysical Permit PRC 8391 issued by the California State Lands Commission (CSLC).

Monitoring and avoidance measures were implemented during the Project to minimize adverse impacts to marine wildlife within the Project area. This Report summarizes the results of the monitoring and measures implemented during the Project to reduce or eliminate potential impacts to marine wildlife.

1.1 PROJECT ACTIVITIES

The survey was conducted in the waters of the Santa Barbara Channel offshore Oxnard, and between Santa Cruz and San Nicholas Islands, California (Figure 1-1). The proposed survey utilized multibeam sonar to document the seafloor bathymetry and topography in the five survey regions (Figure 1-1). The survey was conducted off the survey vessel DSV *Clean Ocean*, owned and operated by Aqueous Corporation. Portions of the Survey area were located within State waters out to the three nautical mile line (Figure 1-2). The survey was conducted from April 26 through May 15, 2016. The acoustic equipment used during the survey is detailed in Table 1-1.

Table 1-1. Survey Equipment and Frequency

Survey Equipment	Operating Frequency (kilohertz)
Reson Seabat 7125 SV2 multibeam system	200 to 400

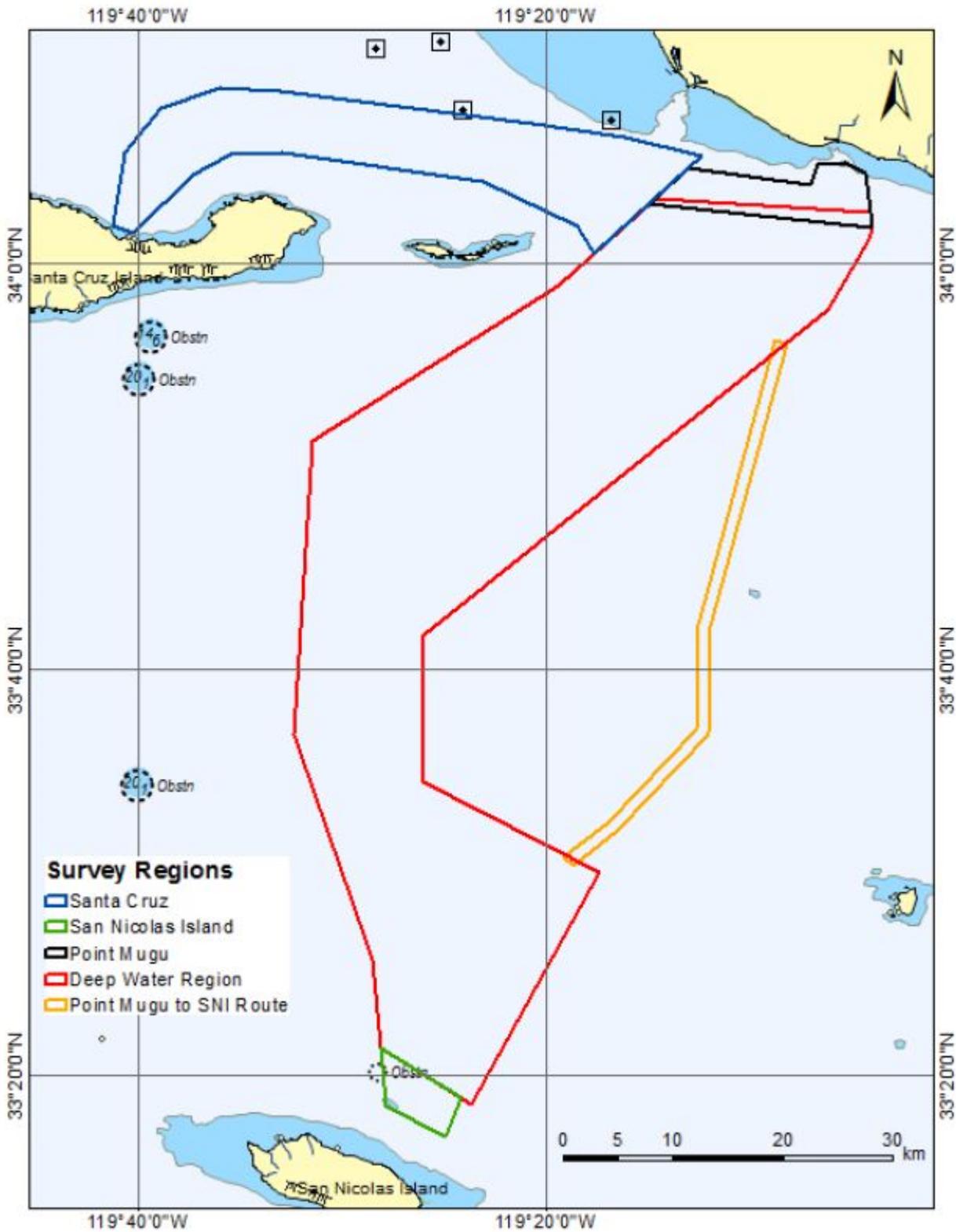


Figure 1-1. Survey Areas

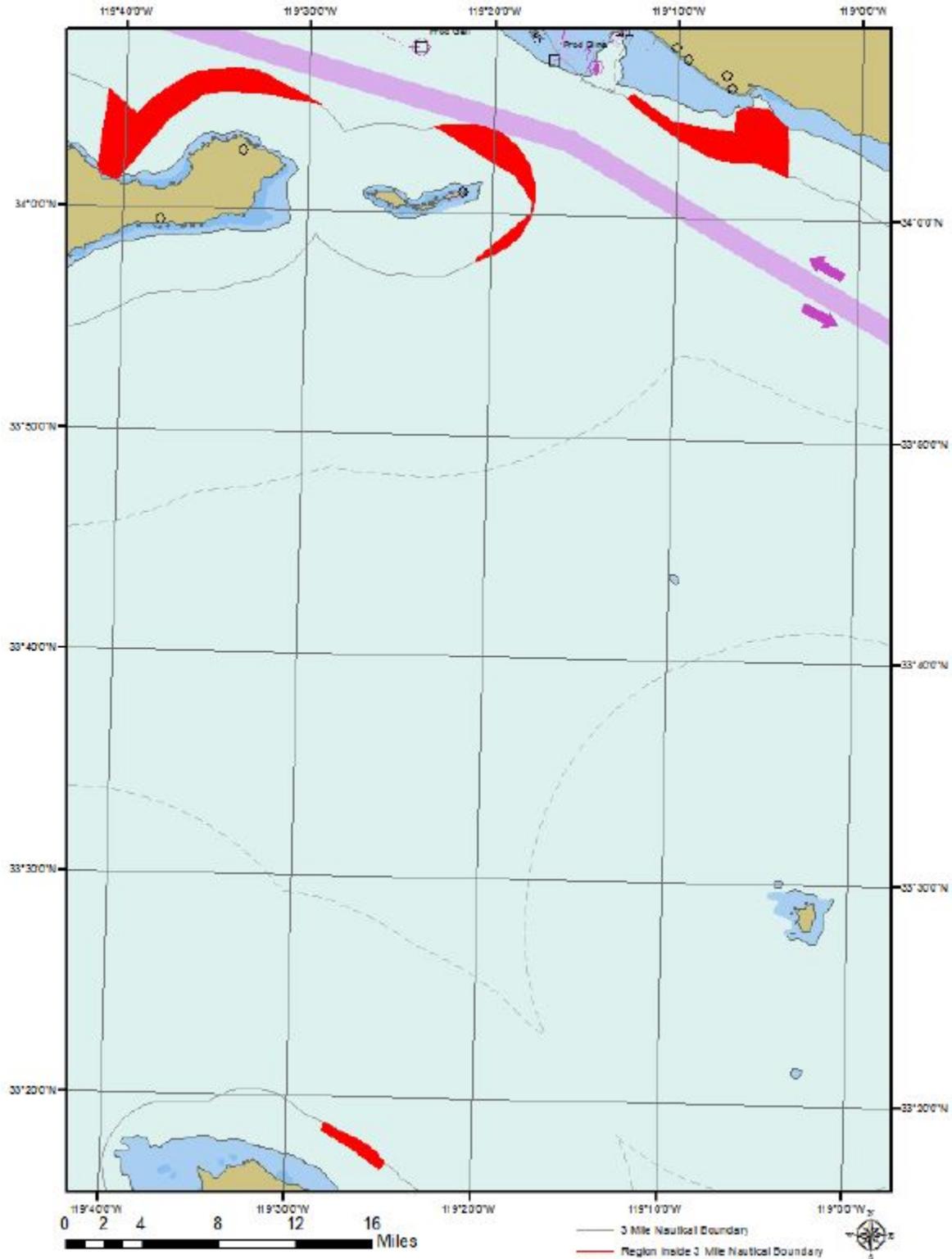


Figure 1-2. Survey Areas within State Waters

2.0 REGULATORY SETTING

The CSLC Offshore Geophysical Permit Program (OGPP) requires individual surveying entities to obtain an OGPP non-exclusive permit to perform low-energy geophysical surveys of the ocean bottom and marine environment. Under the OGPP, operators are permitted to conduct surveys using specific types of geophysical equipment subject to permit terms and conditions developed to minimize impacts to marine wildlife and the coastal environment. In August 2013, the CSLC identified