FISHERIES MANAGEMENT PLAN

BETA UNIT GEOPHYSICAL SURVEY
OFFSHORE HUNTINGTON BEACH, CALIFORNIA

Project No. 1602-1681

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NOVEMBER 2017

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1.0 INTRODUCTION

Beta proposes to conduct a geophysical survey of the Beta Unit located within Federal outer continental shelf (OCS) waters approximately 8 miles offshore Huntington Beach, California (Figure 1-1). The proposed Project is intended to provide Beta with subsurface imaging of the oil productive formations below the seafloor within the Beta Unit Field. The survey will be used to map the subsurface geology to locate remaining resources thereby reducing the number of wells required to recover the resource.

The proposed scope of work offshore will require operating a node deployment/recovery vessel, geophysical survey vessel, support/monitoring vessels, and a monitoring aircraft in the survey area as well as transit of the vessels and aircraft between the research area and nearby harbors (Port of Long Beach) and airfields. The geophysical survey vessel will tow a sound-generating source array along pre-determined transects to acquire seismic reflection data across and along major geologic structures and fault zones within the survey area. The size of the survey area is approximately 18.885 square miles (48.91 sq.km.) in a NNW to SSE direction. Water depths in the survey area range from 148 to 1,083 feet (45 to 330 m). As the Beta Unit is within the Federal OCS waters, all ocean-based survey activities will occur within Federal waters.

1.1 PROJECT VESSELS

The proposed activities will require a combination of vessels including: a vessel to install and retrieve the autonomous nodes (*M/V Clean Ocean* or equivalent), a vessel to tow the source array (*M/V Silver Arrow* or equivalent), and a support vessel (S*/V Jab* or equivalent).

