ATTACHMENT E

ExxonMobil Santa Ynez Unit

Offshore Power System
Reliability– B Project

ENVIRONMENTAL IMPACT ANALYSIS

August 2013
Rev 0

Environmental Impact Analysis

ExxonMobil Santa Ynez Unit
Offshore Power System Reliability- B Project
(OPSRB)

ExxonMobil has reviewed the proposed OPSRB Project Description and identified environmental impacts associated with the activities. As a result, ExxonMobil has developed a number of mitigation measures to reduce the impacts. This document describes the identified impacts and the associated mitigation measures. Since the OPSRB project is very similar to the previous OPSR-A project, the analysis for the OPSRB project is based on the Mitigated Negative Declaration/Environmental Assessment, ExxonMobil Offshore Power System Repair Project (02-ND-35) issued in January 2003 by the County of Santa Barbara Planning and Development Department, Energy Division and the United States Department of Interior, Minerals Management Service, Pacific Outer Continental Shelf Region.

The analysis focuses on the current environmental and regulatory setting, an assessment of project-specific and cumulative impacts, and includes recommended mitigation measures that will be implemented during the project to reduce impacts.

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Summary

ExxonMobil Production Company is submitting applications for the Offshore Power System Reliability Project– B (OSPRB) for its Santa Ynez Unit (SYU) operations to Federal, State, and local regulatory agencies for review and approval. The proposed project is divided into two phases- Phase 1 and Phase 2. Phase 1involves the installation of modifications at Platforms Harmony and Heritage for the replacement power cables and electrical systems required for Phase 2 installation. Phase 2 involves the retrieval of existing Cable A (or B) and C1 from selected locations and installation of replacement Cables A2 (or B2), F2 and G2. Several contingency scenarios have been included in the OPSRB Execution Plan in case one of the existing out-of-service power cables cannot be removed from or a replacement cable cannot be installed in a conduit or platform riser (i.e., F2 at nearshore conduit, G2 at HE riser, A2 at nearshore conduit and A2 at HA riser). The decision on which of the two cables, Cable A or B, that will be replaced will be made based on a detailed analysis of the condition of each cable prior to installation. Currently documents depict Cable A as being replaced.

The OPSRB project phases are divided into the following principal elements:

1. Installing modifications on Platform Harmony and Heritage to allow installation of the replacement power cables and upgrade the electrical systems [Phase 1]
2. Retrieving approximately a 5 mile (8 kilometer) sections of power Cable A (or B) and C1 from an onshore point at the southern end of LFC to just beyond State-Federal boundary (approximately at the shelf break) [Phase 2]
3. Retrieving a 1-6 mile (1.6-9.6 km) section of power Cable A (or B) at and adjacent to Platform Harmony. Due to the restricted route available for installing the replacement cable, an additional section of Cable A (or B) may have to be retrieved from the State-Federal Boundary to the platform. Retrieving a 1-2 mile (1.6-3.2 km) section of power Cable C1 at and adjacent to Platform Heritage [Phase 2]
4. Installing approximately 10.3 miles (16.6 kilometers) of replacement power Cable A2 (or B2) between Platform Harmony and the southern end of the onshore Las Flores Canyon (LFC) Processing Facility [Phase 2]
5. Installing approximately 11.2 miles (18.0 kilometers) of replacement power Cable F2 between Platform Harmony and the southern end of the onshore Las Flores Canyon (LFC) Processing Facility. (Cable Route Map shows proposed and alternative routes within the surveyed area- the selected route will be chosen after detailed review of survey data and installation plans.) [Phase 2]
6. Installing approximately 7.3 miles (11.7 kilometers) of replacement power Cable G2 between Platform Harmony and Platform Heritage. (Cable Route Map shows proposed and alternative routes within the surveyed area- the selected route will be chosen after detailed review of survey data and installation plans.) [Phase 2]
7. At end of SYU life, removing all operating and remaining power cables in both State Waters and the Outer Continental Shelf (OCS)

As part of the Santa Ynez Unit (SYU) Expansion Project, the two new platforms (Harmony (HA) and Heritage (HE)) as well as the existing platform (Hondo (HO)) were required to utilize shore–based electric power. The electrical power distribution systems for the platforms were installed in the early 1990's. The systems consisted of an Offshore Substation (OSS) in Las Flores Canyon

(LFC) and three power cables from the substation going offshore with two to Platform Harmony (Cables A and B) and one to Platform Heritage (Cable C). In addition, power cables were installed from Platform Harmony to Platform Hondo (Cable D) and to Platform Heritage (Cable E). The installation also included the associated electrical equipment at each facility. Once the electrical distribution system was energized, the SYU offshore operations became completely reliant on these systems for all normal operations. In 2003, Cable C experienced a failure in State Waters that could not be repaired. The SYU OPSR-A project replaced the C cable with the C1 cable.. In addition, at the same time the D1 submarine cable was installed between Platform Harmony and Platform Hondo for improved reliability. Since the time that the C1 cable was installed, the cable has experienced two failures in the OCS which were repaired and the cable returned to service. In addition, in May 2013, Cable B experienced a failure in the onshore section of the cable near the southern end of LFC. After receipt of approvals from the County of Santa Barbara in June 2013, the failed section was removed and a section of spare cable was spliced into the existing cable. The repaired cable was tested and returned to service in July 2013.

The reliability of the current offshore power distribution system requires improvement due to continual aging of existing individual circuits, history of submarine cable faults in the distribution system and the obsolescence of offshore switchgear and electrical components. The proposed OPSRB project will further improve the reliability of electricity distribution from shore to and between the platforms.

ExxonMobil estimates that the proposed project would require approximately 15-21 months for Phase 1 and 8-12 months for Phase 2. The Phase 1 installation activities commenced in June 2013 after the Bureau of Safety and Environmental Enforcement (BSEE) approved the Phase 1 activities as minor platform modifications in May 2013. The Phase 1 activities are expected to be completed by about 1st Quarter 2015. The Phase 2 cable retrieval and installation activities are expected to commence on or about the 4th Quarter of 2014 and be completed by about early 4rd Quarter 2015. The offshore cable retrieval and installation portion of Phase 2 is expected to require 1-2 months and be conducted during mid to late 2015.

The Bureau of Safety and Environmental Enforcement (BSEE) is expected to be the lead agency for conducting environmental review of the Phase 2 activities pursuant to the requirements of the National Environmental Policy Act (NEPA). The California State Lands Commission is expected to be the lead agency for conducting environmental review of the Phase 2 activities pursuant to the California Environmental Quality Act (CEQA).

This analysis establishes the current environmental and regulatory setting, provides an assessment of project-specific and cumulative impacts, and includes recommended mitigation measures to reduce impacts in the following resource areas:

Aesthetics/Visual Resources	Fire Protection
Agricultural Resources	Geologic Processes
Air Quality	Greenhouse Gases
Onshore Biological Resources	Hazardous Materials/Risk Of Upset
Benthic Environment	Historic Resources
Commercial Fishing Operations	Land Use
Marine Mammals	Noise

Essential Fish Habitat (EFH) Endangered Abalone Species Cultural Resources Energy Environmental Justice	Public Facilities Recreation Transportation/Circulation Water Quality

A summary of the proposed project impacts and mitigation measures follows this opening section.

The analysis proposes that all potentially significant impacts associated with the OPSRB project can be reduced to less than significant levels with the implementation of applicant-proposed mitigation measures.

Environmental Impact & Mitigation Summary Table

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies) [5]
Aesthetics/Visual Res. Temporary impacts to visual character	Offshore construction vessels and night lighting	Offshore	Insignificant	Shielding or re-aiming of lights to minimize glare from night lighting shall be utilized onshore and on vessels offshore when within 1/2 mile from shore unless such shielding conflicts with USCG requirements. (VIS-1)	Insignificant	SLC, SBC
	Onshore night lighting (possible)	Onshore	Insignificant	Utilize shields onshore to minimize glare on Hwy 101 from night lighting. (VIS-1)	Insignificant	SBC
Air Quality Potential impacts associated with project emissions.	Diesel engines of the cable installation and support vessels.	Offshore	Insignificant	ExxonMobil shall implement the project in accordance with an Emissions Reporting Plan. Limit total actual project actual emissions from the retrieval and installation of the power cables to less than 25 tons of any affected pollutant in a 12-month period, as defined primarily by APCD Rules 202.F.7 and 202.D.16. (AQ-1)	Insignificant	BSEE, APCD
	Incidental emissions from stationary equipment on the vessel.	Offshore	Insignificant	Determine, on a daily basis, fuel use and emissions from the retrieval and installation of the power cable to verify compliance with APCD rules and regulations. (AQ-2)	Insignificant	BSEE, APCD

[1] Expected impact levels for proposed project; assume incorporation of all applicant-proposed mitigation measures.
[2] In some cases, impact levels may differ under CEQA vs. NEPA due to differences in agency significance criteria.
[3] See appropriate resource section for full mitigation language including timing
[4] Expected residual impacts; assume incorporation of all applicant-proposed mitigation measures.
[5] Expected enforcement agency(ies)

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies) [5]
				Require installation vessels and internal combustion engines to use ultra low sulfur fuel (15 ppm S). (AQ-3) Prepare a contingency plan for the scenario where the total project emissions of any affected pollutant, except CO, are projected to exceed 80% of the above 25 ton/year limit. (AQ-5)		BSEE, APCD APCD, SBC
Increase in particulate matter due to grading operations.	Excavation in lower LFC.	Onshore	Insignificant	Implement dust control measures onshore. (AQ-4)	Insignificant	APCD, SBC
Onshore Biological Resources Impacts to sensitive species present in LFC construction area.	Lower canyon construction within range of sensitive species.	Onshore	Insignificant	ExxonMobil shall include awareness training for sensitive species located in Corral Creek. (BIO-1)	Insignificant	SBC
Benthic Resources Bottom sediment disturbance and cleaning of retrieved cable	Retrieval of cable & installation of replacement cable	Offshore	Insignificant	Contractors shall use a dynamically-positioned (DP) vessel to retrieve and install power cables. (BE-1)	Insignificant	BSEE, SLC
Bottom sediment disturbance or direct impact to benthic resources.	Vessel anchoring	Offshore	Insignificant	Where feasible, contractors shall use installation techniques that minimize or avoid environmental impacts such as turbidity and scarring. (BE-2) (See also RMM-7).	Insignificant	BSEE, SLC, SBC
Direct physical impacts to hard bottom habitat.	Placing a concrete mattress or replacement power cable on rocky	Offshore	Insignificant	A pre-installation marine biological survey of the nearshore area shall be performed prior to the work. Specific	Insignificant	SLC, SBC, BSEE, CDFG,

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies) [5]
	outcrops			scope and methodology to be approved by agencies in advance. (BE-3)		NMFS
				A post-installation marine biological survey shall be conducted to identify any impacts from construction. Specific scope and methodology to be approved by agencies in advance. (BE-4)		SLC, SBC, BSEE, CDFG, NMFS
				Contractors shall use ROV to monitor and videotape portions of installation activities. Rocky outcrops shall be avoided wherever feasible. (BE-5)		BSEE, SLC
				ExxonMobil shall cast sand excavated at or near the conduit terminus and initial section of cable downslope into the adjacent sand channel. (BE-6)		SLC, SBC, CDFG, NMFS
				ExxonMobil shall provide, under safe conditions, the permitting agencies access to the site, during installation and installation-related activities. (BE-7)		BSEE, SLC, SBC
				ExxonMobil shall develop a restoration and restoration-monitoring plan after submission of the post-installation survey, if significant impacts to kelp, eelgrass, non-listed abalone and/or hard bottom habitats are detected. (BE-8)		SLC, SBC, CDFG
				ExxonMobil shall adhere to the Southern California Eelgrass Mitigation Policy and use native species for restoration. (BE-9)		SLC, SBC, CDFG, NMFS

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies) [5]
				If non-listed abalone(s) is detected near the conduit terminus during the time of the pre-installation marine biological survey, ExxonMobil shall either move anchor(s) at least 50' away to avoid any direct impacts to abalone or have a qualified biologist move abalone pursuant to procedures reviewed and approved by the agencies. (BE-10)		SLC, SBC, CDFG, NMFS
				ExxonMobil shall conduct a post-installation ROV or diver video survey along installed replacement cables in State Waters to verify as-built condition and confirm seafloor cleanup and restoration. (BE-11)		SLC
<u>Commercial Fishing</u> Potential interference with commercial fishing operations in the area.	Temporary preclusion of fishing areas from project vessels & anchoring	Offshore	Insignificant	ExxonMobil and all contractors shall comply with vessel traffic corridors. (CF-1)	Insignificant	BSEE, SLC
	Loss of trawling areas due to cable placement	Offshore	Insignificant	JOFLO shall be kept informed of construction activities. (CF-2)	Insignificant	BSEE, SBC
	Potential damage to fishing gear from debris on sea floor	Offshore	Insignificant	Offshore personnel shall view the Wildlife and Fisheries Training Program. (CF-3)	Insignificant	BSEE, SLC
				ExxonMobil shall file advisory with U.S. Coast Guard for publication in Local Notice to Mariners and shall notify JOFLO and fishers at least 15		BSEE, SLC, SBC

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies) [5]
				days prior to construction. (CF-4)		
				ExxonMobil shall continue to consult with JOFLO and fishers during planning and construction to identify and mitigate project-related impacts. If unanticipated conflicts with commercial fishing operations should arise, ExxonMobil shall resolve through appropriate measures such as physical modification of problem area, establishment of temporary preclusion zones, off-site mitigation. (CF-5)		BSEE, SLC, SBC
				ExxonMobil shall review installation procedures with JOFLO to minimize impacts to commercial fishing. (CF-6)		BSEE, SLC, SBC
				ExxonMobil shall require contractor to recover any escaped fan channel supports, if used. (CF-7)		BSEE
				ExxonMobil shall require contractors to recover all items lost overboard to the extent feasible. Logs shall be maintained on project vessels. (CF-8)		BSEE, SLC
				ExxonMobil shall require contractor to scout for traps in nearshore area that may interfere with the project. Temporary relocation of traps shall be coordinated through JOFLO. (CF-9)		BSEE, SLC
				Inside 30 fathoms, where corridors have not been established specifically for the project area, ExxonMobil shall		SLC, BSEE

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies) [5]
				establish temporary vessel traffic corridors reviewed and approved by JOFLO. (CF-10) ExxonMobil shall include training on vessel traffic corridors in all pre-construction meetings with project contractors and their personnel. (CF-11) See also BE-1, BE-2, and BE-4.		BSEE, SLC, SBC
Marine Mammals Disturbance of marine mammals due to noise associated with cable retrieval and installation activities.	DP vessel and other project-related vessels	Offshore	CEQA: Potentially significant but mitigable; NEPA: Insignificant	ExxonMobil shall prepare and implement a Marine Mammal Monitoring Plan. (MM-1)	Insignificant	BSEE, SLC, SBC
Increase in risk that a large marine mammal might become entangled in an anchor line or be hit by a vessel due to installation activities and associated vessel traffic.	DP vessel and other project-related vessels as well as anchoring	Offshore	CEQA: Potentially significant but mitigable; NEPA: Insignificant	ExxonMobil shall provide awareness training for offshore personnel re: marine mammals in area and potential project-related impacts. (MM-2)	Insignificant	BSEE, SLC, SBC
Essential Fish Habitat Disturbance to essential fish habitat.	Bottom sediment disturbance and cleaning of retrieved cable	Offshore	Insignificant	See BE-1 – BE-10.	Insignificant	
	Anchoring	Offshore	Insignificant		Insignificant	

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies) [5]
	Placing a concrete mattress or the replacement power cable on rocky outcrops.	Offshore	Insignificant		Insignificant	
Endangered Abalone Species Potential direct or indirect impacts to endangered abalone species.	Bottom sediment disturbance and cleaning of retrieved cable, and anchoring	Offshore	Insignificant	If a white or black abalone(s) is detected during the pre-construction survey near the conduit terminus, the project shall not begin until the animal is relocated or an appropriate alternative is implemented. (AB-1) See also: BE-1 through BE-6, BE-8 and BE-10.	Insignificant	NMFS, CDFG, SLC, SBC
Cultural Resources Potential damage to marine cultural sites.	Vessel anchoring and retrieval and installation of power cables.	Offshore	Insignificant	Contractors shall avoid potential offshore cultural resources by a 300-foot radius to the extent possible. (ARCH-1) ExxonMobil shall provide contractors with coordinates of potential sites in order to comply with ARCH-1. (ARCH-2) Review of avoidance procedures shall be included in pre-installation compliance meeting. (ARCH-3)	Insignificant	BSEE BSEE BSEE

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies) [5]
				ExxonMobil shall utilize an ROV to monitor cable installation in areas of potential cultural resources. (ARCH-4)		BSEE
				ExxonMobil shall immediately halt installation if a previously unidentified cultural resource is detected that could be impacted by project activities. (ARCH-5, ARCH-10)		SBC, BSEE
				ExxonMobil shall use an ROV with color-imaging sonar to monitor cable placement in the area of potential cultural resource No. 3. (ARCH-6)		BSEE
				If the cable needs to be laid outside the previously surveyed area, ExxonMobil shall utilize the ROV to conduct a survey prior to installation. (ARCH-7)		BSEE
				ExxonMobil shall notify agencies of pre-installation meeting with contractor regarding cultural resource avoidance (ARCH-8)		BSEE, SLC
				ExxonMobil shall provide for inspectors to be present near archaeological sites, if requested by agencies. (ARCH-9)		BSEE, SLC
				If a previously undetected resource site(s) is discovered, ExxonMobil shall notify BSEE and SLC immediately and avoid the site. If site is unavoidable, ExxonMobil shall perform an		BSEE, SLC

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies) [5]
				investigation to assess significance. If site is significant, BSEE/SLC shall inform applicant how to protect resource. (ARCH-10) Onshore excavation shall be limited to 8-9 feet below ground surface and 3-6 feet below cable entry point at north end of tunnel for approximately 400 ft. (ARCH-11)		SBC
Potential impacts to onshore archaeological site(s).	Excavation work in lower LFC area	Onshore	Insignificant	If potential cultural material is encountered during excavation, work shall be halted until an SBC-approved archaeologist and Native American representative are consulted. Protection of resource shall be per SBC guidelines. (ARCH-12) ExxonMobil shall organize a pre-construction meeting to discuss onshore cultural resources with onsite construction personnel. (ARCH-13)	Insignificant	SBC SBC
Fire Protection Introduction of ignition source into high fire hazard area.	Construction equipment in lower canyon	Onshore	Insignificant	A project-specific onshore Fire Protection Plan shall be prepared for the project. (FIRE-1)	Insignificant	SBC
	Construction work in classified area (tunnel)	Onshore	Potentially significant but mitigable	Proposed project complies with applicable code requirements (API RP 500 and NFPA 70) through tunnel; construction operations (FIRE-2)	Insignificant	SBC