potential impacts to marine wildlife from acoustical survey equipment within a Mitigated Negative Declaration (MND) and determined survey activity requirements that would mitigate or avoid those impacts to a point where no significant impacts would occur. This Report details the compliance with the applicable OGPP permit mitigation measures as outlined in Table 2-1.

In addition, The United States Marine Mammal Protection Act (MMPA) of 1972, amended 1994, protects all marine mammals, including cetaceans (whales, dolphins, and porpoises), pinnipeds (seals and sea lions), sirenians (manatees and dugongs), sea otters, and polar bears within the waters of the United States. Specifically, the MMPA prohibits the intentional killing or harassment of these marine mammals; however, incidental harassment, with authorization from the appropriate federal agency, may be permitted. National Oceanic and Atmospheric Administration (NOAA) Fisheries is responsible for enforcing the MMPA.

Special status species are protected by the Endangered Species Act (ESA) of 1973 (Section 9 and implementing regulations 50 CFR Part 17). The Endangered Species Act makes it unlawful to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect an endangered species, or to attempt to engage in any such conduct. Anyone violating the provisions of the ESA and regulations is subject to a fine and imprisonment. An “endangered species” is any species which the Secretaries of the Department of the Interior and/or the Department of Commerce determine is in danger of extinction throughout all or a portion of its range. A “threatened species” is any species which the Secretaries determine is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The United States Fish and Wildlife Service (USFWS) and NOAA Fisheries are responsible for implementation of the Federal ESA.