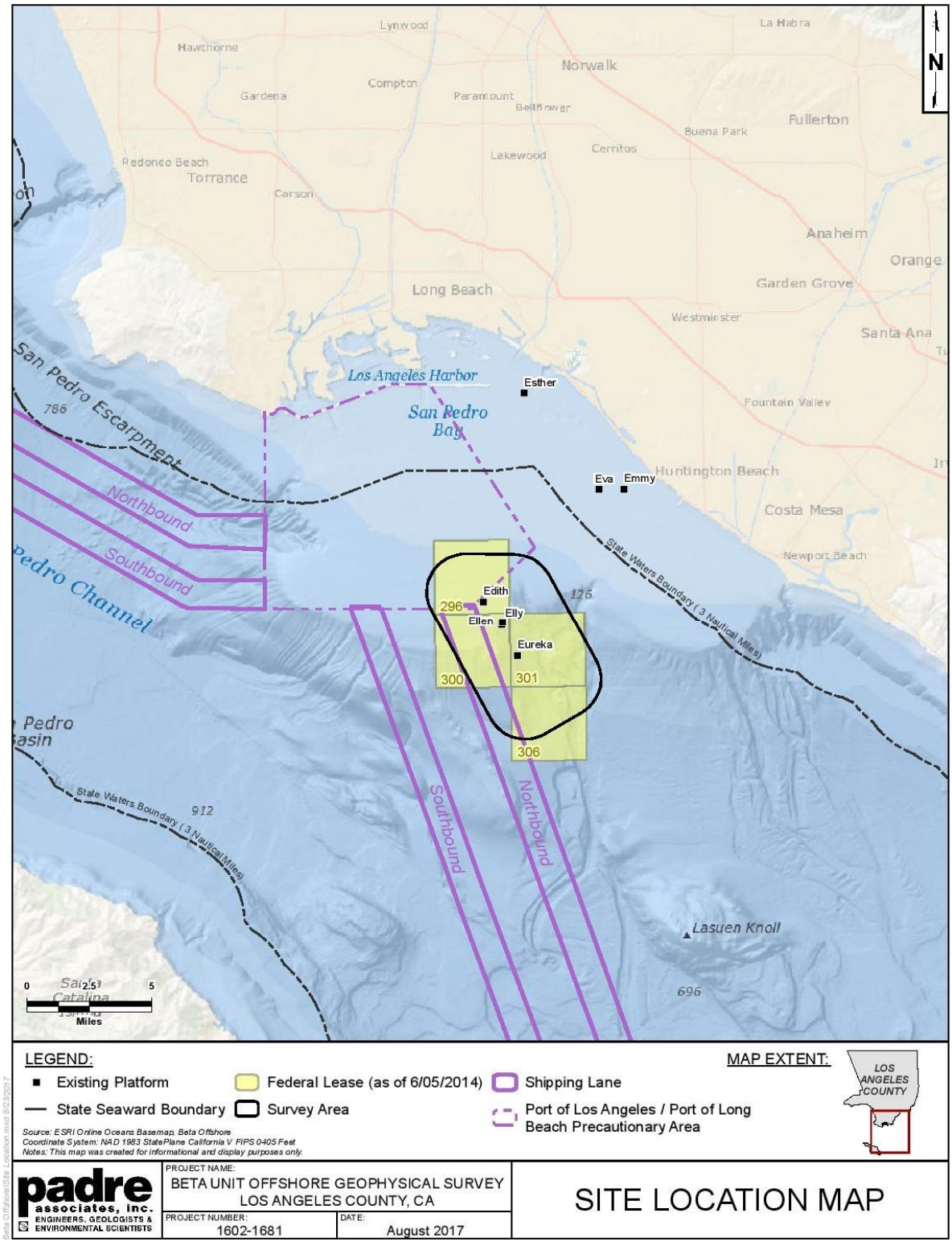


Figure 1-1. Site Location Map

2.0 COMMERCIAL FISHING OPERATIONS

2.1 COMMERCIAL CATCH

Commercial catch data within the marine waters off California are reported by the California Department of Fish and Wildlife (CDFW) from a series of 10 latitude by 10 longitude area blocks, each covering an area of approximately 110 square miles, called a Fish Block (FB). The FB boundaries correspond to lines of latitude and longitude and therefore due to the irregular California coast, FBs that include the shoreline encompass a smaller area.

As shown in Figure 1-2, the Project site is located within FBs 739 and 740. FB 739 encompasses an area of approximately 100 square nautical miles is best described as a range of rocky and sedimentary seafloor habitats, and includes water depths that range from 0 at the shoreline to over 1,600 ft. mean lower low water (MLLW). The inshore portion (water depths of 300 ft. or less) of FB 739 is a portion of the Huntington Flats, a gently-sloping and sedimentary seafloor area. Additionally, Platforms Eva, Emmy, Edith, Ellen, Elly, and Eureka are all located within FB 739. It should be noted that the man-made platforms provide a complex structure that is not present naturally. The platforms provide a large surface area of hard substrate throughout the water column (Claisse, 2014). The hard substrate provides ideal habitat for many fish species.

Figure 1-2. CDFW Fish Blocks near Proposed Project

Commercial catch data from FBs 739 and 740 for the years 2011 through 2015 (most recent data) (CDFW unpublished) made available to the public through the CDFW no longer includes reported gear types that were utilized to land all species. However, historical data indicates that gear including, but not limited to purse seine, drum seine, and drift net operations have been used target pelagic species such as market squid (Loligo opalescens), Pacific sardine (Sardinops sagax caeruleus), and northern anchovy (Engraulis mordax). As detailed within Tables 1-1 and 1-2, these three species all contributed to a substantial percentage of the reported commercial catch (in total pounds caught) for FBs 739 and 740. Please refer to Tables 1-1 and 1-2 for more detail on the commercial catch and value in relation to each FB. Please refer to Section 3.8 (Commercial and Recreational Fishing) for more detailed information reported on these data.

Table 1-1. The Most Abundant and Valuable Taxa for 2011 through 2015 Commercial Fishing Catch (Fish Block 739)

FB 739 Taxa	Gear Type(s)	Total Caught (pounds)	Total Value (in dollars)
Market squid	Drum Seine / Purse Seine	34,200,735	9,924,220
Pacific sardine	Drum Seine / Purse Seine	17,017,089	1,191,900
Pacific mackerel	Drum Seine / Purse Seine	766,063	79,608
Northern anchovy	Drum Seine / Purse Seine	595,259	29,535
White seabass	Drift Gill Net / Set Gill Net	110,523	303,741
Spot prawn	Prawn Trap	17,607	247,799
California spiny lobster	Lobster Trap	7,300	140,500

Table 1-2. The Most Abundant and Valuable Taxa for 2011 through 2015 Commercial Fishing Catch (Fish Block 740)

FB 740 Taxa	Gear Type(s)	Total Caught (pounds)	Total Value (in dollars)
Market squid	Drum Seine / Purse Seine	11,164,499	3,124,700
Sea urchin	Dive	436,655	603,139
Pacific sardine	Drum Seine / Purse Seine	216,116	17,897
Northern anchovy	Drum Seine / Purse Seine	194,640	14,999
Ridgeback prawn	Trap / Trawl	57,759	139,981
Giant red sea cucumber	Trawl and Dive	46,941	196,422
California spiny lobster	Lobster Trap	6,873	236,630

Figures 1-3 and 1-4 show typical drift and purse seine gear, respectively, that would be expected to be used within the Project area.