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies) [5]
Geologic Processes						
Disturbance to sea floor.	Installation of cable and/or anchoring	Offshore	Insignificant	Contractors shall utilize current industry standards in engineering designs. (GEO-1)	Insignificant	BSEE, SLC, SBC
				Utilize an ROV that shall monitor selected portions of the installation activities. (GEO-2)		BSEE, SLC
Potential for erosion-related impacts during excavation work in rainy season.	Grading work in lower LFC area.	Onshore	Insignificant	WQ-3 applies here also.	Insignificant	SBC
Greenhouse Gases						
Potential cumulative impacts on global climate change from project GHG emissions	Cable retrieval and installation, and other associated onshore and offshore construction activaties	Onshore and Offshore	Insignificant	Air Quality mitigation measures AQ-1, AQ-2, and AQ-5, summarized above	Insignificant	BSEE, APCD
Hazardous Materials/ Risk of Upset						
Risk of spills of lubricating oils, hydraulic fluids, waste oils.	Offshore vessel and cable laying operations	Offshore	CEQA: Potentially significant but mitigable; NEPA: Insignificant	Contractors shall maintain all petroleum products in contained areas and practice good housekeeping. (RMM-1)	Insignificant	BSEE, SLC
				All project-related materials shall be loaded at port, to the extent possible. (RMM-2)		BSEE, SLC, SBC
				ExxonMobil shall prepare a project-specific addendum to the SYU Oil Spill		BSEE, SLC, SBC

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies) [5]
				Response Plan. (RMM-3) ExxonMobil shall provide oil spill response training for project and contract personnel. (RMM-4)		BSEE, SLC, SBC
Risk of fuel oil spills.	Refueling at sea	Offshore	CEQA: Potentially significant but mitigable; NEPA: Insignificant	All vessels shall be refueled at designated ports or per the prepared refueling plan. (RMM-5)	Insignificant	BSEE, SLC, SBC
Potential damage to existing pipelines or power cables.	Anchoring accidents	Offshore	CEQA: Potentially significant but mitigable; NEPA: Insignificant	Anchors shall be set at least 250' from active pipelines and power cables. (RMM-6) ExxonMobil shall prepare an Anchoring Plan. (RMM-7)	Insignificant	SLC, BSEE BSEE, SLC, SBC
Potential damage to existing pipelines or power cables.	Accidental release of cable	Offshore	Insignificant	ExxonMobil shall prepare a Critical Operations and Curtailment Plan. (RMM-8) Applicant shall prepare a Cable Release Prevention Plan. (RMM-9)	Insignificant	BSEE, SLC, SBC BSEE, SLC, SBC
Potential damage to existing pipelines or power cables in tunnel.	Accident during removal or installation of cable through onshore tunnel.	Onshore	CEQA: Potentially significant but mitigable; NEPA: Insignificant	ExxonMobil shall prepare a Safety Plan for tunnel work. (RMM-10) ExxonMobil shall prepare an Execution Plan for cable removal/installation procedures in tunnel. (RMM-11) ExxonMobil shall de-energize cables and shut-in oil and gas pipelines during	Insignificant Insignificant	SBC SBC, SLC SBC, SLC

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies) [5]
				cable pulling operations through onshore/nearshore conduit unless they demonstrate operations can be performed safely while in operation. (RMM-12) See also FIRE-2		
Land Use Potential inconsistency with existing CCC Coastal Development Permit for SYU project; cumulative impact.	Deferral of removal of out-of-service OCS cables.	Offshore	CEQA: Potentially significant but mitigable; NEPA: Insignificant	ExxonMobil shall remove replacement power cables as well as remaining out-of-service cables in their entirety at the end of the SYU project life. (LUS-1)	Insignificant	BSEE, SLC, SBC
Public Facilities Landfilling of waste.	Removal of approximately 1275 tons of out-of-service cables	Onshore	Insignificant	ExxonMobil shall require the contractor to recycle the out-of-service cables to the extent feasible. (PUB-1)	Insignificant	SBC
	Eventual removal of all installed cables.	Onshore	CEQA: Potentially significant but mitigable; NEPA: Insignificant	ExxonMobil shall submit a Recycling Feasibility Analysis for agency review and approval for replacement cable in state waters and onshore, along with other SYU facilities, as part of abandonment application at the end of project life. (PUB-2)	Insignificant	SLC, SBC
Recreation Impacts to recreationalists on public	Use of construction equipment and vehicles	Onshore	Insignificant	ExxonMobil shall obtain and comply with all conditions of approval set forth	Insignificant	SBC, State Parks

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies) [5]
bike path at El Capitan State Park.	on bike path			in its State Parks TUP. (REC-1) During any time that the south tunnel manhole is accessed, safety barriers shall be erected and speed limits for vehicle traffic along the bike path shall be adhered to pursuant to State Parks rules. (REC-2)		SBC, State Parks
Potential damage to bike path.	Use of construction equipment and vehicles on bike path	Onshore	Insignificant	In order to ensure public safety, signs shall be posted alerting cyclists and pedestrians to project-related work being conducted along the bike path. (REC-3) ExxonMobil shall submit photo-documentation of the physical condition of the bike path at the work area before and after access to the south manhole tunnel and be responsible for any maintenance or repair work necessary if there is evidence of damage during construction. (REC-4)	Insignificant	SBC, State Parks SBC, State Parks
<u>Water Quality</u> Degradation of water quality due to increased turbidity.	Anchoring	Offshore	Insignificant	BE-2 also applies to this impact.	Insignificant	
Degradation of water quality due to discharges to marine water.	Water jetting, flushing and pigging, where necessary at the conduits and J-tubes	Offshore	Insignificant	If required, ExxonMobil shall provide results of samples taken of the seawater in the existing J-tubes and other information to EPA in order to receive permission to conduct flushing. (WQ-1)	Insignificant	EPA, BSEE
	Removal and cleaning	Offshore	Insignificant	ExxonMobil shall work with the	Insignificant	CCRWQCB,

Description of Potential Impacts	Impacting Agents	Onshore/ Offshore	Impact Levels [1, 2]	Mitigation Measures [3]	Residual Impacts [4]	Enforcement Agency(ies) [5]
	of short segments of cable in preparation for installation of the replacement cable			CCRWQCB in order to receive permission to conduct conduit flushing operations. (WQ-2) See also BE-1 and BE-2.		BSEE, SLC, SBC
Potential erosion-related impacts during excavation work in LFC.	Excavation work in lower LFC	Onshore	Insignificant	Utilize a site-specific Storm Water Pollution Prevention Plan for the onshore work activities. (WQ-3)	Insignificant	SBC

1.0 POTENTIALLY SIGNIFICANT EFFECTS CHECKLIST

The 1984 Santa Ynez Unit/Las Flores Canyon Development and Production Plan Final Environmental Impact Statement/Report and Supplemental EIS/EIR (83-EIR-22) provide a comprehensive analysis of the environmental impacts associated with the development of oil and gas resources in the project area. The EIS/EIR included a detailed analysis of impacts associated with the construction of up to four platforms (Platform Heather was never constructed), pipelines and the onshore Las Flores Canyon facilities.

The resources analyzed in the EIS/EIR included: air quality, climatology and meteorology, geology, surface water, groundwater, cultural resources, terrestrial biology, marine biology, socioeconomics (which included regional growth, tourism, recreation, aesthetics, land use, energy, noise, traffic and commercial and recreational fishing), system safety and reliability, physical oceanography and marine water quality.

As was done for the Mitigated Negative Declaration/Environmental Assessment (02-ND-35) for the OPSR-A project, the same areas were analyzed for the OPSRB project with the addition of a section discussing Greenhouse Gases. These issue areas include aesthetics/visual resources, agricultural resources, air quality, onshore biological resources, benthic environment, commercial fishing operations, marine animals, essential fish habitat, endangered abalone species, cultural resources, energy, environmental justice, fore protection, geologic processes, greenhouse gases, hazardous materials/risk of upset, historic resources, land use, noise, public facilities, recreation, transportation/circulation, and water quality. Significance criteria for assessing impacts are outlined in each section.

The following issue areas are expected to have the most potential of being affected by the offshore portion of the proposed project:

- Air Quality
- Marine Biological Resources (including Essential Fish Habitat and Benthic Resources)
- Risk of Upset/Hazardous Materials

The following issue areas are expected to have the most potential of being affected by the onshore portion of the proposed project:

- Fire Protection
- Risk of Upset/Hazardous Materials

The discussion on marine biological resources is divided into several focused sections. These include Essential Fish Habitat, Endangered Abalone Species, Benthic Resources, and Marine Mammals. The purpose is to facilitate the future federal consultation process with the U.S. Fish & Wildlife Service and National Marine Fisheries Service.

1.1 Aesthetics/Visual Resources

1.1.1 Environmental & Regulatory Setting

Onshore: The existing onshore oil and gas processing facilities are located in Las Flores Canyon along the Gaviota Coast, approximately 20 miles (32 km) west of the City of Santa Barbara. The processing facilities are screened from public view by the topography of the canyon. In addition, the nearest public roads, Calle Real and US Highway 101, are located approximately 2 miles (3.2 km) south of the facilities. The LFC lower parking lot, guard shack and principal areas of onshore excavation for the proposed project, however, are visible from US Highway 101 and Calle Real. South of US Highway 101 and the UPRR railroad tracks, a manhole exists providing access to the tunnel. The manhole and signs indicating the presence of the pipelines and power cables are visible to recreationalists walking or riding along the bike path (currently bike path in area of tunnel manhole is closed due to damage to path) and beach goers in the area. The onshore facilities were considered a Class II and III visual impact in the original project EIR (84-EIR-22).

Offshore: The existing offshore facilities consist of three platforms located in federal waters, between 5 and 8 miles (8 to 13 km) offshore. In addition to the platforms, there are numerous subsea cables and pipelines. The pipelines and power cables are buried beneath the surf zone and are therefore not visible from the beach area. The platforms were considered a Class I visual impact in the original project EIR (84-EIR-22). Pursuant to their County-issued Final Development Plan permit, ExxonMobil contributes to the Santa Barbara County Coastal Resources Enhancement Fund annually to help mitigate visual impacts from two of their three platforms (Harmony and Heritage).

1.1.2 Project Impact Assessment

The classification of a project's visual or aesthetic impacts as beneficial or adverse, and insignificant or significant, is subject to personal and cultural interpretation. Assessing the visual impacts of a project involves two major steps. First, the visual resources of the project site must be evaluated. Important factors in this evaluation include the physical attributes of the site, its relative visibility to the public and its relative uniqueness. In terms of visibility, four types of areas are especially important: coastal and mountainous areas, the urban fringe and travel corridors. Second, the potential impact of the project on visual resources located onsite and on views in the project vicinity that may be partially or fully obstructed by the project must be determined. Determining compliance with local and state policies regarding visual resources is also an important part of visual impact assessment. Based on these criteria, the proposed project would not create significant impacts on visual resources.

The project would not generate any long term adverse impacts to aesthetic or visual resources nor would impacts to the visual character of the area (scenic Gaviota coast) be exacerbated. Potential impacts caused by the proposed project would be temporary and would be primarily limited to offshore construction vessels and night lighting. Work is proposed to occur up to 24 hours per day on the platforms and vessels. Phase 1 construction activities on Platform Harmony would be expected to last approximately 12-14 months. Phase 2 cable retrieval and installation activities would be expected to last approximately 7-10 months for onshore activities and 1-2 months for offshore activities. Onshore work activities would normally occur during daylight hours except for operational and electric utility shut down periods when work would be

continuous. Night glare from vessel lighting and construction equipment would be visible to the public. All new structures would be located on the seafloor, within an existing underground tunnel or within previously developed areas of the canyon.

Onshore work would be limited to previously disturbed areas of the canyon. The only portion of construction activity that would be visible to the public (along Calle Real and US Highway 101 northbound) would be excavation in the lower canyon. The proposed project would be visually compatible with the height, scale and design of the existing facility. All impacts would be temporary.

1.1.3 Mitigation Measures

To minimize impacts to the maximum extent feasible, the following mitigation measure is recommended:

VIS-1: Shielding or re-aiming lights to minimize glare from night lighting shall be utilized onshore and on vessels offshore when within 0.5 mile from shore unless such shielding would conflict with U.S. Coast Guard requirements.
Expected enforcement Agency: SLC, SBC

Residual impacts would be temporary and insignificant.

1.1.4 Cumulative Impacts

The proposed project would not extend the expected life of the SYU operations and therefore would not prolong the Class I impacts caused by the existing platforms. There are no cumulative impacts associated with the project.

1.2 Agricultural Resources

1.2.1 Environmental and Regulatory Setting

The portion of the project site that is not developed with oil and gas-related facilities is zoned for agricultural use (AG-II-320). Leased property in the lower canyon is currently utilized as an avocado orchard.

1.2.2 Project Impact Assessment

The project involves the replacement of offshore power cables with onshore work limited to the already developed lower canyon area. No agricultural land would be taken out of use if the proposed project is implemented. There would be no effect upon any state or local farmlands. Onshore work would be limited to the footprint of existing development.

1.2.3 Mitigation Measures

No mitigation measures are required.

1.2.4 Cumulative Impacts

The project would not contribute to cumulative impacts to Agricultural Resources.

1.3 Air Quality

1.3.1 Environmental and Regulatory Setting

The proposed project is located in the OCS, offshore and onshore of Santa Barbara County within the South Central Coast Air Basin. The climate, meteorology, air quality, and air quality trends of the Santa Barbara County area have been described in detail in several planning and environmental documents and are best summarized in the Santa Barbara County 2010 Clean Air Plan (CAP) (SBCAPCD, 2010). Santa Barbara County can be described as having a Mediterranean climate, characterized by warm, dry summers and cooler mildly damp winters. The unique combination of prevailing wind conditions generated by a persistent offshore high pressure system and the topography of coastal mountains results in variations of airflow are conducive to the formation and retention of air pollutants.

The Federal Government has established ambient air quality standards to protect public health (primary standards) and, in addition, has established secondary standards to protect public welfare. The State of California has established separate, more stringent ambient air quality standards to protect human health and welfare. California and National standards have been established for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, suspended particulate matter 10 microns (PM_{10}), suspended particulate matter 2.5 microns ($PM_{2.5}$) and lead. In addition, California has standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles.

The federal attainment status of Santa Barbara County is found in 40 CFR 81.305. Currently, Santa Barbara County is in attainment of all the National Ambient Air Quality Standards. Santa Barbara County is presently classified as an attainment area for the federal ozone standard and a nonattainment area for the state 8-hour ozone standard and the state PM_{10} ambient air quality standard. The SBCAPCD Board of Directors adopted the 2010 CAP in January 2011 which provides a three-year update to the 2007 CAP. The 2010 CAP describes how Santa Barbara County will attain the 8-hour state ozone ambient air quality standard at the earliest practicable date as well as progress toward attaining the California PM_{10} air quality standard.

Section 328 of the 1990 Clean Air Act Amendments (CAAA) transfers authority for air quality on the OCS to the U.S. Environmental Protection Agency (EPA). On September 4, 1992, the EPA Administrator promulgated requirements (40 CFR Part 55) to control air pollution from OCS sources to attain and maintain Federal air quality standards and to comply with CAAA provisions for the Prevention of Significant Deterioration. The promulgated regulations require OCS sources to comply with applicable onshore air quality rules in the corresponding onshore area (COA). The EPA delegated authority to the SBCAPCD on November 5, 1993 to implement and enforce the requirements of 40 CFR Part 55. The full transfer of authority to SBCAPCD to regulate OCS air emissions pursuant to 40 CFR Part 55 transpired on September 4, 1994. The SYU Platforms Harmony, Heritage, and Hondo are currently permitted and within the jurisdiction of the SBCAPCD.

SBCAPCD Rules and Regulations

Under Rule 202.F.7, marine vessels used in cable laying projects are subject to a 25 ton emission limitation in a 12-month period. Projects meeting these criteria may be required to obtain a permit from the SBCAPCD in accordance with Rule 202. F.7, however eligible projects are exempt from the requirement to comply with Best Available Control Technology (BACT) or

provide emission offsets pursuant to SBCAPCD Rule 804. ExxonMobil will submit a permit application to the SBCAPCD to demonstrate that the anticipated actual annual emission for the OPSRB project will be below the 25 TPY threshold.

Construction Emissions
Significance criteria have not been presently established by either Santa Barbara County or the SBCAPCD for short-term construction emissions. The cable retrieval and cable installation project qualify as short term construction emissions for the purposes of CEQA. Under the terms of SBCAPCD Rule 202.F.7, the project will be limited to 25 TPY in a single 12-month period.

Operations Emissions
Santa Barbara County, as an agency under CEQA, considers the subject project as a temporary construction project and not an ongoing operational project. Therefore, the County-adopted significance criteria for operational emissions do not apply to this project (See the Environmental Review Guidelines for Santa Barbara County Air Pollution Control District, SBCAPCD, 2000)).

SBCAPCD has determined that both the cable retrieval portion of the project and the cable installation portion of the project qualify under the terms of Rule 202.F.7. In accordance with Rule 202.F.7, ExxonMobil must apply for and received a permit which limits the project duration to a maximum of 12 consecutive months and an emission limit of 25 tons.

Based on meetings and discussions between ExxonMobil and the SBC APCD between August and November 2012, the following table was developed to better define the requirements for use of the 202.F exemptions and existing Permits to Operate.

Table AQ-1: Requirements of SBCAPCD Construction Exemptions

	Demolition (TPY emissions)	**Construction (TPY emissions)**	**Permit Exemption Evaluation**
Platform Activities - Outside vessels used to support a specified short-term project that does not meet existing PTO criteria for dedicated project vessels (DPV) and Spot Charter vessels. [1,2]	A1	A2	A1 + A2 < 10 TPY (**202.F.8**) [In a 12-month period]
Cable Removal and Cable Installation - Outside vessels used to support a specified short-term project that does not meet existing PTO criteria for DPV and Spot Charter vessels. [1,2]	B1	B2	B1 + B2 < 25 TPY (**202.F.7**) [In a 12-month period]
PERP Equipment - Certified equipment used to support a specified short-term project	C1	C2	No limit
Other Exempt Equipment - Vehicles, <50hp Engines, etc. used to a support specified short-term project.	D1	D2	No limit
DPV and Spot Charters - Vessels meeting PTO criteria for DPV and Spot Charter which are used exclusively to support a specified short-term project	E1	E2	Subject to PTO Limits[3]
Applicable Terms in Offset Exemption Evaluation (202.D.16)[4]	NA	A2 + B2 + C2 + D2 + E2 <25 TPY [In a 12-month period]	
Additional Notes	Demolition activities are not subject to offsets under Rule 804.D.8 and H&SC 42301.13	If the construction activity exceeds 25 TPY, then offsets will be required, regardless of any permit exemption it qualifies for. (**202.D.16**)	

Notes:

1. Current SYU Platform Part 70/APCD PTOs identify a number of acceptable crew and supply boat uses to support various platform operations (reference Section 2.2.3). Emissions resulting from the use of approved DPV, and qualifying spot charter vessels are reported to the APCD under the terms of the Part 70/APCD PTO and are also federally enforceable. These emissions are not covered under the 202.F.7 or 202.F.8 exemptions.