Table 2-1. OGPP Marine Wildlife Mitigation Measures

Condition Number	Measure
Condition 5(c)	<p>Marine Wildlife Contingency Plan (MWCP): Except as otherwise provided in Exhibit E, Part II, at least twenty-one (21) calendar days prior to each survey, Permittee shall prepare a MWCP for review and approval by the CSLC staff. Said plan shall include, at a minimum, measures that: 1) specify the distance, speed, and direction transit vessels would maintain when in proximity to a marine mammal or reptile; 2) qualifications, number, location, and authority of onboard Marine Wildlife Monitors (MWMs); 3) methods of reducing noise levels generated by the geophysical equipment; 4) Acoustic “safety zone(s)” radius that will be enforced by the MWMs (must be consistent with MM BIO-3 in attached Exhibit H); 5) identification of pinniped haul-out sites within or immediately adjacent to the proposed survey area; and 6) observation recording procedures and reporting requirements in the event of an observed impact to marine organisms.</p> <ul style="list-style-type: none"> i. For surveys within 300 meters (m) of a pinniped haul-out site, the MWCP shall further require that: <ul style="list-style-type: none"> 1. The survey vessel shall not approach within 91 m of a haul-out site, consistent with National Marine Fisheries Service (NMFS) guidelines; 2. Survey activity close to haul-out sites shall be conducted in an expedited manner to minimize the potential for disturbance of pinnipeds on land; and 3. MWMs shall monitor pinniped activity onshore as the vessel approaches, observing and reporting on the number of pinnipeds potentially being disturbed (e.g. via head lifting, flushing into the water). ii. Qualifications of proposed MWMs shall also be submitted to the National Oceanic and Atmospheric Administration (NOAA) and CSLC staff at least 21 calendar days in advance of the survey. Survey operations shall not commence until the SLC staff approves the MWMs and the MWCP.
Condition 5(h)	<p>Current Biological Information (MM BIO-1, Exhibit H): Prior to commencement of survey operations, the Permittee shall: 1) contact the NOAA Long Beach Office Staff and local whale-watching operations and shall acquire information on the current composition and relative abundance of marine wildlife offshore, and 2) convey sightings data to the vessel operator and crew, survey party chief, and MWMs prior to departure.</p>
Condition 7(d)	<p>Nighttime Operations: Permittee shall not conduct night time survey operations, except when the CSLC staff may authorize at its discretion, upon application, the Permittee to use single beam echosounders and/or passive equipment types at night on a case-by-case basis. The CSLC staff will take into consideration the equipment specification, location, timing, and duration of survey activity.</p>
Condition 7(h)	<p>Marine Wildlife Monitors: A minimum of two qualified MWMs who are experienced in marine wildlife observations shall be onboard the survey vessel throughout both transit and data collection activities. Onboard MWMs responsible for observation during vessel transit shall be responsible for monitoring during the survey equipment operations. All visual monitoring shall occur from the highest practical vantage points aboard the survey vessel; binoculars shall be used to observe the surrounding areas, as appropriate.</p> <ul style="list-style-type: none"> i. For survey activities the [sic] require the collection of geophysical data of nearshore ocean bottom areas, at least 21 calendar days prior to the

Condition Number	Measure												
	<p>commencement of survey activities, the Permittee may petition the CLSC staff for authorization to conduct survey operations with one (1) MWM onboard. The CSLC staff will evaluate such petitions on a case-by-case basis and, in granting such authorization at its discretion, will consider factors as the timing type, and location of the survey, the size of the survey vessel, the availability of alternate vessels, and the ability of one MWM to effectively monitor the safety zone.</p> <p>ii. For survey activities where the only geophysical equipment used is operated at a frequency at or above 200 kHz, one (1) MWM will be required.</p> <p>iii. MWMs will not be required aboard vessels conducting survey activities that utilize, as the only form of geophysical equipment, non-pulse or non-acoustic generating, passive survey equipment (e.g. ROV, magnetometers, gravity meters).</p>												
Condition 7(i)	<p>Safety Zone Monitoring: The MWMs will survey an area (i.e. safety or exclusion zone) based on the equipment used, centered on the sound source (i.e., towfish), when the survey equipment is operating. The onboard MWMs shall have authority to stop operations if a marine mammal or reptile is observed within the specified safety zone (below), or if a large concentration of diving birds/seabirds is observed in the immediate vicinity. The MWMs shall also have authority to recommend continuation or cessation of operations during periods of limited visibility (i.e., fog, rain). Periodic reevaluation of weather conditions and reassessment of the continuation/cessation recommendation shall be completed by the onboard MWMs. During operations, if a mammal or reptile's actions are observed to be irregular, the monitor shall have authority to recommend that equipment be shut down until the animal(s) moves further away from the sound source. If irregular behavior is observed the equipment shall be shut-off and will be restarted and ramped-up to full power as applicable or will not be started until the animal(s) is/are outside of the safety zone or have not been observed for 15 minutes. Radial distances for the safety zone of each equipment type are as follows:</p> <table border="1" data-bbox="695 1245 1232 1459"> <thead> <tr> <th data-bbox="695 1245 1034 1304">Equipment Type</th> <th data-bbox="1034 1245 1232 1304">Safety Zone (radius, m)</th> </tr> </thead> <tbody> <tr> <td data-bbox="695 1304 1034 1335">Single Beam Echosounder</td> <td data-bbox="1034 1304 1232 1335">50</td> </tr> <tr> <td data-bbox="695 1335 1034 1367">Multibeam Echosounder</td> <td data-bbox="1034 1335 1232 1367">500</td> </tr> <tr> <td data-bbox="695 1367 1034 1398">Side-Scan Sonar</td> <td data-bbox="1034 1367 1232 1398">600</td> </tr> <tr> <td data-bbox="695 1398 1034 1430">Subbottom Profiler</td> <td data-bbox="1034 1398 1232 1430">100</td> </tr> <tr> <td data-bbox="695 1430 1034 1459">Boomer System</td> <td data-bbox="1034 1430 1232 1459">100</td> </tr> </tbody> </table>	Equipment Type	Safety Zone (radius, m)	Single Beam Echosounder	50	Multibeam Echosounder	500	Side-Scan Sonar	600	Subbottom Profiler	100	Boomer System	100
Equipment Type	Safety Zone (radius, m)												
Single Beam Echosounder	50												
Multibeam Echosounder	500												
Side-Scan Sonar	600												
Subbottom Profiler	100												
Boomer System	100												
Condition 7(j)	<p>Soft Start: The Permittee shall use a "soft start" technique at the beginning of survey activities each day (or following a shut down) to allow any marine mammal that may be in the immediate area to leave before the sound sources reaches full energy. Permittee shall initiate each piece of equipment at the lowest practical sound level, increasing output in such a manner as to increase in steps not exceeding approximately 6 decibels (dB) per 5-minute period.</p>												
Condition 7(k)	<p>If the geophysical survey equipment is operated at or above a frequency of 200 kHz, safety zone monitoring/enforcement (MM-BIO 3) is not required; however, if geophysical survey equipment operated at a frequency at or above 200 kHz is used simultaneously with geophysical survey equipment less than 200 kHz, then the safety zone for the equipment less than 200 kHz must be monitored.</p>												

Condition Number	Measure
Condition 7(l)	Fishing gear interaction (MM Fish-2, Exhibit H): To minimize interaction with fishing gear that may be present within a survey area: 1) the geophysical vessel (or designated vessel) shall traverse the proposed survey corridor prior to commencing survey operations to note and record the presence, type, and location of deployed fish gear (i.e., buoys); 2) No survey lines within 30 m (100ft) of observed fishing gear shall be conducted. The survey crew shall not remove or relocated any fish gear; removal or relocation shall only be accomplished by the owner of the gear upon notification by the survey operator of the potential conflict.
Condition 7(m)	Collision reporting: In the event of a collision with a marine mammal or reptile the Permittee shall abide by the reporting and procedure requirement listed in Exhibit D.