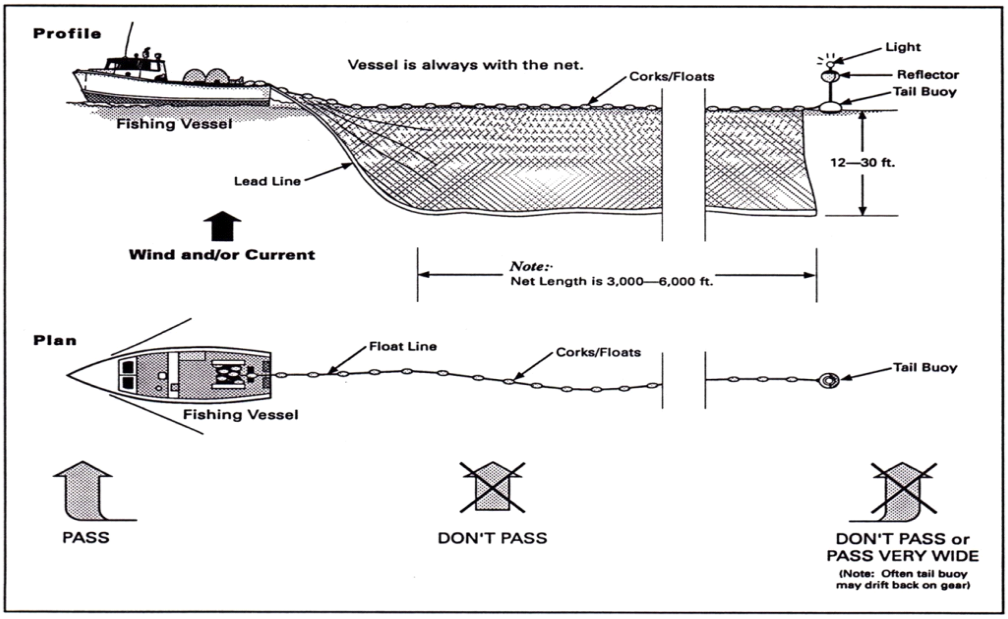


Figure 1-3. Drift Gillnet Gear

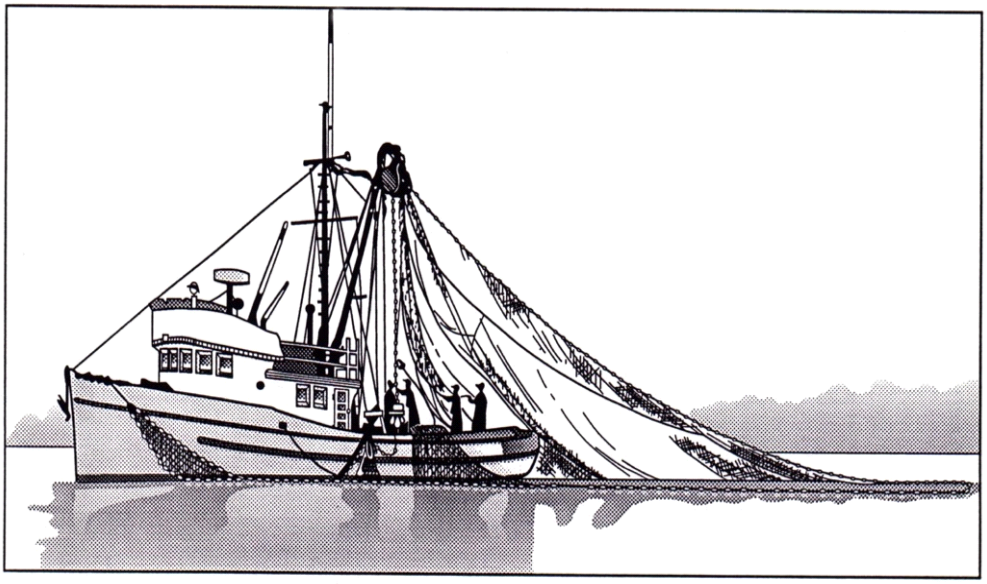


Figure 1-4. Purse Seine Vessel with Net Deployed

2.2 FISHING GEAR MARKINGS

In practice, it is often necessary for oil industry vessel operators to spot and identify commercial fishing gear that might lie in their path. Figure 1-5 provides a visual summary of buoys which are commonly used in the rock crab, lobster, gillnet, and hook and line fisheries. Each buoy group has several possibilities, and those shown in Figure 1-5 are indicative of the most commonly-used for each type of operation. Within the Project area, and based on the catch records for that area, drift nets are the most likely type of gear that will be marked and within the area. Water depths here preclude crab or lobster traps, and vessel activities likely preclude bottom or mid-water set nets.