2. Vessels used for specified short-term projects which are not eligible for DPV or spot charter status per the criteria defined in the facility Part 70/PTO may qualify under the 202.F.7 and/or F.8 exemptions. Emissions would be included in the equation to determine compliance with the 202.F.7 or F.8 exemption threshold.

3. Depending on the specific activity for which a DPV or spot charter is used, the associated emissions may be limited under the existing facility PTO for allowable uses or under the ATC/PTO issued for the specified short-term project in accordance with Rule 202.F.7 or F.8 for exclusive uses. A specific District-approved mechanism will be utilized for logging and reporting each type of operation with a description of how the emissions will be differentiated, recorded and calculated.

4. Compliance with the 202.D.16 exemption threshold should include all equipment used to construct a stationary source. As such, emissions associated with the following activities should be included in the determination: outside vessels under 202.F.7 and/or F.8, PERP equipment, other exempt equipment and existing DPV and spot charters used exclusively to support a specified short-term project. Note that clearly delineated demolition activities are deleted when determining compliance with this rule.

1.3.2 Project Impact Assessment

Emissions resulting from the proposed power cable retrieval and installation may have a potential to increase concentrations of pollutants onshore. The primary regulated pollutants of concern in Santa Barbara County are oxides of nitrogen (NO_x) and reactive organic compounds (ROC). Both NO_x and ROC are considered precursors to ozone formation, for which Santa Barbara County is in nonattainment for the state ozone standard. The major pollutant of concern associated with projects of this type and duration are NOx emissions due to the extensive use of propulsion and stationary combustion equipment.

Cable Retrieval and Installation Impacts

As described in the OPSRB Project Description, the proposed project would involve the retrieval of approximately 12-18 miles (19.3-29 km) of power cable and installation of 29 miles (47 km) of replacement cable in the vicinity of the SYU project facilities. This section analyzes impacts to air quality that would be expected to occur as a result of cable retrieval and installation activities. In addition, impacts that could occur from removal of the replacement cables (A2 (or B2) and F2) and the remaining out-of-service cables (Cable C1 and A (or B)) at the end of SYU life are also analyzed.

The applicant will provide an Emission Basis Report (EBR) as part of the submittal of Phase 2 applications containing equipment specifications and emission estimate information specific to the proposed project, including both offshore and onshore equipment.

Preliminary emission estimates have been prepared for the Phase 1 and Phase 2 portions of the project. For Phase 1, all emissions are expected to be associated with platform-based internal combustion engines that are covered under the Rule 202.F.1 and 202.F.2 under the Statewide Portable Equipment Registration Program (PERP) and spot charter vessels that are covered under the platform APCD PTOs. These activities are expected to occur over several months and generate approximately 6-7 tons NO_x emissions which are not included in the 202.F.7 exemption totals, but are included with the 202.D.16 cumulative emissions. As such, no permits are expected to be required from the SBCAPCD for these activities. Equipment and personnel required for the Phase 1 installation activities will be transported to the Harmony Platform using regularly scheduled SYU crew and supply boats.

For Phase 2, emissions will be divided into cable retrieval and cable installation activities. The cable retrieval activities will involve the use of the cable installation vessel, a support tug and one or more diver support vessels. These activities are expected to take several weeks and generate about 3-5 tons of NO_x emissions that would be included in the 202.F.7 exemption, but are not included in the Rule 202.D.16 cumulative emissions. The cable installation activities will involve the use of the cable installation vessel, a support tug and one or more diver support vessels, as well as platform and onshore based internal combustion engines. The platform and onshore based internal combustion engines will be covered under the Statewide Portable Equipment Registration Program (PERP) and are not included in the 202.F.7 exemption totals,

but are included in the 202.D.16 cumulative emissions. The installation activities are expected to occur over several months. The cable installation activities are expected to generate about 15-20 tons of NOx emissions that would be included in the 202.F.7 exemption. Total emissions for Phase 2 (both retrieval and installation activities) will be limited to less than or equal to 25 tons as required by SBCAPCD 202.F.7 exemption. Table AQ-2 provides the calculational methodology for estimating the marine vessel emissions for the cable installation vessel, support tug and dive vessels.

The project phases would be scheduled to occur in mostly sequential progression with Phase 1 requiring approximately 15-21 months and Phase 2 requiring 8-12 months. The projected emissions from the proposed project would result primarily from the main diesel engines on the cable installation, support tug and diver support vessels.

The proposed cable installation vessel for the project will be dynamically positioned (DP) and not require anchoring. Several small SYU spot charter type vessel will also be required to support the diving operations. The dive vessel will require anchoring in the nearshore area near the conduit terminus. As such, the vessel main engines will only be used for transit to and from the location with the small generator engines used while onsite.

Cable Removal Impacts at End of SYU Life
No additional impacts are estimated at this time from the removal of the out-of-service OCS cables simultaneous with the removal of the SYU facilities at the end of the project life. All impacts associated with complete removal of the remaining out-of-service OCS cables would occur in the future with removal of all associated SYU power cables, pipelines and platforms and total decommissioning emissions cannot be estimated at this time.

However, impacts from the removal of the out-of-service Cables A (or B) and C1 may be assumed to be less significant in the future as the emissions resulting from the removal of the power cable will not occur simultaneously with the operational emissions of the SYU platforms. Therefore, removal of the out-of-service cable would not add to the increased emission loading potential with operational emissions in the SYU Unit area. Additional factors that are unpredictable at the present time are the technological advances that may be expected for both cable removal operations and emission control technology which may further reduce any air quality impacts associated with removal at the end of the facility life.

Onshore Construction Impacts
Onshore impacts to air quality from the proposed project would result primarily from equipment used for the excavation of earth and materials adjacent to the power cable conduit tunnel at the lower end of Las Flores Canyon. Onshore equipment includes various pieces of construction equipment including winches, backhoes, front end loaders, air compressors, generators and other necessary equipment. It is expected that these pieces of equipment would be exempted from permit by SBCAPCD Rule 202.F.1 or 202.F.2.

Dust mitigation measures have been proposed to reduce and further minimize particulate matter impacts resulting from the grading required of this activity. Given the project location and minimal volume of earth to be moved, ambient particulate matter standards would not be expected to be exceeded.

Worker commute trips and supply/equipment delivery trips would additionally be expected to contribute approximately 30-40 additional workforce trips. In addition, there would be an estimated 3-5 truck trips per day involved with the transport of supplies and an estimated 20-30 total truck trips associated with transporting the retrieved cable from Port Hueneme in Ventura County to a recycle facility. Trips to recycle cable would not be expected to all occur on the same day. Worker commute trips and supply/equipment delivery trip impacts to Santa Barbara County would be considered to be minimal due to the short duration of the project.

Project Impact
Significance determination for the proposed project is based on whether activities anticipated under the proposed project will be conducted consistent with plans, programs, and regulations enacted to achieve and maintain compliance with California and National ambient air quality standards. As discussed above, the proposed project will comply with requirements of SBCAPCD Rules, therefore, air quality impacts are expected to be less than significant.

1.3.3 Mitigation Measures

ExxonMobil is proposing the following mitigation measures to be implemented to further reduce and minimize impacts to air quality.

AQ-1: ExxonMobil shall implement the OPSRB Project in accordance with the provisions of the submitted Emissions Reporting Plan and any subsequent approved modification to the plan. This plan shall provide detailed information regarding the internal combustion engines used, the duration of their use, the fuel consumed, and the calculated emissions. The plan shall be submitted to the BSEE and SBCAPCD, for review and approval prior to commencement of cable retrieval or installation activities.

The plan and issued permit shall limit the combined actual emissions from the DP vessel and associated equipment used in the retrieval and installation of the power cables at the SYU stationary source to less than 25 tons of any pollutant, except carbon monoxide, in a 12 month period. The plan shall include detailed information on the engines used and methods to measure fuel consumption to demonstrate that the actual emissions for the project will be below 25 tons per year in accordance with Rules 202.F.7 and 202.D.16.
Expected Enforcement Agency: BSEE, APCD.

AQ-2: Determine, on a daily basis, fuel use and emissions from the retrieval and installation of the power cables when within 25 miles of SYU. At the conclusion of the project, the applicant shall prepare and submit a summary of the daily and total fuel use and emissions associated with the project to verify compliance with SBCAPCD rules and regulations and SYU and project specific permit conditions.
Expected Enforcement Agency: BSEE, APCD.

AQ-3: Require all cable retrieval and installation vessels and other associated IC engines to comply with the SYU ATC/PTO condition by using fuel with less than 0.0015% sulfur by weight (15 ppm) when operating within Santa Barbara County.
Expected Enforcement Agency: BSEE, APCD.

AQ-4: Dust generated by onshore construction activities shall be kept to a minimum with a goal of retaining dust on site. The dust control measures shown below shall be followed. *Enforcement Agency: APCD, SBC.*

a. During clearing, grading, earth moving, excavation, or transportation of cut or fill materials, water trucks or sprinkler systems are to be used to prevent dust from leaving the site and create a crust after each day's activities cease.

b. During construction of the onshore portion of the project, water trucks will be used as necessary to keep all areas of vehicle movement damp enough to reduce dust from leaving the site. At a minimum, this should include wetting down such areas in the late morning and after work is completed for the day.

AQ-5: Prepare a contingency plan prior to cable retrieval and installation for the scenario where the total project emissions of any affected pollutant (specifically NO_x), except CO, are projected to exceed 80% of the above 25 ton/year limit. This plan shall identify potential measures that could be implemented by the contractors to reduce, defer or eliminate emissions without adversely impacting safety or completion of the project. In addition, daily fuel use with pollutants emitted to date and projected toward project completion shall be provided to BSEE and the SBCAPCD.
Expected Enforcement Agency: BSEE, APCD.

Residual impacts would be short term and insignificant.

Conclusions-Proposed Project
The potential impacts to onshore air quality resulting from emissions from vessels and equipment used in the SYU Offshore Power System Reliability- B Project (cable retrieval and installation phases) would be considered to be insignificant based on the significance criteria utilized in this analysis. The cable retrieval and installation phases of the project are subject to permit, however they are exempt from the New Source Review Provisions as specified under SBCAPCD Rule 201.F.7 provided the actual emissions of the DP cable installation vessels and associated engines stays below 25 tons in a consecutive 12-month period. The 25-ton emission limitation contained in the aforementioned rules is the level below which the SBCAPCD considers that projects of this type and duration would result in insignificant air quality impacts.

The Emission Reporting Plan would be used to limit equipment usage and project duration to ensure compliance with Rule 201.F.7 limiting the actual emissions of the project to less than 25 tons of any affected pollutant during any consecutive 12 month period. Emission limitations placed upon the project would be additionally assured by daily monitoring of emissions to ensure compliance with SBCAPCD threshold levels. Threshold levels would be preserved through identified contingency measures to be implemented for the project if the project reaches 80% of the emission limitation as identified in the daily monitoring reports. The contingency measures would be implemented when actual emissions generated to date plus the projected emissions required to complete the project exceed 20 tons. The potential for violations of the ambient air standards would be further minimized through implementation of the aforementioned project conditions to mitigate emissions associated with the OPSRB project.

1.3.4 Cumulative Impacts

Cumulative air quality impacts and consistency with the policies and measures in the Air Quality Supplement of the Comprehensive Plan, other general plans, and the CAP should be determined for all projects (i.e., whether the project exceeds the CAP emission projections or growth assumptions). As discussed above, the proposed project will comply with requirements of SBCAPCD Rules, therefore, the proposed project would be consistent with the adopted 2010 Clean Air Plan.

ExxonMobil is not aware of other projects with significant levels of emissions that are presently anticipated for the affected OCS area during the proposed project period. SBCAPCD rules have deemed that power cable retrieval and installation projects that result in emissions below the 25 ton level per Rule 202.F.7 are considered to be insignificant. Previously identified potential impacts have been addressed through the applicant's commitment of the aforementioned mitigation measures. To date, the SYU Expansion Project emissions of NO_x and ROC have been typically been below permitted levels, and no exceedances of the either the federal or the state 1-hour NO_2 standard have occurred at applicable monitoring sites during the highest emission intensive phases of the OCS construction. Thus, the emissions associated with the short-term power cable installation and retrieval operations would not be expected to result in any cumulative exceedances of applicable air quality standards.

Table AQ-2: Estimated Marine Vessel Emissions

Equipment Description [Reasonable Worst Case]

Equipment	Description	Device Specifications				Usage Data			Maximum Operating Schedule				Exemption/ Appl. Reg.	OPERATING DAYS	ENGINE INFO	Operating Time
		Fuel	%S	Size	Units	BSFC	Units	Load	Hr	Day	Qtr	Yr				
												Days				
Marine Vessel Emission Estimates							Load Main	0.30	Gen		Work	15		Days in SYU		Days in SYU
Cable Retrieval and Installation							Load Main	0.30	Direct		Boats		Bio/Soil Survey	6.0	CIV	63.75
OPSRB Activities (Within SBC)							Load Aux	0.40	Gen				Mooring	6.0	Dive (80% of CIV)	51
CIV Vessel	Main Engine-Gen Set (# 1)	Diesel	0.0015	3,922	bhp	0.055	gal/bhp-hr	0.30	1	24	1530.0	1530.0	APCD Rule 202.F.7	63.8	Wartsila 9L26 (900 RPM)	Operate DP 100%
[Prysmian	Main Engine-Gen Set (# 2)	Diesel	0.0015	3,922	bhp	0.055	gal/bhp-hr	0.30	1	24	1530.0	1530.0	APCD Rule 202.F.7	63.8	Wartsila 9L26 (900 RPM)	Operate DP 100%
Enterprise DP2]	Main Engine-Direct Drive (# 3)	Diesel	0.0015	3,621	bhp	0.055	gal/bhp-hr	0.30	1	24	1530.0	1530.0	APCD Rule 202.F.7	63.8	Wartsila 8L26 (1000 RPM)	Operate DP 100%
	Main Engine-Direct Drive (# 4)	Diesel	0.0015	3,621	bhp	0.055	gal/bhp-hr	0.30	1	24	1530.0	1530.0	APCD Rule 202.F.7	63.8	Wartsila 8L26 (1000 RPM)	Operate DP 100%
	Emerg Generator (Engine 1)	Diesel	0.0015	158	bhp	0.055	gal/bhp-hr	0.25	0.5	0.5	4.6	4.6	APCD Rule 202.F.7	63.8	Cat C4.4 DITA	Operate 0.5 hr/wk
	Work Boats (3) [Assume]	Diesel	0.0015	100	bhp	0.055	gal/bhp-hr	0.30	1	15	675.0	675.0	APCD Rule 202.F.7	63.8	TBD	Operate in Nearshore
	Life Boat (1)	Diesel	0.0015	28	bhp	0.055	gal/bhp-hr	0.25	0.5	0.5	4.6	4.6	APCD Rule 202.F.7	63.8	BUKH A/S DV29RME	Operate 0.5 hr/wk
	Life/Rescue Craft	Diesel	0.0015	28	bhp	0.055	gal/bhp-hr	0.25	0.5	0.5	4.6	4.6	APCD Rule 202.F.7	63.8	BUKH A/S DV29RME	Operate 0.5 hr/wk
	Existing Aux (Engine 1)	Diesel	0.0015	1,333	bhp	0.055	gal/bhp-hr	0.40	1	24	1530.0	1530.0	APCD Rule 202.F.7	63.8	Cat C32	Operate 100%
	Existing Aux (Engine 2)	Diesel	0.0015	1,333	bhp	0.055	gal/bhp-hr	0.40	1	24	1530.0	1530.0	APCD Rule 202.F.7	63.8	Cat C32	Operate 100%
	Existing Aux (Engine 3)	Diesel	0.0015	1,333	bhp	0.055	gal/bhp-hr	0.40	0	0	0.0	0.0	APCD Rule 202.F.7	63.8	Cat C32	Spare
	Existing Aux (Engine 4)	Diesel	0.0015	1,333	bhp	0.055	gal/bhp-hr	0.40	0	0	0.0	0.0	APCD Rule 202.F.7	63.8	Cat C32	Spare
										Days	4.0	Tow				
Support Vessels										Days	5.0	Transit				
CIV Support Tug	Main Generator (Engine 1)	Diesel	0.0015	3,040	bhp	0.055	gal/bhp-hr	0.60	1	24	96.0	96.0	APCD Rule 202.F.7	4.0	Mitsubishi S12 U MPTK	Operate for Tow
[Example-	Main Generator (Engine 2)	Diesel	0.0015	3,040	bhp	0.055	gal/bhp-hr	0.60	1	24	96.0	96.0	APCD Rule 202.F.7	4.0	Mitsubishi S12 U MPTK	Operate for Tow
AHTS Norne]	Main Generator (Engine 1)	Diesel	0.0015	3,040	bhp	0.055	gal/bhp-hr	0.40	1	24	120.0	120.0	APCD Rule 202.F.7	5.0	Mitsubishi S12 U MPTK	Operate for Transit
	Main Generator (Engine 2)	Diesel	0.0015	3,040	bhp	0.055	gal/bhp-hr	0.40	1	24	120.0	120.0	APCD Rule 202.F.7	5.0	Mitsubishi S12 U MPTK	Operate for Transit
	Auxiliary Gen (Engine 1 of 2)	Diesel	0.0015	138	bhp	0.055	gal/bhp-hr	0.65	1	24	1530.0	1530.0	APCD Rule 202.F.7	63.8	Mitsubishi 6D 16T	Operate 100%
Dive Vessel	Main Propulsion (Engine 1)	Diesel	0.0015	600	bhp	0.055	gal/bhp-hr	0.40	1	24	122.4	122.4	SYU- Spot Charter	51.0	Detriot Diesel 16V-71	Operate 10%
[Example-	Main Propulsion (Engine 2)	Diesel	0.0015	600	bhp	0.055	gal/bhp-hr	0.40	1	24	122.4	122.4	SYU- Spot Charter	51.0	Detriot Diesel 16V-71	Operate 10%
Surveyor	Auxiliary Gen (Engine 1)	Diesel	0.0015	107	bhp	0.055	gal/bhp-hr	0.50	1	24	612.0	612.0	SYU- Spot Charter	51.0	John Deere	Operate 50%
(Anchored)]	Auxiliary Gen (Engine 2)	Diesel	0.0015	107	bhp	0.055	gal/bhp-hr	0.50	1	24	612.0	612.0	SYU- Spot Charter	51.0	John Deere	Operate 50%
Mooring/Survey	Main Propulsion (Engine 1)	Diesel	0.0015	360	bhp	0.055	gal/bhp-hr	0.40	1	24	144.0	144.0	SYU- Spot Charter	12.0	Caterpillar 3406C	Operate 100%
Vessel [Example-	Main Propulsion (Engine 2)	Diesel	0.0015	360	bhp	0.055	gal/bhp-hr	0.40	1	24	144.0	144.0	SYU- Spot Charter	12.0	Caterpillar 3406C	Operate 100%
Danny C	Auxiliary Gen (Engine 1)	Diesel	0.0015	66	bhp	0.055	gal/bhp-hr	0.50	1	24	72.0	72.0	SYU- Spot Charter	12.0	Isuzu UM4JB1	Operate 50%
(Install anchors)]	Auxiliary Gen (Engine 2)	Diesel	0.0015	32	bhp	0.055	gal/bhp-hr	0.50	1	24	72.0	72.0	SYU- Spot Charter	12.0	Northern Lights M20CRW2	Operate 50%

Note 1: CIV Main Engines- IMO Tier 2 w/SCR (normally operate all 4 engines)
Note 2: CIV Auxiliary Engines- EPA Tier 2 (normally operate 2 of 4 engines)
Note 3: CIV Main Engine Load and CIV Auxiliary Engine Load based on Prysmian desktop calculations based on operating experience
Note 4: CIV 9.6 MW total thruster power; Operate as required to maintain position
Note 5: ABS requires Support Tug to tow CIV to and from site or remain on site; Assume remain on site
Note 6: CIV and Support Tug emissions combined to determine compliance with APCD exemption (202.F.7); Dive and Mooring vessels under spot charter allowance and included in 202.D.16 totals
Note 7: Spot Charter Limitations- Mains < 4,000 BHP; Generator < 400 BHP; Bow Thruster < 500 BHP [Engine have no emission factor limitations]
Note 8: Dive and Mooring Vessel engine load factors based on expected operations from experience on previous projects.