Source: CSLC Low-Energy Offshore Geophysical Permit PRC 8391

3.0 METHODS

Three days prior to the initiation of the survey, Padre marine biologists contacted NOAA Fisheries Long Beach office staff and local whale-watching groups to inquire about the species and numbers of recently observed marine wildlife near the survey area. Marine wildlife monitors onboard the survey vessel were responsible for observing wildlife and their behaviors during transit and data collection operations. Monitoring conditions and avoidance measures designed to decrease the impacts to marine wildlife were implemented as detailed in the following sections.

3.1 PERSONNEL

The multibeam sonar equipment operated at frequencies greater than 200 kHz; therefore, only one NOAA-approved marine wildlife monitor was required during survey operations. Marques Humpal, with Padre Associates, Inc., was responsible for monitoring during multibeam operations.

3.2 FISHING GEAR CLEARANCE

In accordance with geophysical permit conditions, vessel personnel noted the presence of commercial fishing gear within the survey area. Survey lines were not completed within 30 meters (m) (100 feet [ft]) of any observed fishing gear. The onboard marine wildlife monitor aided in the identification and avoidance of fishing gear during survey operations.

3.3 MONITORING METHODS

Monitoring occurred during Project activities that were within State waters. Fugro notified the Marine Wildlife Monitor when the survey was entering and exiting State waters.

3.3.1 Vessel Transit

The survey vessel initially transited from Port of Long Beach, California to the survey area. During Project operations, the survey vessel regularly transited between State and Federal waters. At the completion of the Project, the vessel transited from the survey area to Port Hueneme, California.

During vessel transit, there was the potential for encountering marine wildlife. The marine wildlife monitor was positioned at the highest safe vantage point for a clear view of the ocean within the vessel's path. To minimize the chance of collision with, or disturbance of, marine wildlife, the marine wildlife monitor recommended that the vessel maintain a minimum distance of 91 m (300 ft) from marine wildlife. If marine wildlife was observed within the path of the transiting vessel, the monitor reported that observation to the vessel operator, who slowed the vessel and/or changed course in order to avoid contact.

3.3.2 Survey Monitoring

Prior to the start of data collection, survey operators utilized a "soft start" technique to allow any marine wildlife that may be in the survey area to leave before the sound source reached full energy level. Marine wildlife monitors were prepared with the appropriate safety and monitoring equipment to conduct observations, including Nikon 7 x 50 low light reticulated

binoculars for daytime and low light observations. Survey activities within State waters were conducted during daylight hours only.

During survey operations, the marine wildlife monitor observed wildlife within the general survey area near the survey vessel whenever survey equipment was operating. No safety zone was required during the multibeam sonar survey. When marine wildlife were observed, the marine wildlife monitor identified the species, counted the number of individual animals present, observed the animals' behavior, and the animals' direction/speed of movement. The marine wildlife monitor recorded any distress behaviors and implemented avoidance actions as discussed above, if necessary.

3.3.3 Pinniped Haul-outs

Survey activities did not occur with 300 m (1,000 ft) of any known pinniped haul-out and/or rookeries.

4.0 RESULTS

All marine wildlife observations are detailed in Appendix A – Daily Marine Wildlife Observations. The following sections summarize the observations made by marine wildlife monitors and results of any avoidance actions requested during the Project.

4.1 SPECIES OBSERVED

Observations were conducted during vessel transit and survey operations within state water limits. A total of six species of marine mammals, were recorded during the Project, totaling 2,095 individual animals. The species observed included three baleen whale species (humpback whale [*Megaptera novaeangliae*], California gray whale [*Eschrichtius robustus*], and minke whale [*Balaenoptera acutorostrata*]), one odontocete species (common dolphin [*Delphinus* sp.]), and two pinniped species (California sea lion [*Zalophus californianus*] and Pacific harbor seal [*Phoca vitulina richardsi*]). No individuals were observed during vessel transit. No collisions occurred with marine wildlife during the vessel transit or survey period. Table 4-1 summarizes the total number of individual animals observed for each species during vessel transit, and multibeam survey activities.

Table 4-1. Observed Marine Wildlife Species

Species	Activity	
	Transit	Survey*
California Sea Lion	-	110
Common Dolphin	-	1,961
Humpback Whale	-	14
Gray Whale	-	1
Harbor Seal	-	8
Minke Whale	-	1

* Multiple sights of the same individual may occur

4.2 AVOIDANCE ACTIONS

On several occasions marine wildlife were observed in the survey area during multibeam operations. On April 29, 2016, common dolphins and one humpback whale were observed feeding within the survey area. On three occasions, the marine wildlife monitor requested the vessel to decrease speed and for survey equipment to cease to allow the marine wildlife to leave the area. No distress or irregular behavior was observed.

On April 30, and May 5, 2016, marine wildlife were observed crossing the vessel path during survey operations. On four occasions, the marine wildlife monitor requested the vessel decrease speed to allow the marine wildlife to leave the area and not cross the vessel path. No distress or irregular behavior was observed.

On April 26, and May 15, 2016, the vessel transit occurred at night in State waters. To reduce the likelihood of collision with marine wildlife, the marine wildlife monitor recommended transit be scheduled for daylight hours only and the monitor remained in the wheelhouse during the transit at night. No negative interaction with marine wildlife occurred. On April 29, 2016, transit occurred at night again to avoid inclement weather. The monitor was not notified of the transit schedule and was not in the wheelhouse during the April 29, 2016 transit period. No negative interactions with wildlife were reported by the vessel crew.