From the markings of the buoys, it should be possible to identify and contact the owner of the gear. Oil industry personnel have often been able to reach an agreement with the owners of the specific pieces of gear for relocating such gear for the period of time necessary to complete the scheduled activities. Contact with the owner of such gear is essential to proper operations, since it is unlawful to willfully disturb or damage any net or trap which is being legally used in California waters (California Fish & Game Code Section 8604).

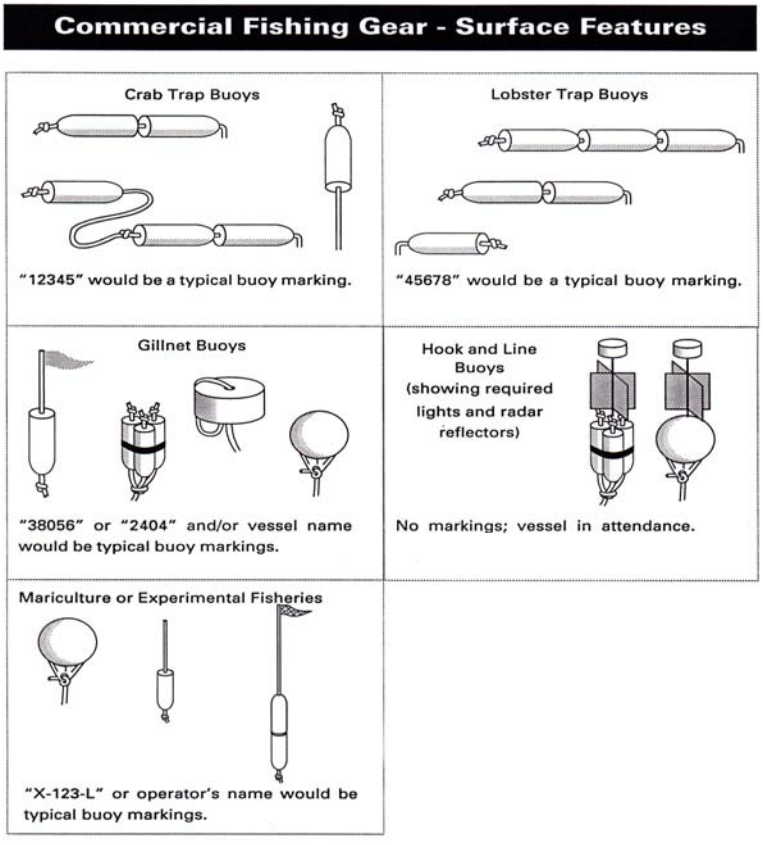


Figure 1-5. Typical Commercial Fishing Buoy Markings

2.3 MARINE AQUACULTURE

According to the NOAA Fisheries Office of Aquaculture, in 2016 the privately-owned Catalina Sea Ranch received several government grants to begin offshore mussel farming within Federal waters of the U.S. Currently, the Catalina Sea Ranch has developed approximately 100 acres in the San Pedro Bay for cultivation of Mediterranean mussel (*Mytilus galloprovincialis*). The Catalina Sea Ranch mussel farm is located approximately two miles (3.2 kilometers) north-east from the Project Platforms (Edith and Elly).

3.0 RECREATIONAL FISHING

The California Recreational Fisheries Survey (CRFS) collects data on California's marine recreational fisheries, and estimates the catch and effort of anglers fishing for marine finfish in California. The survey was first instituted in January 2004, and is a collaborative effort between the California Department of Fish and Wildlife (CDFW) and the Pacific States Marine Fisheries Commission (PSMFC) with funding from State and Federal sources. In California, the survey area is divided into six districts. The Project site falls within the South District, which incorporates the fisheries west of the counties of Los Angeles, Orange, and San Diego.

Survey Results. Table 1-3 below provides a summary of the types of fish most commonly caught by recreational anglers in southern California from January through December of 2015. As indicated, rockfish and scorpionfish are the most commonly caught fish in southern California at nearly twice the amounts of the next most common catch, tunas and mackerels. Sand and kelp bass rank as the third largest harvest; with approximately 118,000 fish caught by recreational anglers in 2015.