Equipment Emission Factors [Reasonable Worst Case]

Equipment	Description	Emission Factors (Note 1) NOx	ROC	CO	SOx	PM	PM10	Units	Notes
Marine Vessel Emission Estimates **Cable Retrieval and Installation** **OPSRB Activities (Within SBC)**									SCR Eff. 85% NOx Red.
CIV Vessel	Main Engine-Gen Set (# 1)	41.25	78.61	66.66	0.21	14.83	14.23	lb/1000gal	IMO Tier 2 w/ SCR / Wartsila
[Prysmian	Main Engine-Gen Set (# 2)	41.25	78.61	66.66	0.21	14.83	14.23	lb/1000gal	IMO Tier 2 w/ SCR / Wartsila
Enterprise DP2]	Main Engine-Direct Drive (# 3)	40.26	113.58	78.61	0.21	14.83	14.23	lb/1000gal	IMO Tier 2 w/ SCR / Wartsila
	Main Engine-Direct Drive (# 4)	40.26	113.58	78.61	0.21	14.83	14.23	lb/1000gal	IMO Tier 2 w/ SCR / Wartsila
	Emerg Generator (Engine 1)	563.64	44.91	121.45	0.21	41.67	40.00	lb/1000gal	EPA Table 3.3.1 (<600HP)
	Work Boats (3) [Assume]	563.64	44.91	121.45	0.21	41.67	40.00	lb/1000gal	EPA Table 3.3.1 (<600HP)
	Life Boat (1)	563.64	44.91	121.45	0.21	41.67	40.00	lb/1000gal	EPA Table 3.3.1 (<600HP)
	Life/Rescue Craft	563.64	44.91	121.45	0.21	41.67	40.00	lb/1000gal	EPA Table 3.3.1 (<600HP)
	Existing Aux (Engine 1)	234.13	26.01	149.51	0.21	14.83	14.24	lb/1000gal	EPA Marine Tier 2
	Existing Aux (Engine 2)	234.13	26.01	149.51	0.21	14.83	14.24	lb/1000gal	EPA Marine Tier 2
	Existing Aux (Engine 3)	234.13	26.01	149.51	0.21	14.83	14.24	lb/1000gal	EPA Marine Tier 2
	Existing Aux (Engine 4)	234.13	26.01	149.51	0.21	14.83	14.24	lb/1000gal	EPA Marine Tier 2
Support Vessels									
CIV Support Tug	Main Generator (Engine 1)	234.13	26.01	149.51	0.21	14.83	14.24	lb/1000gal	EPA Marine Tier 2
[Example-	Main Generator (Engine 2)	234.13	26.01	149.51	0.21	14.83	14.24	lb/1000gal	EPA Marine Tier 2
AHTS Norne]	Main Generator (Engine 1)	234.13	26.01	149.51	0.21	14.83	14.24	lb/1000gal	EPA Marine Tier 2
	Main Generator (Engine 2)	234.13	26.01	149.51	0.21	14.83	14.24	lb/1000gal	EPA Marine Tier 2
	Auxiliary Gen (Engine 1 of 2)	600.00	49.00	129.30	0.21	42.20	40.50	lb/1000gal	SYU Supply- Spot Charter (UC)
Dive Vessel	Main Propulsion (Engine 1)	561.00	16.80	78.30	0.21	33.00	31.70	lb/1000gal	SYU Supply- Spot Charter (UC)
[Example-	Main Propulsion (Engine 2)	561.00	16.80	78.30	0.21	33.00	31.70	lb/1000gal	SYU Supply- Spot Charter (UC)
Surveyor	Auxiliary Gen (Engine 1)	600.00	49.00	129.30	0.21	42.20	40.50	lb/1000gal	SYU Supply- Spot Charter (UC)
(Anchored)]	Auxiliary Gen (Engine 2)	600.00	49.00	129.30	0.21	42.20	40.50	lb/1000gal	SYU Supply- Spot Charter (UC)
Mooring/Survey	Main Propulsion (Engine 1)	337.00	16.80	78.30	0.21	33.00	31.70	lb/1000gal	SYU Supply- Spot Charter (C)
Vessel [Example-	Main Propulsion (Engine 2)	337.00	16.80	78.30	0.21	33.00	31.70	lb/1000gal	SYU Supply- Spot Charter (C)
Danny C	Auxiliary Gen (Engine 1)	600.00	49.00	129.30	0.21	42.20	40.50	lb/1000gal	SYU Supply- Spot Charter (C)
(Install anchors)]	Auxiliary Gen (Engine 2)	600.00	49.00	129.30	0.21	42.20	40.50	lb/1000gal	SYU Supply- Spot Charter (C)

Notes:

Note 1: Reference EPA documents for Non-Road and Marine Emission Standards for Tier engines; Reference IMO documents for marine engine emissions

Note 2: CIV Main Engines; Emissions based on MARPOL 73/78 Annex VI Tier II NOx emission standard; SCR efficiency based on manufacturer's information at anticipated engine load

Note 3: CIV Auxiliary Engine emission factors based on EPA Marine Tier 2 factors

Hourly and Daily Construction Emissions Estimate [Reasonable Worst Case]

		NOx		ROC		CO		SOx		PM		PM10	
Equipment	Description	lb/hr	lb/day	lb/hr	lb/day	lb/hr	lb/day	lb/hr	lb/day	lb/hr	lb/day	lb/hr	lb/day
Marine Vessel Emission Estimates **Cable Retrieval and Installation** **OPSRB Activities (Within SBC)**													
CIV Vessel	Main Engine-Gen Set (# 1)	2.67	64.06	5.09	122.09	4.31	103.52	0.01	0.33	0.96	23.03	0.92	22.11
[Prysmian	Main Engine-Gen Set (# 2)	2.67	64.06	5.09	122.09	4.31	103.52	0.01	0.33	0.96	23.03	0.92	22.11
Enterprise DP2]	Main Engine-Direct Drive (# 3)	2.41	57.73	6.79	162.87	4.70	112.72	0.01	0.30	0.89	21.26	0.85	20.41
	Main Engine-Direct Drive (# 4)	2.41	57.73	6.79	162.87	4.70	112.72	0.01	0.30	0.89	21.26	0.85	20.41
	Emerg Generator (Engine 1)	0.61	0.61	0.05	0.05	0.13	0.13	0.00	0.00	0.05	0.05	0.04	0.04
	Work Boats (3) [Assume]	0.93	13.95	0.07	1.11	0.20	3.01	0.00	0.01	0.07	1.03	0.07	0.99
	Life Boat (1)	0.11	0.11	0.01	0.01	0.02	0.02	0.00	0.00	0.01	0.01	0.01	0.01
	Life/Rescue Craft	0.11	0.11	0.01	0.01	0.02	0.02	0.00	0.00	0.01	0.01	0.01	0.01
	Existing Aux (Engine 1)	6.87	164.78	0.76	18.31	4.38	105.23	0.01	0.15	0.43	10.44	0.42	10.02
	Existing Aux (Engine 2)	6.87	164.78	0.76	18.31	4.38	105.23	0.01	0.15	0.43	10.44	0.42	10.02
	Existing Aux (Engine 3)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Existing Aux (Engine 4)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Support Vessels													
CIV Support Tug	Main Generator (Engine 1)	23.49	563.70	2.61	62.63	15.00	359.97	0.02	0.51	1.49	35.71	1.43	34.28
[Example-	Main Generator (Engine 2)	23.49	563.70	2.61	62.63	15.00	359.97	0.02	0.51	1.49	35.71	1.43	34.28
AHTS Norne]	Main Generator (Engine 1)	15.66	375.80	1.74	41.76	10.00	239.98	0.01	0.34	0.99	23.81	0.95	22.85
	Main Generator (Engine 2)	15.66	375.80	1.74	41.76	10.00	239.98	0.01	0.34	0.99	23.81	0.95	22.85
	Auxiliary Gen (Engine 1 of 2)	2.96	71.04	0.24	5.80	0.64	15.31	0.00	0.02	0.21	5.00	0.20	4.80
Dive Vessel	Main Propulsion (Engine 1)	7.41	177.72	0.22	5.32	1.03	24.81	0.00	0.07	0.44	10.45	0.42	10.04
[Example-	Main Propulsion (Engine 2)	7.41	177.72	0.22	5.32	1.03	24.81	0.00	0.07	0.44	10.45	0.42	10.04
Surveyor	Auxiliary Gen (Engine 1)	1.77	42.37	0.14	3.46	0.38	9.13	0.00	0.01	0.12	2.98	0.12	2.86
(Anchored)]	Auxiliary Gen (Engine 2)	1.77	42.37	0.14	3.46	0.38	9.13	0.00	0.01	0.12	2.98	0.12	2.86
Mooring/Survey	Main Propulsion (Engine 1)	2.67	64.06	0.13	3.19	0.62	14.88	0.00	0.04	0.26	6.27	0.25	6.03
Vessel [Example-	Main Propulsion (Engine 2)	2.67	64.06	0.13	3.19	0.62	14.88	0.00	0.04	0.26	6.27	0.25	6.03
Danny C	Auxiliary Gen (Engine 1)	1.09	26.14	0.09	2.13	0.23	5.63	0.00	0.01	0.08	1.84	0.07	1.76
(Install anchors)]	Auxiliary Gen (Engine 2)	0.53	12.67	0.04	1.03	0.11	2.73	0.00	0.00	0.04	0.89	0.04	0.86
Total CIV (202.F.7 exemption)		**25.64**	**587.94**	**25.41**	**607.73**	**27.17**	**646.14**	**0.07**	**1.56**	**4.69**	**110.54**	**4.50**	**106.12**
Total Tug (202.F.7 exemption)		**81.25**	**1,950.05**	**8.94**	**214.58**	**50.63**	**1,215.22**	**0.07**	**1.71**	**5.17**	**124.02**	**4.96**	**119.06**
Total CIV + Tug (202.F.7 exemption)		**106.89**	**2,538.00**	**34.35**	**822.31**	**77.80**	**1,861.37**	**0.14**	**3.27**	**9.86**	**234.56**	**9.46**	**225.18**
Total Support (Dive/Moor Spot Charter Vessels)		**25.30**	**607.12**	**1.13**	**27.12**	**4.42**	**106.00**	**0.01**	**0.26**	**1.76**	**42.14**	**1.69**	**40.48**
Total		**132.19**	**3,145.11**	**35.48**	**849.43**	**82.22**	**1,967.37**	**0.15**	**3.53**	**11.61**	**276.71**	**11.15**	**265.65**

Quarterly and Annual Construction Emissions Estimate [Reasonable Worst Case]

Equipment	Description	NOx		ROC		CO		SOx		PM		PM10	
		TPQ	TPY	TPQ	TPY	TPQ	TPY	TPQ	TPY	TPQ	TPY	TPQ	TPY
Marine Vessel Emission Estimates **Cable Retrieval and Installation** **OPSRB Activities (Within SBC)**													
CIV Vessel	Main Engine-Gen Set (# 1)	2.04	2.04	3.89	3.89	3.30	3.30	0.01	0.01	0.73	0.73	0.70	0.70
[Prysmian	Main Engine-Gen Set (# 2)	2.04	2.04	3.89	3.89	3.30	3.30	0.01	0.01	0.73	0.73	0.70	0.70
Enterprise DP2]	Main Engine-Direct Drive (# 3)	1.84	1.84	5.19	5.19	3.59	3.59	0.01	0.01	0.68	0.68	0.65	0.65
	Main Engine-Direct Drive (# 4)	1.84	1.84	5.19	5.19	3.59	3.59	0.01	0.01	0.68	0.68	0.65	0.65
	Emerg Generator (Engine 1)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Work Boats (3) [Assume]	0.31	0.31	0.03	0.03	0.07	0.07	0.00	0.00	0.02	0.02	0.02	0.02
	Life Boat (1)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Life/Rescue Craft	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Existing Aux (Engine 1)	5.25	5.25	0.58	0.58	3.35	3.35	0.00	0.00	0.33	0.33	0.32	0.32
	Existing Aux (Engine 2)	5.25	5.25	0.58	0.58	3.35	3.35	0.00	0.00	0.33	0.33	0.32	0.32
	Existing Aux (Engine 3)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Existing Aux (Engine 4)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Support Vessels													
CIV Support Tug	Main Generator (Engine 1)	1.13	1.13	0.13	0.13	0.72	0.72	0.00	0.00	0.07	0.07	0.07	0.07
[Example-	Main Generator (Engine 2)	1.13	1.13	0.13	0.13	0.72	0.72	0.00	0.00	0.07	0.07	0.07	0.07
AHTS Norne]	Main Generator (Engine 1)	0.94	0.94	0.10	0.10	0.60	0.60	0.00	0.00	0.06	0.06	0.06	0.06
	Main Generator (Engine 2)	0.94	0.94	0.10	0.10	0.60	0.60	0.00	0.00	0.06	0.06	0.06	0.06
	Auxiliary Gen (Engine 1 of 2)	2.26	2.26	0.18	0.18	0.49	0.49	0.00	0.00	0.16	0.16	0.15	0.15
Dive Vessel	Main Propulsion (Engine 1)	0.45	0.45	0.01	0.01	0.06	0.06	0.00	0.00	0.03	0.03	0.03	0.03
[Example-	Main Propulsion (Engine 2)	0.45	0.45	0.01	0.01	0.06	0.06	0.00	0.00	0.03	0.03	0.03	0.03
Surveyor	Auxiliary Gen (Engine 1)	0.54	0.54	0.04	0.04	0.12	0.12	0.00	0.00	0.04	0.04	0.04	0.04
(Anchored)]	Auxiliary Gen (Engine 2)	0.54	0.54	0.04	0.04	0.12	0.12	0.00	0.00	0.04	0.04	0.04	0.04
Mooring/Survey	Main Propulsion (Engine 1)	0.19	0.19	0.01	0.01	0.04	0.04	0.00	0.00	0.02	0.02	0.02	0.02
Vessel [Example-	Main Propulsion (Engine 2)	0.19	0.19	0.01	0.01	0.04	0.04	0.00	0.00	0.02	0.02	0.02	0.02
Danny C	Auxiliary Gen (Engine 1)	0.04	0.04	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
(Install anchors)]	Auxiliary Gen (Engine 2)	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total CIV (202.F.7 exemption)		**18.59**	**18.59**	**19.36**	**19.36**	**20.56**	**20.56**	**0.05**	**0.05**	**3.51**	**3.51**	**3.37**	**3.37**
Total Tug (202.F.7 exemption)		**6.40**	**6.40**	**0.64**	**0.64**	**3.13**	**3.13**	**0.00**	**0.00**	**0.42**	**0.42**	**0.40**	**0.40**
Total CIV + Tug (202.F.7 exemption)		**24.99**	**24.99**	**20.00**	**20.00**	**23.69**	**23.69**	**0.05**	**0.05**	**3.93**	**3.93**	**3.78**	**3.78**
Total Support (Dive/Moor/Survey Spot Charters)		**2.43**	**2.43**	**0.14**	**0.14**	**0.46**	**0.46**	**0.00**	**0.00**	**0.17**	**0.17**	**0.16**	**0.16**
Total Offshore Marine		**27.41**	**27.41**	**20.14**	**20.14**	**24.15**	**24.15**	**0.06**	**0.06**	**4.10**	**4.10**	**3.94**	**3.94**

Peak Construction Emissions [Reasonable Worst Case]

Marine Vessel Emission Estimates
Cable Retrieval and Installation
OPSRB Activities (Within SBC)

Peak Hourly (lb/hr)

Equipment Category	NOx	ROC	CO	SOx	PM	PM10
OPSRB Activities (Within SBC)						
- Cable Installation Vessel	25.64	25.41	27.17	0.07	4.69	4.50
- CIV Support Tug	49.94	5.46	30.64	0.04	3.18	3.06
- Total 202.F.7 Exemption (CIV+Tug)	75.58	30.87	57.81	0.11	7.87	7.56
- Support Vessels (Dive+Moor+Survey)	25.30	1.13	4.42	0.01	1.76	1.69
Total	**100.87**	**32.00**	**62.22**	**0.12**	**9.63**	**9.25**

Note: Not all activities occur at the same time

Peak Daily (lb/day)

Equipment Category	NOx	ROC	CO	SOx	PM	PM10
OPSRB Activities (Within SBC)						
- Cable Installation Vessel	587.94	607.73	646.14	1.56	110.54	106.12
- CIV Support Tug	1,198.45	131.07	735.26	1.04	76.41	73.35
- Total 202.F.7 Exemption (CIV+Tug)	1,786.39	738.79	1,381.40	2.60	186.95	179.47
- Support Vessels (Dive+Moor+Survey)	607.12	27.12	106.00	0.26	42.14	40.48
Total	**2,393.51**	**765.92**	**1,487.40**	**2.86**	**229.10**	**219.95**

Note: Not all activities occur at the same time

Peak Quarterly (tpq)

Equipment Category	NOx	ROC	CO	SOx	PM	PM10
OPSRB Activities (Within SBC)						
- Cable Installation Vessel	18.59	19.36	20.56	0.05	3.51	3.37
- CIV Support Tug	6.40	0.64	3.13	0.00	0.42	0.40
- Total 202.F.7 Exemption (CIV+Tug)	24.99	20.00	23.69	0.05	3.93	3.78
- Support Vessels (Dive+Moor+Survey)	2.43	0.14	0.46	0.00	0.17	0.16
Total	**27.41**	**20.14**	**24.15**	**0.06**	**4.10**	**3.94**

Note: Not all activities occur at the same time

Peak Annual (tpy)

Equipment Category	NOx	ROC	CO	SOx	PM	PM10
OPSRB Activities (Within SBC)						
- Cable Installation Vessel	18.59	19.36	20.56	0.05	3.51	3.37
- CIV Support Tug	6.40	0.64	3.13	0.00	0.42	0.40
Total 202.F.7 Exemption (CIV+Tug)	**24.99**	**20.00**	**23.69**	**0.05**	**3.93**	**3.78**
- Support Vessels (Dive+Moor+Survey)	2.43	0.14	0.46	0.00	0.17	0.16
Marine Total	**27.41**	**20.14**	**24.15**	**0.06**	**4.10**	**3.94**