5.0 CONCLUSION

The marine wildlife monitor observed six species that were anticipated to occur within the survey area, and implementation of preemptive avoidance actions helped to minimize the potential adverse impacts to those marine species. There were seven mitigation shut downs and vessel speed reductions that were implemented throughout the Project. No collisions occurred with marine wildlife and no distress was observed during the course of the survey period. Based on the observations of the marine wildlife monitor, and the cooperative efforts of the Fugro team and vessel crew, no negative Project-related effects to the marine wildlife were observed during the survey period.

APPENDIX A

DAILY MARINE WILDLIFE OBSERVATION TABLE

Table A-1. Marine Wildlife Observations during Vessel Transit

Date	Marine Wildlife Observed during Transit	Action Taken/Notes
April 26, 2016	None observed	Vessel departed Port of Long Beach and transited to the Project site at 21:13. The Marine Wildlife Monitor (MWM) reminded Fugro that vessel transit within State waters should occur during daylight hours and that wildlife observations cannot be made during nighttime transit activities. However, MWM remained in wheelhouse to monitor transit. No negative wildlife interaction occurred.
April 27, 2016	None observed	No action required. Entered Port Hueneme due to weather.
April 29, 2016	None observed	Vessel departed Port Hueneme to project prior to sunrise (03:01). The MWM reminded Fugro that vessel transit within State waters should occur during daylight hours and that wildlife observations cannot be made during nighttime transit activities. However, MWM remained in wheelhouse to monitor transit. No negative wildlife interaction occurred. Vessel departed Project site to Port Hueneme after sunset, due to weather, and returned to Project area prior to sunrise once weather permitted. MWM was unaware of the transit and was not able to make wildlife observations.
April 30, 2016	None observed	No action required.
May 2, 2016	None observed	No action required.
May 15, 2016	None observed	Vessel departed Project site to Port Hueneme after sunset. The MWM reminded Fugro that vessel transit within State waters should occur during daylight hours and that wildlife observations cannot be made during nighttime transit activities. However, MWM remained in wheelhouse to monitor transit. No negative wildlife interaction occurred.

Table A-2. Marine Wildlife Observations During Survey Operations

Date	Marine Wildlife observed in Safety Zone	Action Taken/Notes
April 27, 2016	22 California Sea Lion 86 Common Dolphins 1 Gray Whale	No action required.
April 28, 2016	Not Applicable	In Port Hueneme due to inclement weather.
April 29, 2016	1850 Common Dolphins 30 California Sea Lion 3 Humpback Whales	<p>12:56 – 500 to 600 common dolphins were observed off the bow of the vessel feeding. MWM requested survey operations to cease and vessel change its course until the animals cleared the area. No negative interaction occurred.</p> <p>13:19 – 500 to 600 common dolphins changed course towards vessel and one humpback whale was observed off the bow. MWM requested survey operations to cease until the animals cleared the area. No negative interaction occurred.</p> <p>14:30 – 300 to 500 common dolphins were observed off the bow, feeding. MWM requested survey operations to cease and vessel change its course until the animals cleared the area. No negative interaction occurred.</p>
April 30, 2016	246 Common Dolphins 1 Minke Whale 1 Humpback Whale 3 California Sea Lion 1 Harbor Seal	<p>09:40 – one minke whale was observed 100 m (330 ft) away from vessel. Vessel decreased speed to allow whale to cross vessel path. No negative interaction occurred.</p> <p>12:31 - one humpback whale was observed 15 m (50 ft) away from vessel. Vessel decreased speed to allow whale to cross vessel path. No negative interaction occurred.</p>
May 1, 2016	28 Common Dolphins 1 Humpback Whale 1 California Sea Lion 1 Harbor Seal	No action required.
May 3, 2016	7 California Sea Lions 15 Common Dolphins	No action required.
May 4, 2016	17 California Sea Lions 1250 Common Dolphins 4 Harbor Seals 6 Humpback Whales	No action required.

Date	Marine Wildlife observed in Safety Zone	Action Taken/Notes
May 5, 2016	9 California Sea Lions 2 Harbor Seals 2 Humpback Whales 30 Common Dolphins	17:16 - one humpback whale was observed 30 m (100 ft) from vessel. Vessel decreased speed to allow whale to cross vessel path. No negative interaction occurred. 18:34 - one humpback whale was observed 25 m (100 ft) from vessel. Vessel decreased speed to allow whale to cross vessel path. No negative interaction occurred.
May 6, 2016	5 California Sea Lions 46 Common Dolphins	No action required.
May 7, 2016	2 California Sea Lions 1 Humpback Whale 110 Common Dolphins	No action required.
May 8, 2016	14 California Sea Lions	No action required.

EXHIBIT H

Mitigation Monitoring Program

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
Air Quality and Greenhouse Gas (GHG) Emissions (MND Section 3.3.3)						
MM AIR-1: Engine Tuning, Engine Certification, and Fuels. The following measures will be required to be implemented by all Permittees under the Offshore Geophysical Permit Program (OGPP), as applicable depending on the county offshore which a survey is being conducted. Pursuant to section 93118.5 of CARB's Airborne Toxic Control Measures, the Tier 2 engine requirement applies only to diesel-fueled vessels.	All Counties: Maintain all construction equipment in proper tune according to manufacturers' specifications; fuel all off-road and portable diesel-powered equipment with California Air Resources Board (CARB)-certified motor vehicle diesel fuel limiting sulfur content to 15 parts per million or less (CARB Diesel).	Daily emissions of criteria pollutants during survey activities are minimized.	Determine engine certification of vessel engines. Review engine emissions data to assess compliance, determine if changes in tuning or fuel are required.	OGPP permit holder and contract vessel operator; California State Lands Commission (CSLC) review of Final Monitoring Report.	Prior to, during, and after survey activities. Submit Final Monitoring Report after completion of survey activities.	4/26/2016 - 5/14/2016 CS
	Los Angeles and Orange Counties: Use vessel engines meeting CARB's Tier 2-certified engines or cleaner; the survey shall be operated such that daily NO _x emissions do not exceed 100 pounds based on engine certification emission factors. This can be accomplished with Tier 2 engines if daily fuel use is 585 gallons or less, and with Tier 3 engines if daily fuel use is 935 gallons or less.		Verify that Tier 2 or cleaner engines are being used. Calculate daily NO _x emissions to verify compliance with limitations.			
	San Luis Obispo County: Use vessel engines meeting CARB's Tier 2-certified engines or cleaner, accomplished with Tier 2 engines if daily fuel use is 585 gallons or less; all diesel equipment shall not idle for more than 5 minutes; engine use needed to maintain position in the water is not considered idling; diesel idling within 300 meters (1,000 feet) of sensitive receptors is not permitted; use alternatively fueled construction equipment on site where feasible, such as compressed natural gas, liquefied natural gas, propane or biodiesel.		Verify that Tier 2 or cleaner engines are being used. Inform vessel operator(s) of idling limitation. Investigate availability of alternative fuels.			
	Santa Barbara County: Use vessel engines meeting CARB's Tier 2-certified engines or cleaner, accomplished with Tier 2 engines if daily fuel use is 790 gallons or less.		Verify that Tier 2 or cleaner engines are being used. Investigate availability of alternative fuels.			4/26/2016 - 5/14/2016 CS
	Ventura County: Use alternatively fueled construction equipment on site where feasible, such as compressed natural gas, liquefied natural gas, propane or biodiesel.		Investigate availability of alternative fuels.			4/26/2016 - 5/14/2016 CS