Rockfish are targeted by recreational fishers at the heads of submarine canyons in approximately 300 to 600 feet (ft.) of water west of the Beta Unit. The Bolsa Chica and Huntington Beach artificial reefs made of a multitude of deposited substrate such as armor rock and telephone poles are located approximately 5 to 6 miles north of the Project site in approximately 60 ft. of water is also a popular spot.

Table 1-3. Estimated Types and Quantity of Fish Commonly Caught by Recreational Anglers in Southern California (January through December 2015)

Rank Based on Estimated Number of Fish Harvested	Southern California	
	Type of Fish	Estimated Number of Fish Harvested
1	Rockfish and Scorpionfish	760,000
2	Tunas and Mackerels	388,000
3	Sand and Kelp Bass	118,000
4	Flatfishes (sanddab, sole, and halibut)	100,000
5	Surfperch	49,000
6	Croaker (i.e. corvina, corbina, white sea bass, white croaker, queenfish)	36,000
7	Sardine	26,000
8	Wrasses (sheephead)	20,000
9	Silversides (Silverside family, topsmelt, jacksmelt)	19,000
10	Sea Chub (halfmoon, opaleye)	17,000

Source: CRFS data extracted from RecFin database at http://www.recfin.org/data/estimates/tabulate-recent-estimates-2004-current/

4.0 REGULATORY SETTING

4.1 FEDERAL

4.1.1 Magnuson-Steven Fishery Conservation and Management Act (MSA)

The MSA is the primary law governing marine fisheries management in United States (U.S.) Federal waters. The MSA was first enacted in 1976, revised in 1996 (Sustainable Fisheries Act), and revised again in 2007 (Magnuson-Stevens Fishery Conservation and Management Reauthorization Act). Amendments to the 1996 MSA require "the identification of Essential Fish Habitat for Federally-managed species and the implementation of measures to conserve and enhance this habitat". Any project requiring Federal authorization, is required to complete and submit an Essential Fish Habitat Assessment (EFHA) with the application and either show that no significant impacts to the essential habitat of managed species are expected or identify mitigations to reduce those impacts. The 2007 MSA reauthorization featured new requirements to prevent overfishing by establishing annual catch limits and accountability measures among other notable amendments.

4.1.2 United States Coast Guard (USCG)

Primary responsibility for the enforcement of the U.S. maritime laws and regulations falls upon the USCG. The USCG's responsibilities for regulating activities on the Outer Continental Shelf (OCS), the continental shelf, and in ports and harbors, as applicable to the proposed action, are presented in Title 33 Code of Federal Regulations (CFR), Chapters I, II, and IV, Title 43 US Code (USC) Chapter 36; and Title 46 USC Subtitle IV. The USCG is responsible for managing and regulating provisions for safe navigation of vessels in US waters, as well as the enforcement of environmental and pollution prevention regulations.

4.1.3 The Outer Continental Shelf Lands Act (OCSLA)

Under the OCSLA, the Department of Interior (DOI) is required to:

- Manage the orderly leasing, exploration, development, and production of oil and gas resources on the Federal Outer Continental Shelf (OCS);
- Ensure the protection of the human, marine, and coastal environments;
- Ensure that the public receives a fair and equitable return for these resources; and
- Ensure that free-market competition is maintained.

Within the DOI, the Bureau of Ocean Energy Management (BOEM) is charged with the responsibility of managing and regulating the development of the OCS oil and gas resources in accordance with the provisions of the OCSLA. The BOEM operating regulations are presented in CFR Title 30, Volume 2.

The USCG also requires a Safety Zone around all Platforms Edith, Elly, Ellen, and Eureka within CFR Title 33 (Navigation and Navigable Waters), Part 147 (Safety Zones).

§ 147.1104. Platform ELLEN & ELLY safety zone.

(a) *Description:* The areas within a line 500 meters from each point on the outer edge of each structure. The structures are approximately 120 meters apart. The position of the center of each structure is: Platform Ellen, 33°–34'–57" N, 118°–07'–42" W; and Platform Elly, 33°–35'–00" N, 118°–07'–40" W.

(b) *Regulations:* No vessel may enter or remain in this safety zone except the following: (1) An attending vessel serving either structure, (2) a vessel under 100 feet in length overall not engaged in towing, or (3) a vessel authorized by the Commander, Eleventh Coast Guard District.

§ 147.1108. Platform EDITH safety zone.

(a) *Description:* The area within a line 500 meters from each point on the structure's outer edge. The position of the center of the structure is 33°–35'–45" N. 118°–08'–27" W.

(b) *Regulations:* No vessel may enter or remain in this safety zone except for the following: (1) An attending vessel, (2) a vessel under 100 feet in length overall not engaged in towing, or (3) a vessel authorized by the Commander, Eleventh Coast Guard District.