Note: Not all activities occur at the same time

Avg. NOx Ton/day CIV 0.292 Tug 0.100

CIV Demolition Days 15.0 Days [Estimated days to retrieve out-of-service cables]

CIV Demolition (202.F.7) [15 days] 4.4 Tons NOx [Deduct from 202.D.16 cumulative project emissions]

Estimated Fuel Consumption [Reasonable Worst Case]

Equipment	Description			Usage Data			Maximum Operating Schedule				OPERATING DAYS	Estimated Fuel Consumption			
		Size	Units	BSFC	Units	Load	Hr	Day	Qtr	Yr		Gal/Day	CuM/Day	Gal Total	CuM Total
Marine Vessel Emission Estimates **Cable Retrieval and Installation** **OPSRB Activities (Within SBC)**															
CIV Vessel	Main Engine-Gen Set (# 1)	3,922	bhp	0.055	gal/bhp-hr	0.30	1	24	1,530.0	1,530.0	63.8	1,553.1	5.9	99,010.9	374.8
[Prysmian	Main Engine-Gen Set (# 2)	3,922	bhp	0.055	gal/bhp-hr	0.30	1	24	1,530.0	1,530.0	63.8	1,553.1	5.9	99,010.9	374.8
Enterprise DP2]	Main Engine-Direct Drive (# 3)	3,621	bhp	0.055	gal/bhp-hr	0.30	1	24	1,530.0	1,530.0	63.8	1,433.9	5.4	91,412.1	346.0
	Main Engine-Direct Drive (# 4)	3,621	bhp	0.055	gal/bhp-hr	0.30	1	24	1,530.0	1,530.0	63.8	1,433.9	5.4	91,412.1	346.0
	Emerg Generator (Engine 1)	158	bhp	0.055	gal/bhp-hr	0.25	0.5	0.5	4.6	4.6	63.8	1.1	0.0	9.9	0.0
	Work Boats (3) [Assume]	100	bhp	0.055	gal/bhp-hr	0.30	1	15	675.0	675.0	63.8	24.8	0.1	1,113.8	4.2
	Life Boat (1)	28	bhp	0.055	gal/bhp-hr	0.25	0.5	0.5	4.6	4.6	63.8	0.2	0.0	1.8	0.0
	Life/Rescue Craft	28	bhp	0.055	gal/bhp-hr	0.25	0.5	0.5	4.6	4.6	63.8	0.2	0.0	1.8	0.0
	Existing Aux (Engine 1)	1,333	bhp	0.055	gal/bhp-hr	0.40	1	24	1,530.0	1,530.0	63.8	703.8	2.7	44,868.8	169.8
	Existing Aux (Engine 2)	1,333	bhp	0.055	gal/bhp-hr	0.40	1	24	1,530.0	1,530.0	63.8	703.8	2.7	44,868.8	169.8
	Existing Aux (Engine 3)	1,333	bhp	0.055	gal/bhp-hr	0.40	0	0	0.0	0.0	63.8	0.0	0.0	0.0	0.0
	Existing Aux (Engine 4)	1,333	bhp	0.055	gal/bhp-hr	0.40	0	0	0.0	0.0	63.8	0.0	0.0	0.0	0.0
Support Vessels															
CIV Support Tug	Main Generator (Engine 1)	3,040	bhp	0.055	gal/bhp-hr	0.60	1	24	96.0	96.0	4.0	2,407.7	9.1	9,630.7	36.5
[Example-	Main Generator (Engine 2)	3,040	bhp	0.055	gal/bhp-hr	0.60	1	24	96.0	96.0	4.0	2,407.7	9.1	9,630.7	36.5
AHTS Norne]	Main Generator (Engine 1)	3,040	bhp	0.055	gal/bhp-hr	0.40	1	24	120.0	120.0	5.0	1,605.1	6.1	8,025.6	30.4
	Main Generator (Engine 2)	3,040	bhp	0.055	gal/bhp-hr	0.40	1	24	120.0	120.0	5.0	1,605.1	6.1	8,025.6	30.4
	Auxiliary Gen (Engine 1 of 2)	138	bhp	0.055	gal/bhp-hr	0.65	1	24	1,530.0	1,530.0	63.8	118.4	0.4	7,548.3	28.6
						0.00									
Dive Vessel	Main Propulsion (Engine 1)	600	bhp	0.055	gal/bhp-hr	0.40	1	24	122.4	122.4	51.0	316.8	1.2	1,615.7	6.1
[Example-	Main Propulsion (Engine 2)	600	bhp	0.055	gal/bhp-hr	0.40	1	24	122.4	122.4	51.0	316.8	1.2	1,615.7	6.1
Surveyor	Auxiliary Gen (Engine 1)	107	bhp	0.055	gal/bhp-hr	0.50	1	24	612.0	612.0	51.0	70.6	0.3	1,800.8	6.8
(Anchored)]	Auxiliary Gen (Engine 2)	107	bhp	0.055	gal/bhp-hr	0.50	1	24	612.0	612.0	51.0	70.6	0.3	1,800.8	6.8
						0.00									
Mooring/Survey	Main Propulsion (Engine 1)	360	bhp	0.055	gal/bhp-hr	0.40	1	24	144.0	144.0	12.0	190.1	0.7	1,140.5	4.3
Vessel [Example-	Main Propulsion (Engine 2)	360	bhp	0.055	gal/bhp-hr	0.40	1	24	144.0	144.0	12.0	190.1	0.7	1,140.5	4.3
Danny C	Auxiliary Gen (Engine 1)	66	bhp	0.055	gal/bhp-hr	0.50	1	24	72.0	72.0	12.0	43.6	0.2	130.7	0.5
(Install anchors)]	Auxiliary Gen (Engine 2)	32	bhp	0.055	gal/bhp-hr	0.50	1	24	72.0	72.0	12.0	21.1	0.1	63.4	0.2
										CIV Total		**7,407.9**	**28.0**	**471,710.8**	**1,785.4**
										Tug Total		**4,933.8**	**18.7**	**26,809.7**	**101.5**
										Sup Vessel Total		**1,219.7**	**4.6**	**9,308.0**	**35.2**
										TOTAL		**13,561.4**	**51.3**	**507,828.5**	**1,922.1**

1.4 Onshore Biological Resources

1.4.1 Environmental and Regulatory Setting

The ExxonMobil onshore facilities are located in Las Flores Canyon. Vegetation and habitat in the canyon include Las Flores Creek and Corral Creek to the east (and south of the confluence of Las Flores and upper Corral Creeks), chaparral to the north, grassland and coastal sage scrub to the west and coastal sage scrub and grassland to the south. Most of the areas disturbed in the upper canyon area during initial project construction were non-native grasslands with scattered stands of coastal sage scrub. Ruderal and cultivated plant communities were also present due to past land use. In addition, vegetation along both creeks was impacted. Streamside vegetation consisted of well-developed riparian woodland dominated by large sycamores and occasional coast live oaks. The understory was comprised of small trees including willow and elderberry with other shrubs, vines and herbs. Oak woodland and chaparral habitats occurred toward the northern end of the project site on slopes of the Vaqueros formation (Exxon SYU Las Flores Canyon Revegetation 1994 Monitoring Report, SAIC, 1994).

To mitigate project impacts, ExxonMobil has participated in extensive revegetation efforts and an annual revegetation survey is performed. Onshore work in the canyon would be limited to the lower canyon parking area, used mostly as a secondary entrance to the canyon and an area for equipment and vehicle parking during construction efforts.

Biological surveys are now conducted in Las Flores Canyon every five years as mitigation for impacts related to the initial project construction and continued operation. No endangered species are known to occur within the existing POPCO and ExxonMobil plant areas. However, several sensitive species are known to occur in Las Flores and Corral Creeks as documented in the annual biological surveys. Such species include the California red-legged frog (a federally-listed threatened species), the Southwestern Pond Turtle (state species of special concern), the California Newt (state species of special concern) and the Two-Striped Garter snake (state species of special concern). The Southern steelhead (endangered) and California red-legged frog (threatened) are protected under the Federal Endangered Species Act. Southern Steelhead and its habitat are listed as endangered. The United States Fish and Wildlife Service (USFWS) has jurisdiction over the California red-legged frog and the National Marine Fisheries Service (NMFS) has jurisdiction over the steelhead. The NMFS designated all Santa Barbara County streams and rivers below Bradbury and Twitchell dams as critical habitat for the steelhead trout (March 17, 2000). Corral and Las Flores creeks, located within Las Flores Canyon, are included within this critical habitat designation.

In addition, since the initial survey during LFC site construction, other sensitive species have been observed in and near Las Flores and Corral creeks during the course of subsequent surveys, including the Coast Range newt, Golden eagle, Prairie falcon, Yellow warbler, Coastal black-tailed jackrabbit, Mountain lion and American badger.

The most recent biological survey was conducted in June 2010 (Garcia & Associates, *2010 Survey Final Report: Ninth Annual Survey, 2010*). Twelve stations are surveyed along Las Flores and Corral Creeks every year, the closest station to the onshore construction area (ABS-1) is located approximately 400 feet northwest of the proposed excavation area. No sensitive herptiles have been observed at this station during the years the survey has been conducted. The

station is considered to be suitable habitat for Southwestern Pond Turtle but only marginal habitat for California red-legged frog and Two-Striped Garter snake.

While Las Flores and Corral Creeks are designated critical habitat for steelhead trout, a four-foot culvert located on the south side of US Highway 101 has been considered too high to be negotiated by migrating steelhead. As a result, no steelhead would be expected to be located in either creek and surveys have not been conducted since 1993.

An autumnal monarch butterfly aggregation site was found in 1998 in Sycamore trees along the Corral Creek, behind the three adobe structures in the lower canyon (*Monarch Butterfly Overwintering Sites in Santa Barbara County*, Althouse and Meade, August 1999). Approximately 2000 butterflies were documented, although significantly fewer have been documented during subsequent site visits. This site is notable as one of few aggregation sites that occur on native trees. Santa Barbara County Policy requires the protection of butterfly habitat and limits work that could potentially disturb aggregation and roost sites between October and February. The onshore excavation work would be located approximately 200 feet from the site.

1.4.2 Project Impact Assessment

The term "biological resources" refers to plant and animal species and habitats that support plant and animal species. Based on a preliminary site assessment and review of existing historical resource information (designated environmentally sensitive habitat areas, biological resources maps, reports, surveys and Natural Diversity Database Maps), the lead agency determines whether resources on a site are biologically valuable and whether a project may result in a significant impact to biological resources.

Assessment of impacts must account for both short term and long term impacts. Disturbance to habitats or species may be significant, based on substantial evidence if they 1) substantially limit reproductive capacity through losses of individuals or habitat or 2) substantially limit or fragment range and movement (geographic distribution or animals and/or seed dispersal routes). Based on these criteria, the proposed project would not create any significant impacts on biological resources.

Flora: There would be no loss or disturbance to any unique, rare or threatened plant community as a result of the proposed project. Neither would there be a reduction in the numbers or restriction in the range of any unique, rare or threatened plant species or a reduction in extent, diversity or quality of native vegetation. No significant amount of vegetation with any habitat value or existing habitat would be impacted by the proposed project. Lastly, no specimen trees would be removed during the proposed project. The onshore portion of the project would be limited to previously disturbed areas in the lower canyon. Excavation necessary to expose the two out-of-service submarine power cable and install the replacement cables is estimated to be approximately 800 to1000 cubic yards of material. Some previously disturbed vegetation would be removed or disturbed with reseeding after completion of the work. The excavation location is approximately 500 feet east of Corral Creek; therefore no impacts to riparian habitat would result.

Fauna: The onshore project area would be limited to the already developed lower canyon parking lot approximately 500 feet from riparian habitat. An autumnal monarch butterfly roost site is

located in the lower canyon, approximately 200 feet from the proposed project area. Santa Barbara County policy requires that development be set back 50 feet from any potential butterfly aggregation or roosting sites. It is not anticipated that the proposed project would have the potential to impact the known butterfly roost site.

While the project area would be approximately 500 feet from the creek, Southwestern Pond Turtle and California red-legged frog are mobile and could be found in the construction area. In order to make workers aware of the sensitivity of these species, since 1994 ExxonMobil has prepared a pamphlet describing the protection status and potential occurrence of these species in Corral and Las Flores creeks. The pamphlets have been distributed during safety briefings, held at least once a month. The pamphlet is distributed to ExxonMobil personnel as well as contractors and subcontractors. The pamphlet cautions workers to avoid handling either species and to be aware of their potential occurrence on roads near creeks. With the dissemination of this information during a pre-construction meeting, there would be no expected impacts to any listed or sensitive species as a result of the proposed project.

1.4.3 Mitigation Measures

BIO-1: ExxonMobil shall include awareness training for its contractors of the sensitive species located in Corral Creek. The training shall include a description of the species, protection status under the law, the potential range of movement, and what to do in the event one is found within the construction area. This training should be incorporated into the pre-construction meeting(s) with construction personnel to perform the work. Agency representatives shall be invited to attend the meeting(s).
Expected Enforcement Agency: SBC.

Residual impacts would be expected to be temporary and insignificant.

1.4.4 Cumulative Impacts

No additional excavation projects are currently underway in the lower canyon area.

1.5 Benthic Environment

1.5.1 Environmental and Regulatory Setting

Extensive regional descriptions of the benthic environments in the proposed project region were prepared by Dames and Moore (1982b); SAI (1984); SAI (1986), and Chambers Group (1987a,b,c). Numerous biological surveys have been conducted to further characterize the marine biological communities of the area (e.g., Dames and Moore, 1982a,b; Chambers Group, 1982 and 1987a; State Lands Commission, 1995). Previous site-specific surveys of the nearshore benthic environment include Dames and Moore (1991 and 1992). De Wit (2001, 2002, and 2003) reports the results of additional biological surveys specifically for the OPSR-A project at the nearshore site. The results of OSPR-B related marine biological surveys are provided in Padre Associates, 2011 and 2012a. Much of pre-year 2000 information has been previously presented in MMS, 1988, 1991, and 1997, and that and the more recent descriptions are summarized below.

Because of their relative rarity and special value as habitat for species of scientific, recreational, commercial, and education interest, nearshore rocky reefs are given special protection by the SBC Local Coastal Plan. Offshore rocky reefs and hardbottom sites share the ecological values of shallow reefs, and are additionally sensitive to impacts because of the relative stability and slow recovery rates of deep ocean locations and biota. Offshore hardbottom sites in the proposed project area are protected through numerous conditions placed by BSEE and SBC on their respective approvals of activities within the SYU areas of operation.

The environmental setting for the proposed project includes both nearshore and offshore locations. The nearshore site is located on the Gaviota coast, near the mouth of Corral Creek, west of Capitan, Santa Barbara County, California (Figure 4). The nearshore marine habitats and biota are typical of that found in similar water depths along the Santa Barbara Channel coastline. The seafloor habitat inshore of the 35-foot (11 meter) isobath includes armor rock covering existing pipelines and conduits, boulder fields, broken rock, and bedrock ridges interspersed with sand.

A 20 to 50 foot-wide (6 to 15 meter) sand channel runs parallel to and on the eastern side of the conduits and west of the POPCO pipeline into about 30 feet (9 meters) of water. The sand channel was created during the 1983 installation of the POPCO pipeline (de Wit, 2002). The seafloor deeper than 35 feet is predominantly sedimentary.

The nearshore rock and boulder fields are typical of areas influenced by coastal streams and the shale ridges are characteristic of the nearshore solid substrate found throughout the area (de Wit, 2002). Within the nearshore pipeline corridor and adjacent areas, these habitats extend approximately to the 35 foot (11 meter) isobath and generally support a mixed flora of brown algae (*Macrocystis* spp., *Desmarestia* spp, *Pterygophora* californica, and *Egregia menziesii*), patchy turf red algal complex comprising, among others, species of *Gracillaria* sp., *Rhodymenia* sp., *Gracilariopsis* sp., and various coralline algae. Red and purple urchins *(Strongylocentrotus franscicanus* and *S. purpuratus*) are common to locally abundant (Padre Associates, 2011a). Other common macroinvertebrates include sea cucumbers (*Parastichopus* spp.), bat stars (*Asterina Patria miniata*), giant and sun stars (*Pisaster giganteus* and *Pycnopodia helianthoides*, respectively), Kellet's whelk (*Kelletia kelletii*), the sea hare (*Aplysia californica*), and the giant keyhole limpet (*Megathura crenulata*). Spiny lobsters (*Panulirus interruptus*) are present in the crevices between the individual rocks. Recruit and juvenile-size giant kelp plants are also present on the rock substrates and on the exposed portions of the existing pipelines. In the most recent survey (Padre Associates, 2011a) juvenile *Macrocystis pyrifera*, were common to abundant in water depths deeper than 12 feet (4 meters) and where urchins were not present; adult *Macrocystis* were only common at and around the conduits. Fish species include kelp bass (*Paralabrax clathratus*), barred sandbass (*P. nebulifer*), senorita (*Oxyjulius californica*), and surfperch, including the white, black, and pile perch (*Phanerodon furcatus, Emibotoca jacksoni,* and *Rachochilus toxotes*, respectively).

Two species of abalone, the white abalone (*Haliotis soensoni*) and the black abalone (*H. cracherodii*), are listed as endangered under the Federal Endangered Species Act. All other California abalone species are non-listed but considered regionally rare along the California coast. No abalone were observed on rock substrate that was surveyed and reported in Padre Associates, 2011a. The results of a diver survey of the concrete mats at the three existing cable

crossings that focused on locating and identifying abalone are reported in Padre Associates, 2012a. No abalone were observed on any of the manmade mats at those locations.

It is likely that black abalone were historically present on the rocky habitat within the intertidal and shallow subtidal zones west of Santa Barbara. However, black abalone have not been detected during recent years of intertidal monitoring at long-term study sites near the proposed project location (Steve Lee, pers. comm., 2002). None were reported in any of the previously-completed marine biological surveys within and around the SYU pipeline and power cables corridor.

The nearshore sedimentary habitat supports abundant polychaete worms (*Diopatra ornata*), sand stars (*Astropecten* sp.), and sand dollar (*Dendraster excentricus*) communities. Surf grass (*Phyllospadix torreyi*), which is attached to the underlying rock but is partially covered with sand, is common from 10 feet (3 meters) to a depth of approximately 15 feet (5 meters). Further offshore within the project area, sedimentary habitat dominates, and relatively large and scattered patches of eelgrass (*Zostera* sp.) are found in water depths from 30 to approximately 45 feet (9 to 14 m). Historically, eelgrass has not been found inshore of the 30 feet (9 meters) isobath at the nearshore SYU site (de Wit 2002); it was however found in 25 feet (<8 meters) during the 2011 survey (Padre Associates, 2011a).