EXHIBIT H

Mitigation Monitoring Program

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials
MM BIO-1: Marine Mammal and Sea Turtle Presence – Current Information.	All State waters; prior to commencement of survey operations, the geophysical operator shall: (1) contact the National Oceanic and Atmospheric Administration Long Beach office staff and local whale-watching operations and shall acquire information on the current composition and relative abundance of marine wildlife offshore, and (2) convey sightings data to the vessel operator and crew, survey party chief, and onboard Marine Wildlife Monitors (MWMs) prior to departure. This information will aid the MWMs by providing data on the approximate number and types of organisms that may be in the area.	No adverse effects to marine mammals or sea turtles due to survey activities are observed.	Document contact with appropriate sources. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder; Inquiry to NOAA and local whale watching operators.	Prior to survey.	4/25/2016 CS
MM BIO-2: Marine Wildlife Monitors (MWMs).	Except as provided in section 7(h) of the General Permit, a minimum of two (2) qualified MWMs who are experienced in marine wildlife observations shall be onboard the survey vessel throughout both transit and data collection activities. The specific monitoring, observation, and data collection responsibilities shall be identified in the Marine Wildlife Contingency Plan required as part of all Offshore Geophysical Permit Program permits. Qualifications of proposed MWMs shall be submitted to the National Oceanic and Atmospheric Administration (NOAA) and CSLC at least twenty-one (21) days in advance of the survey for their approval by the agencies. Survey operations shall not commence until the CSLC approves the MWMs.	Competent and professional monitoring or marine mammals and sea turtles; compliance with established monitoring policies.	Document contact with and approval by appropriate agencies. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Prior to survey.	4/26/2016 5/14/2016 CS (1 MWM required)
MM BIO-3: Safety Zone Monitoring.	Onboard Marine Wildlife Monitors (MWMs) responsible for observations during vessel transit shall be responsible for monitoring during the survey equipment operations. All visual monitoring shall occur from the highest practical vantage point aboard the survey vessel; binoculars shall be used to observe the surrounding area, as appropriate. The MWMs will survey an area (i.e., safety or exclusion zone) based on the equipment used, centered on the sound source (i.e., vessel, towfish), throughout time that the survey equipment is operating. Safety zone radial distances, by equipment type, include:	No adverse effects to marine mammals or sea turtles due to survey activities are observed; compliance with established safety zones.	Compliance with permit requirements (observers); compliance with established safety zones. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Prior to survey.	4/26/2016 - 5/14/2016 CS

EXHIBIT H

Mitigation Monitoring Program

Mitigation Measure (MM)	Location and Scope of Mitigation	Effectiveness Criteria	Monitoring or Reporting Action	Responsible Party	Timing	Implementation Date(s) and Initials												
	<table border="1" data-bbox="493 310 978 505"> <thead> <tr> <th>Equipment Type</th> <th>Safety Zone (radius, m)</th> </tr> </thead> <tbody> <tr> <td>Single Beam Echosounder</td> <td>50</td> </tr> <tr> <td>Multibeam Echosounder</td> <td>500</td> </tr> <tr> <td>Side-Scan Sonar</td> <td>600</td> </tr> <tr> <td>Subbottom Profiler</td> <td>100</td> </tr> <tr> <td>Boomer System</td> <td>100</td> </tr> </tbody> </table> <p data-bbox="436 532 1035 1198">If the geophysical survey equipment is operated at or above a frequency of 200 kilohertz (kHz), safety zone monitoring and enforcement is not required; however, if geophysical survey equipment operated at a frequency at or above 200 kHz is used simultaneously with geophysical survey equipment less than 200 kHz, then the safety zone for the equipment less than 200 kHz must be monitored. The onboard MWMs shall have authority to stop operations if a mammal or turtle is observed within the specified safety zone and may be negatively affected by survey activities. The MWMs shall also have authority to recommend continuation (or cessation) of operations during periods of limited visibility (i.e., fog, rain) based on the observed abundance of marine wildlife. Periodic reevaluation of weather conditions and reassessment of the continuation/cessation recommendation shall be completed by the onboard MWMs. During operations, if an animal's actions are observed to be irregular, the monitor shall have authority to recommend that equipment be shut down until the animal moves further away from the sound source. If irregular behavior is observed, the equipment shall be shut-off and will be restarted and ramped-up to full power, as applicable, or will not be started until the animal(s) is/are outside of the safety zone or have not been observed for 15 minutes.</p> <p data-bbox="436 1222 1035 1404">For nearshore survey operations utilizing vessels that lack the personnel capacity to hold two (2) MWMs aboard during survey operations, at least twenty-one (21) days prior to the commencement of survey activities, the Permittee may petition the CSLC to conduct survey operations with one (1) MWM aboard. The CSLC will consider such authorization on a case-by-case basis and</p>	Equipment Type	Safety Zone (radius, m)	Single Beam Echosounder	50	Multibeam Echosounder	500	Side-Scan Sonar	600	Subbottom Profiler	100	Boomer System	100					
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Single Beam Echosounder	50																	
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	factors the CSLC will consider will include the timing, type, and location of the survey, the size of the vessel, and the availability of alternate vessels for conducting the proposed survey. CSLC authorizations under this subsection will be limited to individual surveys and under any such authorization; the Permittee shall update the MWCP to reflect how survey operations will occur under the authorization.					
MM BIO-4: Limits on Nighttime OGPP Surveys.	All State waters; nighttime survey operations are prohibited under the OGPP, except as provided below. The CSLC will consider the use of single beam echosounders and passive equipment types at night on a case-by-case basis, taking into consideration the equipment specifications, location, timing, and duration of survey activity.	No adverse effects to marine mammals or sea turtles due to survey activities are observed.	Presurvey request for nighttime operations, including equipment specifications and proposed use schedule. Document equipment use. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Approval required before survey is initiated. Monitoring Report following completion of survey.	4/26/2016 5/14/2016 COF
MM BIO-5: Soft Start.	All State waters; the survey operator shall use a "soft start" technique at the beginning of survey activities each day (or following a shut down) to allow any marine mammal that may be in the immediate area to leave before the sound sources reach full energy. Surveys shall not commence at nighttime or when the safety zone cannot be effectively monitored. Operators shall initiate each piece of equipment at the lowest practical sound level, increasing output in such a manner as to increase in steps not exceeding approximately 6 decibels (dB) per 5-minute period. During ramp-up, the Marine Wildlife Monitors (MWMs) shall monitor the safety zone. If marine mammals are sighted within or about to enter the safety zone, a power-down or shut down shall be implemented as though the equipment was operating at full power. Initiation of ramp-up procedures from shut down requires that the MWMs be able to visually observe the full safety zone.	No adverse effects to marine mammals or sea turtles due to survey activities are observed.	Compliance with permit requirements (observers); compliance with safe start procedures. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Immediately prior to survey.	4/26/2016 5/14/2016 COF