§ 147.1111. Platform EUREKA safety zone.

(a) *Description*: The area within a line 500 meters from each point on the structure's outer edge. The position of the center of the structure is 33-33-50 N, 118-07-00 W.

(b) *Regulations*: No vessel may enter or remain in this safety zone except the following: (1) An attending vessel, (2) a vessel under 100 feet in length overall not engaged in towing or (3) a vessel authorized by the Commander, Eleventh Coast Guard District.

4.2 STATE

4.2.1 California Department of Fish and Wildlife (CDFW)

Recreational fishing is regulated by the CDFW and subject to the California Code of Regulations (CCR) Title 14 Division 1, as adopted by the CDFW Commission. Similar to commercial fishing regulations, catch limits can prohibit catch of one or more species after the State catch limit has been reached. The open season for each species is dependent on the stock assessments as determined by the CDFW.

4.2.1.1 State of California Ocean Sport Fishing Regulations

Each year, the California Fish and Game Commission (CFGC) issue regulations on recreational fishing within the marine waters of the State of California. These regulations specify season, size and bag limits, and gear restrictions as well as licensing requirements. Additionally, a section on fishing restrictions within the Marine Protected Areas (MPAs) is also included.

4.2.1.2 State of California Commercial Fishing Laws and Licensing Requirements

Similar to the recreational fishing industry, commercial fishing is regulated by a series of laws passed by the CFGC and is issued each year in a summary document. Seasonal and gear restrictions within the various Fish and Game Districts, licensing instructions and restrictions, and species-specific fishing requirements are provided in the document. Most of the MPAs have commercial fishing restrictions (based on the designation of each area) which are also listed in the summary document.

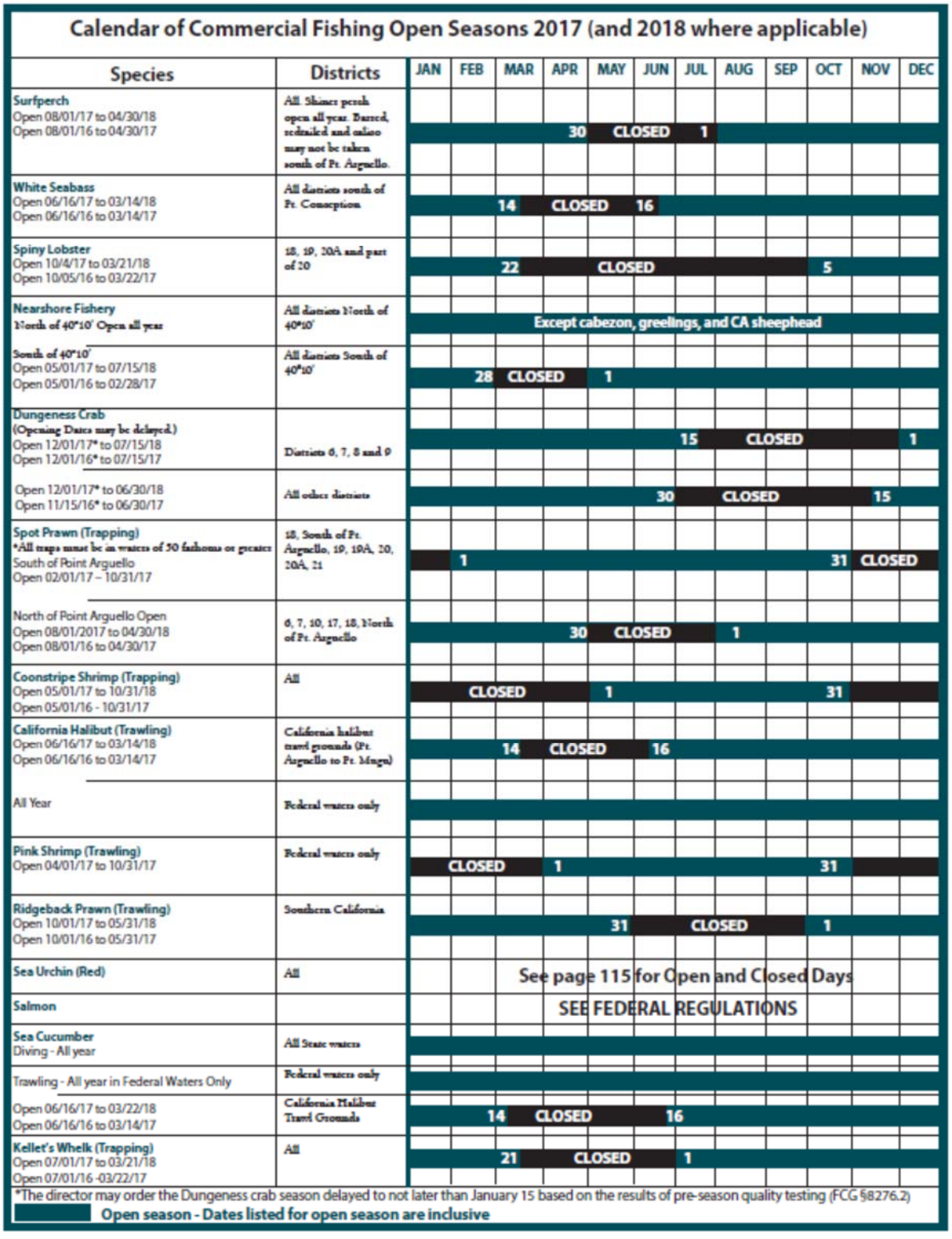
4.2.1.3 Closures of Commercial Fishing Season During Anticipated Survey Time Period