The seafloor habitat in water depths of 50 feet (15 meters) to the platforms in 800 to 1200 feet (244 to 366 meters) of water is sedimentary, consisting of silts and clays. Silty sediments surround the offshore platforms and lay between platforms Harmony and Hondo. Isolated rocky features have been recorded along the shelf break (300 to 400 feet [91 to 122 meters]) and approximately 1 mile (<2 kilometers) northeast of Platform Hondo (SAI, 1984a). High resolution geophysical data (side-scan sonar) reported in ExxonMobil, 2002a indicates that the shelf break hardbottom habitat within the pipeline/power cables corridor consists of a few low- to medium-relief (1to 5 feet [< 1 to < 2 meters]) features in water depths between 265 and 445 feet (80 and 135 meters). Chambers Group (1987a,b) noted a number of species in this shelf-break rocky habitat including the solitary coral *Paracyathus stearnsi*; the anemones *Metridium senile* and *Corynactis californica*; the crinoid *Florimetra serritissima*, the sea star *Mediaster aequalis*; and various species of hydroids, tube worms, bryozoans, and sponges. In addition, the rocky areas provide shelter/habitat for several species of rockfishes (*Sebastes* spp.), as well as shelter for several crab species (e.g., *Cancer anthonyi*). The de Wit (2003) report discusses the results of a review of video recorded during the installation of power cable C-1 in water depths between 280 and 410 feet (85 and 137 meters). That report supports observations reported in Chambers Group (1987a, b) and indicates that scattered rock along the C-1 power cable route is most comment in water depths of 295 and 410 feet (90 and 125 meters) and supports many of the same epibiota referenced in the earlier reports.

The deeper water sedimentary habitat-associated macroepibiota is characterized by the two seapen species, *Acanthoptilum gracile* and *Stylatula elongata*; the sea cucumber *Parastichopus californicus*; and the pink sea urchin *Allocentrotus fragile*. Evidence of superficially buried rocks was noted due to the presence of *Paracyathus* sp. and *Metridium* sp. protruding from an otherwise muddy bottom. Seapens, seastars, sea urchins, shrimp, and sea cucumbers dominate the soft bottom macrobiota in the area (Chambers Group, 1987a), whereas polychaete worms, clams, and amphipods characterize the infauna (Dames and Moore, 1982b).

High resolution geophysical data (side-scan sonar), of the seafloor from 800 to 1,000 feet (245 to 365 meters) south of Platform Heritage indicates there is an area of scattered higher-relief substrate (ExxonMobil 2002a). Video from an ROV survey (ExxonMobil, 2002b) of the proposed power cable route reveals that this area is all low-relief (< 1 foot [< 1 meter]) consolidated sediment or clay lumps with no observable epibiota. There are no hardbottom areas around the offshore platforms in or near the path of the proposed project.

1.5.2 Project Impact Assessment

The impact analysis for the benthic environment in this document adopts significance criteria developed for all biological resources. An impact from the proposed project is significant if it is likely to result in any of the following:

- A measurable change in population abundance and/or species composition beyond natural variability
- Substantially limit reproductive capacity through losses of individuals or habitat.
- Substantially limit or fragment range and movement (geographical distribution and normal route of movement)
- A substantial loss or irreversible modification of habitat in several localized areas or 10 percent of the habitat within the affected area

For an impact to be locally significant, the size of the localized area would be relatively small compared with that of an ecologically equivalent area within the region. The threshold for significance is determined by scientific judgment, and considers the relative importance and sensitivity of the habitat and/or species affected. The affected area, relative to that available in the region, is determined in the same way as that for locally significant impacts. This determination considers the sensitivity and relative importance of the species and/or habitat affected.

Cable Installation and Retrieval Impacts

As described in the OPSRB Project Description, the proposed project would involve removal of approximately 12-18 miles (19.3-29 km) of out-of-service power cable and the installation of 29 miles (47 km) of replacement cable within the existing SYU pipeline and power cables corridor and within general vicinity of the existing SYU facilities.

Several contingency scenarios have been included in the OPSRB Execution Plan in case one of the existing out-of-service power cables cannot be removed from, or a replacement cable cannot be installed in, a conduit or platform riser (i.e., F2 at nearshore conduit, G2 at HE riser, A2 at nearshore conduit and A2 at HA riser). These contingency measures involve laying the cable that cannot be installed on the ocean floor parallel to the installed cable. In the nearshore area, a cable that cannot be installed in a conduit would be laid in a normal manner from the platform to a location south of the POPCO crossing and then turned parallel to the installed route for several thousand feet. In the OCS, a similar approach would be taken at an appropriate distance from the platform. Any cable installed under one of the contingencies would be left in place until an acceptable approach could be identified, approved by the agencies with jurisdiction, and implemented. From an installation approach, utilizing one of these contingencies would not be expect to have a significant impact on the benthic environment. [The probability of one of these contingencies occurring is considered to be very low.]

This section discusses the potential impacts to the seafloor habitats and associated biota that would be expected to occur as a result of cable retrieval and installation, and associated activities.

Seafloor disturbance, and the resulting impacts to the biota, from the retrieval of existing power cables and concrete mats, the installation of replacement power cables and concrete mats (to insulate the power cables from underlying pipelines), and from the anchoring of support vessels are expected. Disturbance of existing solid substrate is expected to be limited to that associated with the removal of existing concrete mats and from the potential for replacement cables being laid across deeper-water rocky habitat. Local sediment-bottom disturbance could also be expected during excavation and pre-installation diver activities around the conduit termini.

Removal and cleaning of the retrieved cable at the surface, placement of anchors, installation of the replacement cables and mats, and excavation around the conduits are expected to resuspend seafloor sediments resulting in an increase in water column turbidity. In addition, one installation measure being considered includes the placement of large bags containing sand or other materials on top of the installed cables adjacent to Platform Harmony at the bottom of the catenary and at the location where the cable makes a sharp turn (F2 towards shore and G2 towards HE). The bags are estimated to be approximately 1-ton in weight and would be lowered by the cable installation vessel on top of the installed cable to help hold the cable in place and minimize any unintended movement as the cable is being laid. That turbidity increase would reduce water clarity and available light for photosynthesis, temporarily clog the gills of biota, and potentially subject attached immobile biota to an increase in sediment deposition. Anchor and concrete mat placement, and cable installation would also cover immobile epibiota and infauna and could alter the existing seafloor habitat. Although retrieval of the out-of-service cables will require the disassembly of the in-place concrete mats which will effectively remove the higher-relief solid substrate (and the associated biota) that it provides, the removed habitat will be replaced by new concrete mats which will provide similar substrate and habitat as that removed. No impacts to the marine resources are expected from the on-platform pre-installation activities.

Detailed discussions on the potential impacts, and mitigations to reduce or eliminate those effects to the existing seafloor habitats and associated biota, are provided below.

Seafloor Disturbance and Sediment Resuspension
As described in the OPSRB Project Description (Attachment A), a number of activities would disturb seafloor sediments and increase turbidity within the nearshore and offshore water columns. Table WQ-3 in the Water Quality section, lists sources, locations, and estimated quantities of sediment that would be resuspended during the proposed project.

Overall, the proposed project is expected to result in minimal seafloor disturbance and short-term, temporary, and localized increases in water column turbidity. In the shallow nearshore, divers working at and seaward of the conduit terminus will excavate sand in order to uncover the out-of-service cables, clear the conduits and expose the cables for approximately 50 feet offshore. The excavated material will be sidecast and could result in burial of sediment infauna and nearby rocky substrate and the associated epibiota, including kelp and immobile fauna.

Turbidity effects are expected to be short-term due to the sandy sediment that is present within this area (de Wit, 2001 and 2002; and Padre Associates, 2011a) and its rapid settlement. The effects are expected to be similar to, but less than, those generated by storm waves.

Because most of the existing power cables are self-buried into the sediment, exposing the cables, cutting and removal of those cables is expected to result in sediment disturbance and resuspension. Additional turbidity in the near-surface waters could result from the cleaning (washing with seawater) of the removed power cables prior to securing them onboard the cable installation vessel. Sediment disturbance, albeit substantially less than during cable retrieval, is also expected to occur immediately around the replacement cables as they "touch-down" onto the seafloor. The sedimentary habitat that characterizes the majority of the project area is not unique within the region and does not support any sensitive species. The effects of sediment disturbance and increases in turbidity are expected to be less than significant, local, and short-term.

The existing concrete mats were placed onto sedimentary habitat and the underlying sediments are expected to be resuspended during the removal of those mats to facilitate the removal of the cables. Similar to the effects of cable retrieval, the resuspended sediment and resulting turbidity is expected to result in less than significant, local, and short-term effects on the surround habitat and biota. The concrete mats are located in water too deep to support eelgrass and no sensitive biota or habitats are expected to be affected by those activities.

To reduce the potential effects of the deposition on the rocky habitat inshore of the conduits, ExxonMobil's contractor will be required to cast excavated sand, via a hose, approximately 20-50 feet (5-15 meters) south, downslope, onto existing natural sedimentary habitat and away from armor rock, boulder fields, broken rock, or bedrock ridges. In addition, actual impacts to the seafloor habitat and biota around the conduits will be assessed during the post-installation surveys. Mitigations including, but not limited to, habitat restoration, transplanting of flora, etc. will be identified and instituted if significant impacts are found and following consultation with regulatory and resource agencies.

Given the projected levels of activity and implementation of proposed mitigation measures, the effects of turbidity would be expected to be highly-localized and temporary causing insignificant impacts.

Physical Alteration of Seafloor Habitats and Biota

Burial of or alteration of seafloor habitats and associated biota from the placement of nearshore anchors, the concrete mats at the POPCO pipeline crossing and over the exposed ends of the cut cables in deeper water, the placement of excavated sediments, and from the installation of the replacement power cables is possible. Potentially significant impacts could occur if anchors or other components are placed onto or across solid substrate habitats; deeper water rock habitats are not common and support long-lived, slow-growing organisms that are particularly sensitive to physical disturbance. Further, placing anchors onto rocky substrate could crush attached organisms (including abalone) and anchor lines across rock features could abrade across rock features and remove or damage algae (including kelp). Although relatively small in area (each power cable is approximately 0.5 feet (<0.2 meter) in diameter, cable placement onto or across hard bottom habitats could result in potentially significant impacts. Other potential impacts to

marine resources include damage or burial of eelgrass under the power cables and anchors within sedimentary habitat in water depths that support that species.

Padre Associates (2011a) reported the results of a pre-project marine biology survey that included diver-biologist's observations within proposed nearshore anchoring sites. That report states that the macroepibiota within the proposed anchor sites was typical of that found in similar water depths and substrate throughout southern California; eelgrass was present along the cable route seaward of the 25 foot (<8 meter) isobath; and that one of the anchor sites was within 12 feet (<4 meters) of rocky substrate. Impacts to the habitats and biota along the cable route and at the anchoring sites are expected to be similar to those described in de Wit (2003) and to be limited in areal extent (i.e. anchoring will only occur within the nearshore areas in water depths of approximately 150 feet (46 meters) or less, but could be significant if sensitive species are affected.

Potentially significant impacts to the endangered white abalone (*Haliotis sorenseni*) could occur if individuals are present on the existing concrete mats. The white abalone has been reported in water depths up to 197 feet (60 meters) (National Marine Fisheries Service, 2008) and could occur on the concrete mats at the existing cable crossings. The results of a focused diver survey at the three existing power cable/POPCO pipeline crossing are reported in Padre Associates (2012a). No abalone were observed on the two concrete mat habitat sites that were found (the mats at crossing site C-1 were covered with sediment and no exposed solid substrate was found). Based on that survey, no significant impacts to the endangered white abalone are expected from the dismantling of the existing concrete mats. Placing of concrete mats over of the cut ends of the remaining power cables in water depths of approximately 400 feet and 1200 feet of water depth is expected to be result in less than significant impacts as the seafloor habitat within the water depths of those activities is sedimentary and does not support any special status species.

There is a rocky habitat feature within the cable route that is expected to be crossed by the replacement cables. This feature is located at the shelf break, approximately 5 miles (8 kilometers) from shore, in water depths of 265 to 275 feet (70 to 85 meters). The rocky feature is generally oriented east-west and is approximately 1,600 feet (490 meters) long and between 25 and 50 feet (<8 to <16 meters) wide; maximum vertical relief is 3 feet (1 meter). Uncontrolled placement of the power cables across this feature could damage the habitat and bury or injure attached organisms.

Impacts from placing the replacement cables at the shelf-break are expected to be limited to approximately 25 square feet (2.0 square meters) of the hardbottom feature and are expected to be insignificant. The use of a dynamically-positioned (DP) vessel that would facilitate the slow, controlled lay of the cable and the expectation that the cable would not move once it is laid, results in the minimal area of the feature being affected.

A beneficial effect of the proposed project is that the new concrete mats will provide additional hard bottom substrate onto a relatively featureless, sedimentary seafloor. Epibiota and fish, similar to the community currently present around the existing concrete mats, are expected to inhabit the new area within a relatively short period after installation.

To reduce potential impacts from physical burial, the following mitigations have been incorporated into the proposed project: A DP cable installation vessel would be used to install the cable in deeper-water areas thus eliminating the potential impacts to hardbottom habitats at the shelf-break from anchoring. There are no hardbottom areas around the offshore platforms in or near the path of the proposed project.

A pre-construction marine biological survey will be completed within the proposed nearshore anchoring sites, cable corridors, and excavation site at the conduit. The results of that survey will be used to relocate anchor sites away from rock substrate and to estimate the area of eelgrass potentially affected by the proposed activities. Mitigation requirements will be based on those results and following consultation with the regulatory and resource agencies.

Anchors would be lowered and retrieved vertically to and from pre-selected positions, using a differential geographic positioning system (DGPS) with accuracy usually within 3 feet (1 meter). Anchors would have chain and wire rope extending from the anchor shank to a floating buoy that becomes the mooring buoy and precludes the chain and wire rope from dragging on the seafloor. Controlled mooring using pre-plotted and pre-set anchors and vertical anchor placement and retrieval would reduce seafloor disturbance and prevent placement of anchors onto rocky habitat. The results of a post-installation marine biological survey would be used to determine actual impacts from anchoring and would be the basis for determining the need for additional mitigation (i.e. habitat restoration or habitat/biota enhancement).

Using the DP vessel or a separate work boat with DGPS, would allow placement of the concrete mats in the proper location and avoid hardbottom habitat by at least 50 feet (15 meters).

Using the DP vessel, the applicant would be able to lay the replacement cable along a route that would avoid most hardbottom habitats by 50 feet (15 meters) or greater. In addition, the applicant has stated that they will utilize an ROV to monitor power cable installation operations in the shelf-break hardbottom area. To avoid impacts, the applicant will monitor the area along the proposed route in water depths from 250 to 500 feet (75 to 150 meters) with an ROV during cable installation. If the ROV observes a rocky outcrop, the ROV would assist the DP vessel in adjusting its route or moving the cable to avoid a feature. There are no hardbottom areas around the offshore platforms in or near the path of the proposed project.

Cable Removal Impacts at End of SYU Life

This section discusses the potential impacts of the removal of all power cables and associated material on the benthic environment within the OCS at the end of SYU life.

The decommissioning of its SYU facilities will occur at some point in the future. Deferral of removing all cables within the OCS until that time would mean that this activity would occur during the larger-scale SYU decommissioning project, which would involve the dismantlement and removal of three offshore platforms and their associated pipelines and power cables. It is estimated that it would take up to three years to remove all SYU facilities. Removal of the OCS segments of out-of-service cables is estimated to take up to three weeks during that period. The SYU decommission project would be subjected to a detailed NEPA and CEQA review and permitting prior to initiation. Expected impacts would be the same as those described in the previous section.

1.5.3 Mitigation Measures

As described above, the applicant has proposed to implement the following mitigation measures to further reduce the potential for impacts on the benthic environment.

BE-1: ExxonMobil shall select contractors who shall use a DP vessel to retrieve and install the replacement power cables from nearshore to Platform Harmony and between Platforms Harmony and Heritage.
Expected Enforcement Agency: BSEE, SLC.

BE-2: ExxonMobil shall require contractors, whenever feasible, to utilize appropriate installation techniques that minimize or avoid environmental impacts such as turbidity and anchor scarring. This shall be accomplished by following procedures included in the Anchoring Plan.
Expected Enforcement Agency: BSEE, SLC, SBC.

BE-3: ExxonMobil shall perform a pre-installation marine biological survey of the nearshore project area prior to any installation work adjacent to the conduit, within the proposed anchoring locations, and within the nearshore power cable corridors. Preliminary survey results shall be submitted to agencies as soon as they are available after completion of the pre-installation survey. Final report shall be submitted within approximately 60 days of completion of the pre-installation survey.
Expected Enforcement Agency: SLC, SBC.

BE-4: ExxonMobil shall, after completion of the project, conduct a post-installation marine biological survey to identify any impacts to the nearshore area that could have resulted from construction activity. Mitigation requirements will be based on the results of that survey and will be developed following consultation with the appropriate regulatory and resource agencies (see BE-8 below). Preliminary survey results shall be submitted to agencies as soon as they are available after completion of the post-installation survey. Final report shall be submitted within 60 days of completion of the post-installation survey.
Expected Enforcement Agency: SLC, SBC.

BE-5: ExxonMobil shall require contractors to utilize an ROV to monitor and videotape selected portions of the installation activities during the cable lay operations. If the ROV observes a rocky outcrop, the ROV shall assist the DP vessel in adjusting its route to avoid a feature, whenever it is feasible to do so. Activities that shall be videotaped with a copy provided to agencies include cable laying along the route in water depths were rocky habitat is suspected.
Expected Enforcement Agency: BSEE, SLC.

BE-6: ExxonMobil shall cast sand excavated at or near the conduit, via a hose, 20-50 feet (5-15 meters) south, downslope, into the sand channel between the out-of-service cables and the POPCO pipeline away from armor rock, boulder fields, broken rock, or bedrock ridges.
Expected Enforcement Agency: SLC, SBC.

BE-7: ExxonMobil shall provide, under safe conditions, the permitting agencies access to the site, during installation and installation-related activities, including but not limited to, the cable laying vessel and support vessels. Agency biologists may observe the extent, distribution, and

type of habitat that could be present near anchors or in the path of the proposed power cable. In the event that rocky habitat is observed during cable installation, the applicant shall adjust its anchors or operations, if at all possible, to avoid the habitat or notify the appropriate regulatory agencies for further direction if rocky habitat is unavoidable. All agency personnel on ExxonMobil contracted vessels shall be advised of and adhere to ExxonMobil safety requirements.
Expected Enforcement Agency: BSEE, SLC, SBC.

BE-8: ExxonMobil shall develop a restoration and restoration-monitoring plan after submission of the post-installation survey, if significant impacts to kelp, abalone, and/or hard bottom habitats are detected. The final restoration and restoration-monitoring plan shall be submitted for review and approval to the appropriate regulatory and resource agencies prior to implementation. The final restoration plan shall be implemented after approval and the restoration-monitoring plan shall extend for a 3-year period.
Expected Enforcement Agency: SLC, SBC, and CDFG.