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<p>MM BIO-6: Practical Limitations on Equipment Use and Adherence to Equipment Manufacturer's Routine Maintenance Schedule.</p>	<p>All State waters; geophysical operators shall follow, to the maximum extent possible, the guidelines of Zykov (2013) as they pertain to the use of subbottom profilers and side-scan sonar, including:</p> <ul style="list-style-type: none"> Using the highest frequency band possible for the subbottom profiler; Using the shortest possible pulse length; and Lowering the pulse rate (pings per second) as much as feasible. <p>Geophysical operators shall consider the potential applicability of these measures to other equipment types (e.g., boomer). Permit holders will conduct routine inspection and maintenance of acoustic-generating equipment to ensure that low energy geophysical equipment used during permitted survey activities remains in proper working order and within manufacturer's equipment specifications. Verification of the date and occurrence of such equipment inspection and maintenance shall be provided in the required presurvey notification to CSLC.</p>	<p>No adverse effects to marine mammals or sea turtles due to survey activities are observed.</p>	<p>Document initial and during survey equipment settings.</p> <p>Submit Final Monitoring Report after completion of survey activities.</p>	<p>OGPP permit holder.</p>	<p>Immediately prior to and during survey.</p>	
<p>MM BIO-7: Avoidance of Pinniped Haul-Out Sites.</p>	<p>The Marine Wildlife Contingency Plan (MWCP) developed and implemented for each survey shall include identification of haul-out sites within or immediately adjacent to the proposed survey area. For surveys within 300 meters (m) of a haul-out site, the MWCP shall further require that:</p> <ul style="list-style-type: none"> The survey vessel shall not approach within 91 m of a haul-out site, consistent with National Marine Fisheries Service (NMFS) guidelines; Survey activity close to haul-out sites shall be conducted in an expedited manner to minimize the potential for disturbance of pinnipeds on land; and Marine Wildlife Monitors shall monitor pinniped activity onshore as the vessel approaches, observing and reporting on the number of pinnipeds potentially disturbed (e.g., via head lifting, flushing into the water). The purpose of such reporting is to provide CSLC and California Department of Fish and Wildlife (CDFW) with information regarding potential disturbance associated with OGPP surveys. 	<p>No adverse effects to pinnipeds at haul outs are observed.</p>	<p>Document pinniped reactions to vessel presence and equipment use.</p> <p>Submit Final Monitoring Report after completion of survey activities.</p>	<p>OGPP permit holder.</p>	<p>Monitoring Report following completion of survey.</p>	<p>4/26/2016 5/14/2016 CS</p>

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<p>MM BIO-8: Reporting Requirements – Collision.</p>	<p>All State waters; if a collision with marine mammal or reptile occurs, the vessel operator shall document the conditions under which the accident occurred, including the following:</p> <ul style="list-style-type: none"> • Vessel location (latitude, longitude) 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 an observer was monitoring marine wildlife at the time of collision; and, • Name of vessel, vessel owner/operator, and captain officer in charge of the vessel at time of collision. <p>After a collision, the vessel shall stop, if safe to do so; however, the vessel is not obligated to stand by and may proceed after confirming that it will not further damage the animal by doing so. The vessel will then immediately communicate by radio or telephone all details to the vessel's base of operations, and shall immediately report the incident. Consistent with Marine Mammal Protection Act requirements, the vessel's base of operations or, if an onboard telephone is available, the vessel captain him/herself, will then immediately call the National Oceanic and Atmospheric Administration (NOAA) Stranding Coordinator to report the collision and follow any subsequent instructions. From the report, the Stranding Coordinator will coordinate subsequent action, including enlisting the aid of marine mammal rescue organizations, if appropriate. From the vessel's base of operations, a telephone call will be placed to the Stranding Coordinator, NOAA National Marine Fisheries Service (NMFS), Southwest Region, Long Beach, to obtain instructions. 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 advised that an incident has occurred in State waters affecting a protected species.</p>	<p>No adverse effects to marine mammals or sea turtles due to survey activities are observed.</p>	<p>Submit Final Monitoring Report after completion of survey activities.</p>	<p>OGPP permit holder.</p>	<p>Monitoring Report following completion of survey.</p>	