As shown in Figure 1-6, Calendar of Commercial Fishing Seasons 2017-18, some fishing for specific species may be closed during the proposed survey period (September through November 2018). The spiny lobster (*Panulirus interruptus*) is typically closed the second week in March through the first week of October. The spot prawn season for 2017 is closed November 1st through January 31st. Other seasons for commonly targeted species for commercial fishing are expected to be open during the anticipated survey time period.

4.2.1.4 The Marine Life Protection Act of 1999 (MLPA)

The Marine Life Protection Act (MLPA) of 1999 directs the State to redesign California's system of MPAs to function as a network in order to: increase coherence and effectiveness in protecting the State's marine life and habitats, marine ecosystems, and marine natural heritage, as well as to improve recreational, educational and study opportunities provided by marine ecosystems subject to minimal human disturbance. There are six goals that guide the development of MPAs in the MLPA planning process: 1) Protect the natural diversity and abundance of marine life, and the structure, function and integrity of marine ecosystems; 2) Help sustain, conserve and protect marine life populations, including those of economic value, and rebuild those that are depleted; 3) Improve recreational, educational and study opportunities provided by marine ecosystems that are subject to minimal human disturbance, and to manage these uses in a manner consistent with protecting biodiversity; 4) Protect marine natural heritage, including protection of representative and unique marine life habitats in California waters for their intrinsic values; 5) Ensure California's MPAs have clearly defined objectives, effective management measures and adequate enforcement and are based on sound scientific guidelines; and 6) Ensure the State's MPAs are designed and managed, to the extent possible, as a network.

To help achieve these goals, three types of MPA designation types are used in the MLPA process: State marine reserves, State marine parks and State marine conservation areas.



Source: CDFW, 2017. Accessed online April 20, 2017 at https://www.wildlife.ca.gov/Regulations

Figure 1-6. Calendar of Commercial Fishing Seasons 2017-18

4.2.1.5 Marine Protected Areas (MPAs)

Within the Project region two MPAs exist. Immediately east of the survey area (approximately 5 miles), inshore, the Bolsa Bay State Marine Conservation Area (SMCA) and the Bolsa Chica Basin SMCA exist. The Bolsa Chica SMCA is a no-take area that generally prohibits the take of living, geological, and cultural marine resources.

4.2.1.6 California Coastal Act

The California Coastal Act of 1976 includes the following policies related to commercial and recreational facilities and opportunities.

Section 30234 states, in part: “Facilities serving the commercial fishing and recreational boating industries shall be protected and, where feasible upgraded. Existing commercial fishing and recreational boating harbor space shall not be reduced unless the demand for those facilities no longer exists or adequate substitute space has been provided. Proposed recreational boating facilities shall, where feasible, be designed and located in such a fashion as not to interfere with the needs of the commercial fishing industry.”

Section 30234.5 states, in part: “The economic, commercial, and recreational importance of fishing activities shall be recognized and protected.”

4.3 LOCAL

4.3.1 POLA and POLB General Plans

Land and water uses in the POLA/POLB are subjected to provisions of the Port Master Plans for each port. Both master plans were developed in conformance with the California Coast Act (CCA) and other Federal, State, and City land use policies, and serve as the Local Coastal Plan for the ports.