BE-9: If eelgrass restoration is required, ExxonMobil shall adhere to the Southern California Eelgrass Mitigation Policy and include a requirement to use only native species, e.g., *Zostera marina*, for restoration purposes, where appropriate.
Expected Enforcement Agency: SLC, SBC, CDFG and NMFS.

BE-10: If non-listed abalone are detected near the conduit terminus during the time of the pre-installation marine biological survey, ExxonMobil shall complete one of two actions. Either ExxonMobil shall move anchor(s) at least 50 feet (15 meter) away to avoid any direct impacts on abalone, or ExxonMobil shall have a qualified biologist move the abalone pursuant to procedures reviewed and approved by the appropriate regulatory agencies.
Expected Enforcement Agency: SLC, SBC.

BE-11: ExxonMobil shall conduct a post construction ROV or diver video survey, with voice overlay, along the length of the completed cable installation in State waters to verify the as-built condition of the cable. Such survey shall also include the entirety of the area affected by the proposed project, including all anchor locations, to confirm seafloor cleanup and site restoration.
Expected Enforcement Agency: SLC.

With incorporation of the proposed mitigation measures, residual impacts would be expected to be insignificant.

Conclusions-Proposed Project
According to the significance criteria established for this document, an impact on the benthic environment would be considered to be locally significant if it results in a measurable change in population abundance and/or species composition beyond natural variability, substantially limits reproductive capacity through losses of individuals or habitat, substantially limit or fragment range and movement, or results in a substantial loss or irreversible modification of habitat in several localized areas or 10 percent of the habitat in the affected area. Increases in turbidity would be expected to be highly-localized and temporary, causing insignificant impacts. The temporary loss of eelgrass plants would be mitigated by measures ExxonMobil is proposing to adopt and by the additional measures the agencies would require; therefore, any adverse impacts

on eelgrass from anchoring or removing cable would be expected to be relatively short-term, local, and insignificant. Based on the distance of the nearshore abalone habitat from planned activities and implementation of the proposed mitigation measures, the effects of the project on abalone would be expected to be insignificant. Impacts on the benthic environment from concrete mats being placed on the bottom would be expected to be limited to short-term turbidity increases and therefore local and insignificant. Those mats will provide additional higher-relief solid substrate and are, therefore, considered a beneficial effect of the project. Impacts from each replacement cable contacting up to a 12.5 ft^2 (1.2 m^2) area within the hardbottom feature at the shelf-break would be expected to be insignificant. The small area affected, coupled with the use of a DP vessel to allow a controlled lay of the cable and the presence of the ROV to monitor the laydown and move the cable(s) if necessary, further reduces potential effects. The weight of the cable would preclude lateral movement once it is in-place, thus minimizing the potential effects of scraping. Overall, as proposed, the impacts on the benthic environment from the proposed project would be expected to be insignificant and have been mitigated to the maximum extent feasible.

4.5.4 Cumulative Impacts

The draft EIS for Delineation Drilling Activities in Federal waters Offshore Santa Barbara County, California (MMS, 2001) provides a detailed discussion of cumulative impacts on the benthic environment and seafloor resources. The EIS identifies several activities that may impact the benthic environment including: commercial fishing operations, fiber optic cable installation operations, ongoing and reasonably foreseeable oil and gas activities in Federal and State waters, and non-anthropogenic and anthropogenic sources of sediment and contaminants.

Cumulative impacts on nearshore benthic habitats and communities could take the form of degradation or elimination of rocky, shallow-water subtidal habitat in the region west of Santa Barbara. The shallow subtidal habitat is a dynamic environment that is exposed to regular increases in water column turbidity from resuspened sediments, strong water surges and wave action. Although the orientation of the Santa Barbara Channel mainland south and these habitats are therefore somewhat protected, they still experience periodic strong winter storm conditions (especially during El Niño events) that subject the shallow habitats to freshwater runoff, increases in turbidity, physically alter the habitat, remove attached biota, and scour sand. Freshwater runoff and increased turbidity are usually short-term (days to weeks), temporary conditions, however longer-term effects can result from habitat alteration or burial.

Cumulative impacts on offshore benthic habitats and communities could also take the form of degradation of hardbottom communities and the associated biota. Hardbottom substrate along the Santa Barbara Channel mainland is considered rare due to the preponderance of sedimentary habitat. The limited extent of hard bottom habitat and the importance of the biota which it supports results in both entities being considered sensitive to potential environmental effects.

Leet et al. (2001) identifies several fishing and non-fishing activities that may have adverse impacts to benthic communities along the Pacific Coast. In addition to the effects of natural events on animal and plant species, over-harvesting of commercial species such as abalone and nearshore rockfish, fishing-related impacts to marine mammals and birds, the introduction of anthropogenic pollution, and competition among user groups, both consumptive and non-consumptive all affect the marine environment.

The NMFS (1998a,b) has identified several fishing and non-fishing activities that may cause adverse impacts to Essential Fish Habitat (EFH) along the Pacific Coast and within the SYU. These include dredging and discharge of dredged material, water intake structures, aquaculture, wastewater discharge, oil and hazardous waste spills, coastal development, agricultural runoff, commercial marine resource harvesting, and commercial fishing. Most of these activities occur throughout the California coastal habitat and all of these activities produce impacting agents within the southern California coastal zone, including the Santa Barbara Channel. As a result, marine water quality has been impacted by municipal, industrial, and agricultural waste discharges and runoff in much of the Southern California Bight (MMS, 1992).

The proposed project activities would be expected to result in locally insignificant impacts (e.g., highly-localized, temporary turbid conditions, temporary impact on eelgrass, and contact up to two 12.5 feet^2 (1.2 meters^2) areas within a rocky feature at the shelf-break. Mitigations that reduce or eliminate potential effects have been incorporated into the proposed activities and result in the impacts being less than significant. The Phase 1 activities will not be within the marine waters of the project area thus no marine-related impacts are expected. The project is also not expected to add significantly to cumulative impacts on the benthic environment within the Santa Barbara Channel.

1.6 Commercial Fishing Operations

1.6.1 Environmental and Regulatory Setting

Commercial fishing activities in the SYU and within the Santa Barbara Channel have been described in previous studies and environmental documents (Fusaro et al., 1986; Kronman 1995; MMS 1995, 1997, and 2001; SAI, 1984).

The SYU project area supports a diverse assemblage of valuable fishery resources. These resources, in turn, support important commercial and recreational fisheries (Fusaro et al., 1986; MBC, 1986; Leet et al., 1992 and 2001). Major fisheries within or near the proposed project area include trapping for crab and lobster; purse seining that generally target anchovy, bonito, mackerel, squid, and other pelagic fish; trawling for spot prawn, ridgeback shrimp, sea cucumbers, and halibut; diving for urchins; and drift and set gillnetting for thresher shark, bonito shark, swordfish, white seabass, and barracuda.

The project area traverses two California Department of Fish and Game (CDFG) Fish Blocks (FB), 655 and 656. Table CF-1 summarizes the commercial catch as provided by CDFG over the most recent five years available (2007 through 2011). Table CF-2 provides catch (pounds) and value information for each of the two project region FBs by year, for the most abundant species, and highest value taxa during that same period.

Table CF-1: Summary Commercial Catch Data for Fish Blocks 655 and 656 (2007 through 2011)

Year	FB 655		FB 656	
	Pounds	**Value**	**Pounds**	**Value**
2007	48,041	$134,057	154,277	$135,282
2008	103,584	$195,221	377,600	$248,786
2009	172,346	$245,346	206,344	$240,021
2010	1,247,534	$400,846	1,117,450	$455,339
2011	881,867	$268,179	3,984,477	$1,195,098
Total	2,453,372	$1,243,649	5,840,148	$2,274,526
Year Avg.	490,674	$248,730	1,168,030	$454,905

Table CF-2: Commercial Catch and Value for Most Abundant and/or Valuable Taxa (2007 through 2011)

Year	Fish Block	Species	Pounds	Value	Gear Types
2007	**655**	Crab (all species)	22,036	$24,153	Trap, trawl
		Kellet's whelk	7,707	$5,634	Trap
		Sea cucumbers	6,730	$8,076	Trawl, diving
		Lobster	3,538	$40,505	Trap
		Spot prawn	3,511	$42,017	Trap, trawl
	656	Pacific bonito[1]	86,339	$25,902	Purse seine
		Crab (all species)	61,135	$73,024	Trap, trawl
		Urchins	3,000	$1,068	Diving
		Lobster	2,917	$32,100	Trap
2008	**655**	Hagfish	72,551	$73,258	Trap
		Sea cucumbers	16,512	$33,592	Trawl, diving
		Lobster	5,300	$58,630	Trap
		White seabass	3,492	$12,745	Drift/set gill net
	656	Pacific bonito[2]	266,991	$94,141	Purse seine
		Crab (all species)	84,723	$104,839	Trap
		Ridgeback prawn	18,774	$34,722	Trawl
		Urchins	5,096	$1,544	Diving
2009	**655**	Pacific bonito	89,452	$32,604	Purse seine, H&L[3]
		Sea cucumbers	36,211	$80,683	Trawl
		Hagfish	13,382	$13,382	Trap
		White seabass	7,593	$17,508	Drift/set gill net, H&L
		Lobster	3,808	$41,248	Trap
	656	Crab (all species)	106,865	$136,920	Trap
		Pacific bonito	67,570[4]	$23,650	Purse seine
		Ridgeback prawn	20,485	$39,009	Trawl
		Hagfish	5,419	$5,419	Trap
		Halibut	2,852	$12,300	Trawl, H&L
2010	**655**	Market squid	1,217,345	$304,336	Drum/purse seine
		Sea cucumbers	14,241	$26,974	Trawl
		Pacific sardine	10,326	$0[5]	Drum/purse seine
		Lobster	3,379	$56,750	Trap

	656	Market squid	978,517	$244,629	Drum/purse seine
		Crab (all species)	130,075	$168,371	Trap
		Lobster	21,471	$27,331	Trap
		Hagfish	4,928	$4,928	Trap
2011	**655**	Market squid	850,760	$166,745	Drum/purse seine
		Sea cucumber	23,023	$88,634	Trawl, diving
		Lobster	4,036	$68,932	Trap
	656	Market squid	3,820,988	$948,030	Drum/purse seine, lampara net
		Crab (all species)	156,626	$206,762	Trap
		Red urchins	2,736	$2,510	Diving

About 10 nautical miles (19 kilometers) of FB 655 and approximately 5 nautical miles (10 kilometers) of FB 656 would be traversed by project-related activities. The portion of FB 656 that could be impacted is the area along the cable route between platforms Harmony and Heritage, an area that receives minimal fishing pressure due to the extreme depths over 1,100 feet (335 meters) and the limited access to the area immediately around each platform. Each CDFG FB encompasses approximately 100 square nautical miles (1,900 square kilometers) except when one of the FB boundaries is the shoreline. Commercial fishing operations occur within the proposed project area throughout the year. Conflicts between fisheries and fishing and oil and gas activities on the California OCS can generally be separated into two categories: (1) potential effects on managed fish species and Essential Fish Habitat (see Section 4.8), and (2) space-use, or operational conflicts (areal preclusion) discussed below.

The following summarizes the commercial fishing activities that, based on CDFG FB data, have occurred during the last five years within the project region.

Purse Seining. As is shown in Table CF-2, the species targeted are primarily pelagic, such as anchovy, mackerel, squid and bonito. Because purse seiners follow schools of these pelagics , it is difficult, if not impossible, to predict how large or where the fleet will be at a given time. When working an area, the purse seine fleet is made up of a group of vessels. While searching, the vessels often move on erratic or zigzag courses, trying to spot schools visually, with the help of aircraft, or with onboard sonar. Although there are no "seasons" for most pelagic species (white seabass is an exception), the CDFG sets catch quotas. When quotas are filled, the fishery is closed for that year unless an extended quota is subsequently issued. Purse seining for pelagic species, particularly mackerel, bonito, squid, sardine and anchovy, could be expected throughout the area. The purse seine fishery contributed a substantial percentage of the total catch in both FBs during the most recent five years with market squid and Pacific bonito being the primary taxa (see Table CF-2).

Trawling. Trawlers in the Santa Barbara Channel target Pacific Ocean shrimp, spot and ridgeback prawn, sea cucumbers, rockfish, and various species of sole. They also fish seasonally in specified sections of State waters for halibut. This is a mobile fishery in which a single or double rig is towed behind the fishing vessel at slow speed, either in midwater or, more commonly in the Santa Barbara Channel, along the bottom. The trawler deploys the net(s) in areas where fish or shellfish are noted on the fathometer, or where trawling has been successful previously. Trawling occurs year-round in the Santa Barbara Channel at depths of 180 to 1,080 feet (55 to 330 meters) (Fusaro, 1986). Trawl catches from FB 655 predominantly consisted of

sea cucumbers; trawling targeted ridgeback prawns in FB 656 for the reporting period (see Table CF-2). Ridgeback prawns are fished within the proposed project area from October 1 through May 30 in water depths of 90 fathoms (fm) (165 meters) and shallower (Mike McCorkle, pers. com., 2002). The peak season is in the spring from late February to June. Sea cucumbers are trawled in the proposed project area between 60 and 90 fm (110 to 165 meters) in winter, and from 1 mile (<2 kilometers) offshore out to 40 fm (73 meters) in summer (Mike McCorkle, pers. com., 2002). The peak season is from June through September.

Drift Gillnetting. Due to restrictions within State waters, all drift gillnetting occurs in Federal waters. The target species are thresher and bonito shark, and swordfish. In the Santa Barbara Channel, drift gillnetting occurs for swordfish and thresher shark from August 15 through January 31 and for bonito shark year-round. The peak season is from October through December. During the summer months, some drift netting for white seabass and barracuda may occur in the offshore portion of the project area. One end of the net is attached to the fishing vessel, while the other is secured to a free-floating buoy marked with a flag, light, and radar reflector. The net also has floats on top and weights on the bottom that can be arranged to allow the net to be at or below the surface. The vessel and net drift together. When not deployed, the net is either stacked on the deck or rolled on a reel. During net deployment, the vessel is under way, and the buoy is set over the stern or side, pulling the net into the water. Rollers on the stern or side keep the net from snagging as it is payed out. The net and buoy are hauled in from the leeward side of the vessel. As the net comes aboard, the fish are removed from the net, which is then restacked or reeled up for the next set. For the most recent five years' commercial catch, drift nets targeted white seabass and were more commonly used in FB 655 (see Table CF-2).

Trap Fishing. Trap fishing for lobster, crab, and hagfish is a fixed gear operation. The crab and hagfish seasons are year-round, and the lobster season is from October to mid-March. Crab and lobster traps (pots) are baited and deployed in fishing grounds; hagfish are usually caught with a large PVC tube-like trap or with fish traps. The crab and lobster pots are commonly left to fish or soak for about three days (hagfish somewhat shorter periods), and then are retrieved. The fishing vessel pulls alongside the pot buoy(s) that are attached to lines and the traps, grapples the buoy on deck, feeds the line through a pinch-puller, and raises the pot from the sea floor. The catch is taken from the pot; it is rebaited and redeployed. Normal fishing practice dictates the movements of trap location: if the traps are fishing well, they are left where they are. If the traps are not catching much, they will usually be moved to a new location. In practice this means that groups, or strings, of gear will be moving from one location to another on an unpredictable time schedule dictated by crab and lobster population movements. It is therefore difficult to predict the location of any particular string of gear at a given time. Most full-time fishermen have at least 50 to70 pots, and many fishermen have several hundred pots arranged in strings of from 5 to 25 individual traps set along particular depth contours. From a practical standpoint in locating and avoiding a string(s) of pots, it is important to consider the effects of tide and current strength on the line and buoy, and the effects of wind and current on the buoy. During conditions of high tide, strong currents, or high winds, buoys may be below sea surface and invisible. Crab and lobster traps are required to have a release door so that any lost or unretrievable pots will not continue to fish indefinitely. Trap-caught crab and/or lobster contributed a substantial percentage of the total commercial catch from both project area FBs and the relatively per-pound price for lobster, makes it one of the major contributors to the total value of the commercial catch for the area (see Table CF-2).

1.6.2 Project Impact Assessment

The impact analysis for the commercial fisheries in this document adopts the following significance criteria. An impact from the proposed project is significant if it is likely to cause any of the following:

- Fishermen are precluded from 10 percent or more of the fishing grounds during the proposed project;
- 10 percent or more of a specific gear type is precluded from a fishing area for all or most of a fishing season; or
- A decrease in catchability of target species exceeds 10 percent of the average annual landing.

Cable Removal and Installation Impacts

As described in the OPSRB Project Description, the proposed project would involve the removal of approximately 12-18 miles (19-29 km) of out-of-service power cable and installation of 29 miles (47 km) of replacement cable in the general vicinity of the existing SYU facilities. The implementation of one of the contingency measures where additional cable in laid on the ocean bottom would not be expected to significantly impact commercial fishing operations. This section analyzes impacts to commercial fishing operations that would be expected to occur as a result of cable retrieval and installation. Impacts that would occur from the removal of the replacement cables (A2 or B2, F2 and G2) and the remaining cables A or B and C1 at the end of the SYU life are analyzed in the following section.

The potential operational conflicts associated with the proposed project include vessel traffic, project-associated obstructions due to anchoring, the power cables themselves, and any project-associated items lost overboard, and space-use conflicts. Due to access limitations around the platform and the proposed actions, no impacts to commercial fishing are expected from the on-platform modifications.

Vessel Traffic: As described in the OPSRB Project Description, ExxonMobil expects that 3-4 vessels would be involved in the cable retrieval and installation: a DP cable installation vessel, a support tug, an anchor handling vessel, and 1-2 dive vessels. Two to four support skiffs would also be deployed to support cable activities in the nearshore area during the project. The Phase 1 on-platform activities are expected to take 15 to 21 months to complete and were initiated in June 2013. Phase 2 activities are expected to take 8-12 months to complete and would be initiated in 2015.

Overall, the proposed project would be expected to result in a temporary, minimal increase in area vessel activity. Following the proposed activities, vessel traffic would be expected to return to current SYU baseline levels. Currently, three crew boats typically are in the SYU area at any time, and crew boats normally make 2-3 round trips per day between the SYU platforms and Ellwood Pier. No additional crew boat trips are anticipated for the OPSRB project. In addition, one supply boat typically is in the field at any time and supply boats normally make 1 trip every other day between Port Hueneme and the SYU platforms. No significant increase in additional supply boat trips are anticipated for the OPSRB project. With this minimal increase in vessel

traffic, the chances of project vessel/fishing vessel interaction are expected to increase at a less than significant level.

The Santa Barbara Channel Oil Service Vessel Traffic Corridor Program is intended to minimize interactions between oil industry operations and commercial fishing operations. It was developed cooperatively between the two industries through the Joint Oil/Fisheries Liaison Office (JOFLO). All vessels associated with the proposed project would use the vessel traffic corridors in transit to and from onshore loading sites. In addition to providing transit corridors in and out of area ports, the program routes support traffic within the Channel seaward of an outer boundary line. East of Gaviota, the 30-fathom (55 meter) line defines the outer boundary. Inside 30 fathoms (55 meters), where corridors have not been established specifically for the project area, the permitting agencies are expected to specify that the applicant establish temporary vessel traffic corridors reviewed and approved by JOFLO for the duration of the project. In addition, the permitting agencies are expected to specify that the applicant include training on vessel traffic corridors in all pre-construction meetings with project contractors and their personnel. This method of reducing vessel conflicts has been shown to be effective during past OCS activities. Although minimal effects are expected, with incorporation of the vessel traffic corridors, the impact to commercial fishing operations attributed to increased vessel traffic associated with the proposed project would be expected to be negligible.