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MM BIO-9: Limitations on Survey Operations in Select Marine Protected Areas (MPAs).	All MPAs; prior to commencing survey activities, geophysical operators shall coordinate with the CLSC, California Department of Fish and Wildlife (CDFW), and any other appropriate permitting agency regarding proposed operations within MPAs. The scope and purpose of each survey proposed within a MPA shall be defined by the permit holder, and the applicability of the survey to the allowable MPA activities shall be delineated by the permit holder. If deemed necessary by CDFW, geophysical operators will pursue a scientific collecting permit, or other appropriate authorization, to secure approval to work within a MPA, and shall provide a copy of such authorization to the CSLC as part of the required presurvey notification to CSLC. CSLC, CDFW, and/or other permitting agencies may impose further restrictions on survey activities as conditions of approval.	No adverse effects to MPA resources due to survey activities are observed.	Monitor reactions of wildlife to survey operations; report on shutdown conditions and survey restart. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder; survey permitted by CDFW.	Prior to survey.	3/31/2016 CS
MM HAZ-1: Oil Spill Contingency Plan (OSCP) Required Information.	Permittees shall develop and submit to CSLC staff for review and approval an OSCP that addresses accidental releases of petroleum and/or non-petroleum products during survey operations. Permittees' OSCP's shall include the following information for each vessel to be involved with the survey: <ul style="list-style-type: none"> • Specific steps to be taken in the event of a spill, including notification names, phone numbers, and locations of: (1) nearby emergency medical facilities, and (2) wildlife rescue/response organizations (e.g., Oiled Wildlife Care Network); • Description of crew training and equipment testing procedures; and • Description, quantities, and location of spill response equipment onboard the vessel. 	Reduction in the potential for an accidental spill. Proper and timely response and notification of responsible parties in the event of a spill.	Documentation of proper spill training. Notification of responsible parties in the event of a spill.	OGPP permit holder and contract vessel operator.	Prior to survey.	3/31/2016 CS
MM HAZ-2: Vessel fueling restrictions.	Vessel fueling shall only occur at an approved docking facility. No cross vessel fueling shall be allowed.	Reduction in the potential for an accidental spill.	Documentation of fueling activities.	Contract vessel operator.	Following survey.	4/25/2016 CS
MM HAZ-3: OSCP equipment and supplies.	Onboard spill response equipment and supplies shall be sufficient to contain and recover the worst-case scenario spill of petroleum products as outlined in the OSCP.	Proper and timely response in the event of a spill.	Notification to CSLC of onboard spill response equipment/supplies inventory, verify	Contract vessel operator.	Prior to survey.	4/26/2016 - 5/14/2016 CS

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			ability to respond to worst-case spill.			
MM HAZ-1: Oil Spill Contingency Plan (OSCP) Required Information.	Outlined under Hazards and Hazardous Materials (above)					
MM HAZ-2: Vessel fueling restrictions.	Outlined under Hazards and Hazardous Materials (above)					
MM HAZ-3: OSCP equipment and supplies.	Outlined under Hazards and Hazardous Materials (above)					
MM BIO-9: Limitations on Survey Operations in Select MPAs.	Outlined under Biological Resources (above)					
MM REC-1: U.S. Coast Guard (USCG), Harbormaster, and Dive Shop Operator Notification.	All California waters where recreational diving may occur; as a survey permit condition, the CSLC shall require Permittees to provide the USCG with survey details, including information on vessel types, survey locations, times, contact information, and other details of activities that may pose a hazard to divers so that USCG can include the information in the Local Notice to Mariners, advising vessels to avoid potential hazards near survey areas. Furthermore, at least twenty-one (21) days in advance of in-water activities, Permittees shall: (1) post such notices in the harbormasters' offices of regional harbors; and (2) notify operators of dive shops in coastal locations adjacent to the proposed offshore survey operations.	No adverse effects to recreational divers from survey operations.	Notify the USCG, local harbormasters, and local dive shops of planned survey activity. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Prior to survey.	3/31/2016 CE

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MM FISH-1: U.S. Coast Guard (USCG) and Harbormaster Notification.	All California waters; as a survey permit condition, the CSLC shall require Permittees to provide the USCG with survey details, including information on vessel types, survey locations, times, contact information, and other details of activities that may pose a hazard to mariners and fishers so that USCG can include the information in the Local Notice to Mariners, advising vessels to avoid potential hazards near survey areas. Furthermore, at least twenty-one (21) days in advance of in-water activities, Permittees shall post such notices in the harbormasters' offices of regional harbors.	No adverse effects to commercial fishing gear in place.	Notify the USCG and local harbormasters of planned survey activity. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Prior to survey.	3/31/2016 CS
MM FISH-2: Minimize Interaction with Fishing Gear.	To minimize interaction with fishing gear that may be present within a survey area: (1) the geophysical vessel (or designated vessel) shall traverse the proposed survey corridor prior to commencing survey operations to note and record the presence, type, and location of deployed fishing gear (i.e., buoys); (2) no survey lines within 30 m (100 feet) of observed fishing gear shall be conducted. The survey crew shall not remove or relocate any fishing gear; removal or relocation shall only be accomplished by the owner of the gear upon notification by the survey operator of the potential conflict.	No adverse effects to commercial fishing gear in place.	Visually observe the survey area for commercial fishing gear. Notify the gear owner and request relocation of gear outside survey area. Submit Final Monitoring Report after completion of survey activities.	OGPP permit holder.	Immediately prior to survey (prior to each survey day).	4/26/2016 5/14/2016 CS
MM FISH-1: USCG and Harbormaster Notification.	Outlined under Commercial and Recreational Fisheries (above)					

Acronyms/Abbreviations: CARB = California Air Resources Board; CDFW = California Department of Fish and Wildlife; CSLC = California State Lands Commission; dB = decibels; kHz = kilohertz; MPA = Marine Protected Area; MWCP = Marine Wildlife Contingency Plan; MWM = Marine Wildlife Monitor; m= meter(s); NOAA = National Oceanic and Atmospheric Administration; NO_x = Nitrogen Oxide; OGPP = Offshore Geophysical Permit Program; OSCP = Oil Spill Contingency Plan; USCG = U.S. Coast Guard