5.0 IMPACT ASSESSMENT

Commercial fishing operations are expected to be limited within the Project site as proposed activities will occur within an area that currently supports existing pipelines and platforms. Existing safety zones extend for 500-meters (1,500 feet) from the outer edges of Platforms Elly, Ellen, and Eureka and USCG regulations for those areas preclude vessels from entering or remaining within those safety zones in except for the following: (1) an attending vessel, (2) a vessel under 100 feet in length overall not engaged in towing, or (3) a vessel authorized by the Commander, Eleventh Coast Guard District.

Deployment and recovery of the autonomous nodes would be completed when sea state and weather conditions are conducive to safe operations and would be via “live boat” (no anchoring is proposed). Nodes will not be placed within the 100-acre Catalina Sea Ranch aquaculture area. During this phase of the Project, mobility of the Project vessel would likely not interfere with any fishing opportunity (recreational or commercial).

Additionally, the source array will not be towed within or near the Catalina Sea Ranch marine aquaculture facilities. Prior to the start of Project survey operations, Beta will initiate communications with Catalina Sea Ranch to coordinate any potential areas of avoidance. Avoidance of the marine aquaculture area will reduce the potential impact of entanglement with buoys or gear to less than significant. No impacts to marine aquaculture would result.

Although preclusion of some commercial fishing may be necessary during survey activities, impacts are expected to be minimal due to the lack of expected commercial fishing in the area during the relatively short period of construction (approximately 42 days). When the M/V *Silver Arrow* is towing the source array, the vessel would “fly” the appropriate USCG-approved day shapes (mast head signals used to communicate with other vessels) and display the appropriate lighting to designate the vessel has limited maneuverability. The turning radius is limited to 3 degrees per minute (2.5 km [1.5 mi]). As such, preclusion of fishing (both recreational and commercial) may be necessary throughout the survey, as the Project vessel will have limited mobility while engaged in active survey operations.

Irrespective of the significance of the potential impacts, procedures will be instituted to reduce the possibility of negative effects on the commercial fishing industry and recreational fishing opportunity.

5.1 PROJECT-INCORPORATED MEASURES TO REDUCE POTENTIAL IMPACTS TO FISHERIES

5.1.1 Notice to Mariners

At least 15 days prior to in-water activities, Beta’s contractor will submit a Notice to Mariners to the Eleventh District, USCG and, as required, to the Captain of the Port to alert other commercial and recreational boaters within the vicinity of the Project site. This notification will

specify vessel and personnel contact information, scope of the proposed actions, location, and the anticipated duration of the activities.

5.1.2 Posting of Notices

A document that shows and describes the proposed activities will be posted at the Harbor Master's office at the Ports of Los Angeles and Long Beach, Marina Del Ray, King Harbor Alamitos Bay, Anaheim Bay, and Newport Bay. That document will provide information on the proposed activities, contact information for Project vessels and personnel, and will have a map depicting the ocean area affected.

5.1.3 Fishing Gear Protection/Removal

Should commercial fishing gear be observed within the Project work site, construction and support vessels will avoid the area to the extent possible. If a commercial fishing vessel is observed within the work area, the construction manager or on-site manager will contact the vessel operator on Channel 16 and inform the skipper that construction operations are ongoing within the area. If set gear is observed, the number on the buoy that marks the gear will be recorded and CDFW will be contacted to obtain information on the owner. The contractor or CDFW will contact the owner and request the gear be removed until construction is completed.

5.1.4 Transit Corridors

Project vessels transiting to and from the Project site from the POLA/POLB will utilize existing vessel traffic routes to and from the platforms. Stationary commercial fishing gear buoys will be avoided and commercial vessels that are towing gear or are drift netting will be avoided in accordance with USCG clearance requirements.

5.1.5 Day Shapes

In accordance with USCG requirements and to alert nearby vessels, when the M/V Silver Arrow is towing the source array, the vessel will "fly" the appropriate USCG-approved day shapes and display the appropriate lighting to designate the vessel has limited maneuverability.

5.1.6 Catalina Sea Ranch Coordination

Prior to the start of Project survey operations, Beta will initiate communications with Catalina Sea Ranch to coordinate any potential areas of avoidance and notification procedures.

6.0 REFERENCES

RecFIN. Tabulate Recent Estimates. Accessed online at RecFin database at http://www.recfin.org/data/estimates/tabulate-recent-estimates-2004-current/

California Department of Fish and Wildlife (CDFW). Unpublished data for Fish Block catch data: e-mailed December 1, 2016 and May 5, 2017 to Patrick Crooks by Charlene Calac of CDFW Los Alamitos, California office.

CDFW. 2017. 2017-2018 Commercial Fishing Digest. Accessed online April 20, 2017 at https://www.wildlife.ca.gov/Regulations.

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