Project-Associated Obstructions: The construction activities associated with the proposed project have the potential to generate seafloor obstructions that could impact commercial fishing, particularly trawling, in the project area. These obstructions could result from vessel anchoring, the power cables themselves, and project-associated items lost overboard.

Anchoring: While the majority of the work would be performed using a DP vessel, thereby avoiding use of anchors, anchoring of a diver support vessel would be required in the nearshore conduit terminus area.. Anchor scars caused by dragging the anchors as they are being set, may cause short to long-term obstacles to commercial trawling depending upon the type of seafloor sediment where the anchors are placed (Centaur Associates, Inc., 1984). Anchor scars would not impact trawl fishermen in the nearshore conduit terminus area since trawling is prohibited within one mile (1.6 kilometers) of shore in this area and except for specified areas for halibut and sea cucumbers, for all commercial trawling. Thus, only the anchoring operations in the nearshore area could be of concern.

Power Cables and Lost Debris. The applicant proposes to lay approximately 29 miles (47 km) of replacement power cable from the Las Flores Canyon Plant to Platform Harmony and from Platform Harmony to Platform Heritage. The project also proposes to retrieve 12-18 miles (19-29 km) of out-of-service cables from the nearshore conduit to the shelf break and adjacent to the platforms.

Commercial fishing gear damage and loss problems attributed to obstructions and lost debris related to offshore California oil and gas activities have been identified since at least 1966 (Richards, 1990). Since 1983, JOFLO has served as an information clearinghouse with primary responsibility for inter-industry communications. A search of the JOFLO inter-industry interactions records on the proposed project area has found no incident in the vicinity of either the existing or proposed power cable route that could be attributed to the existing cables. The

power cables are approximately 7 inches (18 cm) in diameter, and weigh approximately 30-40 lbs/feet (50-60 kg/m). Due to the weight and small diameter of the power cables, they are partially to completely self-buried and thus pose a low risk of snagging or entangling a trawl net. No adverse impact to commercial fishing operations due to the replacement or the existing power cables in the proposed area would be expected. In the unlikely event that commercial fishing conflicts attributable to the replacement power cables in the SYU area develop in the future, the permitting agencies could require additional mitigations that may include physical modification of identified problem areas, removal of the abandoned cable, or offsite, out-of-kind measures.

The applicant proposes to require its contractors on the cable installation and support vessels for the project to maintain logs that identify the date, time, location, depth, and description of all items lost overboard. To the extent reasonable and feasible, the applicant proposes to require its contractors to recover all items lost overboard during activities associated with the project. No adverse impact to commercial fishing operations due to project-related lost debris in the proposed project area would be expected.

Space-Use Conflicts. As previously discussed, 3-4 vessels (a DP cable installation vessel, a support tug and dive vessels) and several support skiffs would be involved in the Phase 2 offshore activities over a 1-2 month period.

The DP cable installation vessel, support tug, dive vessels and support skiffs would be onsite an estimated 1-2 months to retrieve the out-of-service cables and install the replacement cables. During deployment and retrieval operations, the cable installation vessel would move slowly and will create a minor obstruction to commercial fishing activities within an estimated 0.25 mile (0.4 kilometer) radius centered on the vessel. The following sections describe the potential impacts to those commercial gear types primarily related to maneuverability while nets are deployed, and analyzes the impacts associated with the proposed project.

Trawl: The trawl fishery is a mobile fishery. But with nets deployed, a trawl vessel is not readily maneuverable. The net is on the bottom and in fairly deep water can be up to or even exceed one mile (1.6 kilometers) behind the vessel. Trawlers often work along the edges of steep drop-off slopes; to turn into deeper water would force the net to drop off these slopes. This causes loss of fishing time since the net has to be picked up and reset. Similarly, seafloor obstructions (i.e. rocky outcrops, wrecks, or other debris) are usually pre-located by the trawl fishers so they can be avoided. Knowledge of the location of these snags also limits the maneuverability of the trawler when towing a net(s). Turning into such a snag may mean loss or damage to the net(s), and potential hazard to the vessel itself if the hang is significant and/or weather/sea conditions are unfavorable. Since turning into such obstructions would be hazardous, most trawlers would have to stop towing and pull their gear rather than turn.

The ridgeback prawn and sea cucumber trawl fisheries are both active in the proposed project area. During cable retrieval and installation operations, the cable installation vessel would move very slowly, and experienced trawlers would likely be able to avoid conflicts. Considering the limited area of effect (i.e. no anchors will be deployed), the impact to commercial trawlers would be expected to be insignificant. Proposed mitigation measures would further minimize potential impacts.

Drift Gillnet: Drift gillnets may be a mile (1.6 km) or more in length and the vessels to which the net is attached has restricted ability to maneuver. The "free" end of the gillnet usually has a radar reflector/lighted buoy attached to it, but may not be immediately obvious because it is so far from the fishing vessel. Since drift gillnetting is usually done at night, and often during the darker phases of the moon, it is difficult for other vessels to be aware of the configuration of drift gillnet operations. A drift gillnet up to 6,000 feet (2000 meters) long and 60 to 100 feet (20 to 30 meters) deep can be fished anywhere from right at the surface to 30 to 40 feet (10 to 15 meters) below the surface. Since drift gillnetters drift with the current and wind, this fishery would be precluded from an increasing large area up-current of the cable installation vessel. The preclusion zone would be a triangular-shaped area up-current, with the apex at the cable installation vessel. Since gillnets are restricted from state waters and most drift net fishing occurs in mid- to south Channel, only a relatively small area compared to the available area between the 3-mile state seaward boundary and the platforms would potentially be affected. Drift net fishers would be expected to routinely avoid fixed objects such as platforms, thus the project area would be expected to be within the area normally avoided. Given this very small area of affect to the drift gillnet fishery, no impact to this fishery would be expected from the proposed project.

Purse Seine: By necessity, the purse seine fleet is very mobile, and usually consists of a group of vessels. While searching, the vessels often move on erratic or zig-zag courses, trying to spot schools of fish visually or with onboard sonar; aerial observations are also used to locate near-surface schools of target fish. When a school of fish is spotted, the vessel maneuvers into position and launches the stern-mounted skiff, which drags the seine around the school of fish and back to the mother vessel. The purse line of the seine is rapidly winched-in to close the bottom of the net, and the entire net is brought in with a power block and winch. A successful set and haul usually takes from 30 to 90 minutes, depending on the size of the fish school, weather, and other factors. With nets deployed, purse seiners are essentially dead in the water and drift with the current. Purse seining would thus be precluded from a triangle-shaped area up-current of the cable installation vessel. Due to the highly mobile nature of this fishery and the limited area of the proposed project, only minor inconveniences would be expected to occur during the cable installation phase of the project.

Trap: Both crab and lobster traps can be expected in the nearshore (up to approximately 200 feet [61 meters), however hagfish traps could be located in substantially deeper water within the project area. A dive vessel with a two to four anchor spread would be onsite at the conduit terminus area for approximately 30-45 days. Assuming a 6 to 1 anchor scope in 25 feet (8 meters) water depth at the conduit terminus, all traps would be precluded from within the anchor spread radius of approximately 165 feet (50 meters) around the vessels for the time period. Trap fishing for crab and lobster would also be precluded from an area approximately 0.25 mile (0.44 kilometer) down current of the work vessel for several days while the replacement cables are floated in a controlled bight to be pulled through the conduit to shore. Due to the short duration (estimated to be 30-45 days) and the limited area of the proposed project, only minor inconveniences to the trap fishery would occur. Hagfish trap fishing, if the fishery, which is based on international buyers' needs, is ongoing, would be affected by a smaller area than the crab/lobster fishery as it is located in deeper water where vessel anchoring is not proposed. The impact to the hagfish fishery is, therefore, also expected to be minor. The proposed mitigation measures would further minimize any impact.

Cable Removal Impacts at End of SYU Life
This section analyses the impacts to commercial fishing operations that would be expected to occur to as a result of removing all remaining cables on the OCS at the end of SYU life.

The applicant currently estimates that decommissioning of its SYU facilities will occur sometime in the future. Deferral of removal of the cable segments on the OCS until that time would mean that this activity would occur as a small part of a large-scale project, which would involve the dismantlement and removal of three offshore platforms and their associated pipelines and power cables. It is estimated that 2-3 years would be required to remove all SYU facilities. Removal of the cable segments on the OCS would take an estimated 2-3 weeks. This project would be subjected to a detailed NEPA and CEQA review in the future. Expected impacts would be the same as those described in the previous section.

1.6.3 Mitigation Measures

The applicant has proposed to implement the following mitigation measures to further reduce the potential for impacts to commercial fishing operations.

CF-1: ExxonMobil shall require all project-related vessels utilize the vessel traffic corridors established by the Joint Oil/Fisheries Committee.
Expected Enforcement Agency: BSEE, SLC

CF-2: ExxonMobil shall keep the JOFLO in Santa Barbara informed of construction activities as they progress.
Expected Enforcement Agency: BSEE, SLC

CF-3: ExxonMobil shall require all offshore personnel to view the Wildlife and Fisheries Training video and receive wildlife and fisheries training.
Expected Enforcement Agency: BSEE, SLC

CF-4: ExxonMobil shall file a timely advisory with the local U.S. Coast Guard District office, with a copy to the Long Beach Office of the SLC, for publication in the Local Notice to Mariners and shall place a similar notification in all Santa Barbara Channel ports that support commercial fishing vessels at least 15 days prior to the commencement of construction activities.
Expected Enforcement Agency: BSEE, SLC

CF-5: ExxonMobil shall continue to consult with JOFLO and commercial fishermen, as appropriate, during the planning stages and construction to identify and mitigate any unanticipated impacts regarding the OPSRB project. If the JOFLO determines that conflicts with commercial fishing operations in the SYU area develop during this project, ExxonMobil shall make all reasonable efforts to satisfactorily resolve any issues with affected fishermen. Possible resolutions may include physical modification of identified problem areas on the replacement cables, the establishment of temporary preclusion zones, or off-site, out-of-kind, measures. Evidence of consultations shall be provided to the BSEE, SLC, and SBC.
Expected Enforcement Agency: BSEE, SLC, SBC.

CF-6: ExxonMobil shall review design concepts and installation procedures with JOFLO to minimize impacts to commercial fishing to the maximum extent possible.
Expected Enforcement Agency: BSEE, SLC, SBC.

CF-7: ExxonMobil shall require the contractor to recover any fan channel support, if used, prior to demobilization in the event they escape.
Expected Enforcement Agency: BSEE.

CF-8: ExxonMobil shall require contractors, to the extent reasonable and feasible, to recover all items lost overboard during activities associated with the proposed project. Logs shall be maintained on the cable installation and support vessels that identify the date, time, location, depth, and description of all items lost overboard.
Expected Enforcement Agency: BSEE, SLC.

CF-9: Prior to initiating work there, ExxonMobil shall require the contractor to scout the nearshore conduit terminus area to determine the presence of any traps that could interfere with the cable operations. If any traps are found, the affected fishermen shall be contacted through JOFLO and requested to relocate the traps for the project duration. If the traps have not been moved by the time project activities are scheduled to begin, any traps that could interfere with the activities shall be relocated and then returned to the original site at the end of the work.
Expected Enforcement Agency: BSEE, SLC.

CF-10: Inside 30 fathoms (55 meters), where vessel corridors have not been established specifically for the proposed project area, ExxonMobil shall establish temporary vessel traffic corridors reviewed and approved by JOFLO for the duration of the project.
Expected Enforcement Agency: SLC, BSEE.

CF-11: ExxonMobil shall include training on vessel traffic corridors in all pre-construction meetings with project contractors and their personnel.
Expected Enforcement Agency: BSEE, SLC, SBC.

In addition to these mitigation measures, please refer to the following mitigation measures from other resource sections: BE-1, BE-2 and BE-4.

With institution of the proposed mitigation measures, the residual impacts would be insignificant.

Conclusions – Proposed Project
According to the significance criteria established for this document, an impact from the proposed project is significant if it is likely that fishermen would be precluded from 10 percent or more of the fishing grounds during the proposed project, that 10 percent or more of a type of fishermen are precluded from a fishing area for all or most of a fishing season, or that a decrease in catchability of target species exceeds 10 percent of the average annual landing. Inside 30 fathoms (55 meters), where corridors have not been established specifically for the proposed project area, the permitting agencies would specify that ExxonMobil establish temporary vessel traffic corridors that would be reviewed and approved by JOFLO. In addition, the permitting agencies would specify that ExxonMobil include training on vessel traffic corridors in all pre-construction meetings with project contractors and their personnel. Thus, the impact to

commercial fishing operations attributable to increased vessel traffic associated with the proposed project would be expected to be insignificant. No adverse impacts on commercial fishing operations would be expected from the power cables themselves. No adverse impacts on commercial fishing operations would be expected from project-related debris. Considering the limited area of potential effect (a pre-specified zone around the DP vessel), the impact to commercial trawlers would be expected to be insignificant. Given this very small area of potential effects to the drift gillnet fishery, no impact to this fishery would be expected from the proposed project. Due to the highly mobile nature of the driftnet fishery and the limited area of the proposed project, only insignificant inconveniences would be expected to occur during the cable installation phase of the proposed project. Due to the limited area of the proposed project, only insignificant preclusion of the anchoring area around the conduit mouth for the crab/lobster trap fishery would be expected to occur. Similar, less than significant effects from the vessel anchoring and cable installation to the deeper water hagfish trap fishing are also expected. Phase 1 activities are not expected to have any negative impacts to the commercial fishing activities. Implementation of the proposed mitigation measures would further minimize conflicts with commercial fishing. Overall, the impacts on commercial fishing operations from the proposed project would be expected to be insignificant and mitigated to the maximum extent feasible.

1.6.4 Cumulative Impacts

The draft EIS for Delineation Drilling Activities in Federal waters Offshore Santa Barbara County, California (MMS, 2001) provides a detailed discussion of cumulative impacts on the commercial fishing industry of southern California. The EIS identifies several activities that contribute to space-use and preclusion conflicts with commercial fishing operations including: on-going and proposed oil and gas activities in Federal and State waters; tankering and shipping; and commercial and recreational fishing. The EIS also identifies several activities that damage the fish resource including: dredging and discharge of dredged materials; oil and gas development; aquaculture; coastal development and non-point source pollution; agricultural run-off, and; commercial and recreational overfishing.

The NMFS (1998a,b) has identified several fishing and non-fishing activities that may cause adverse impacts to Essential Fish Habitat (EFH) along the Pacific Coast and within the SYU. These include dredging and discharge of dredged material, water intake structures, aquaculture, wastewater discharge, oil and hazardous waste spills, coastal development, agricultural runoff, commercial marine resource harvesting, and commercial fishing. Most of these activities occur throughout the California coastal habitat and all of these activities and impacting agents exist in the southern California coastal zone within the Santa Barbara Channel. As a result, marine water quality has been impacted by municipal, industrial, and agricultural waste discharges and runoff in much of the Southern California Bight (MMS, 1992).

Several fish stocks in the marine waters off California, and within the Santa Barbara Channel, are depressed resulting in management decisions to restrict some gear types, place fish size and bag limits, and close fisheries. It is difficult to apportion the reasons for a fishery's demise among overfishing, habitat degradation, pollution, and natural variability of the population. Several rockfish species that occur in the Santa Barbara Channel were declared overfished for the entire west coast of the U.S. (Leet et al., 2001). Recent predictions of population trends indicate that rockfish populations may take many decades to recover to sustainable levels. The

establishment of state Marine Protected Areas is one recent method that is being used in an attempt to rejuvenate the rockfish populations.

Given the relatively small area of potential effects and with the proposed mitigation measures, no significant impacts to commercial fishing operations from the proposed operations would be expected. In conclusion, the project is not expected to add significantly to cumulative impacts on commercial fishing operations in the Santa Barbara Channel.

1.7 Marine Mammals

1.7.1 Environmental and Regulatory Setting

Marine mammals in the Santa Barbara Channel have been described in detail in previous studies and environmental documents (e.g., Bonnell et al., 1981, 1983; Bonnell and Dailey, 1993; Dohl et al., 1981, 1983; ADL, 1984a, 1986; SAI, 1984a; Barlow, 1995; Barlow et al., 1995, 1997, 2001; Barlow and Gerrodette, 1996; Koski et al., 1998; FWS, 2000; DeLong and Melin, 2000; Forney et al., 2000; MMS, 1988, 1991, 1994, 1995, 2000, 2001; Stewart and Yochem, 2000). At least 29 species of marine mammals inhabit or visit California waters. These include five species of pinnipeds (seals and sea lions), 23 species of cetaceans (whales, porpoises, and dolphins), and the southern sea otter (Allen, et al., 2011). Pinnipeds breed on the Channel Islands and on offshore rocks and isolated beaches along the mainland coast; thousands also move through the area during their annual migrations. Cetaceans, including a number of endangered species, use area waters as year-round habitat and calving grounds, important seasonal foraging grounds, or annual migration pathways. The sea otter, a year-round resident of the mainland coast north of Point Conception, is appearing in increasing numbers in the western Channel and around the northern Channel Islands (FWS, 2000).

In the U.S., two laws currently regulate human activities where marine mammals might be adversely affected. These include the Marine Mammal Protection Act of 1972, which prohibits the intentional taking, import, or export of any marine mammal without a permit, and the Endangered Species Act of 1973, which extends similar protection to species listed as threatened or endangered. The threatened or endangered marine mammal species found in southern California waters include six whales (blue, humpback, fin, sei, right, and sperm whales), one pinniped (Guadalupe fur seal), and the southern sea otter.

Two of the endangered whale species, the blue whale (*Balaenoptera musculus*) and humpback whale (*Megaptera novaeangliae*), usually feed on krill in the western Santa Barbara Channel and southern Santa Maria Basin during summer and fall (Calambokidis et al., 1990; Calambokidis, 1995; Reeves et al., 1998; Mate et al., 1999; Forney et al., 2000; Barlow et al., 2001). Although also present in the Channel during summer, fin whales generally are distributed somewhat farther offshore and south of the northern Channel Island chain (Leatherwood et al., 1987; Bonnell and Dailey, 1993). The other two endangered baleen whales, sei and northern right whales, are rare in California waters (Barlow et al., 1997).

Marine mammal observers onboard the Cable Vessel (CV) *Giulio Verne* during the 15 day October-November 2003 installation of the C-1 power cable recorded a total of 3,069 individuals representing five species: California sea lion, long-beaked common dolphin, Pacific whitesided

dolphin, Dall's porpoise, and Minke whale. Two sightings of unidentified whales were also recorded during that period (Marine Mammal Consulting Group [MMCG], 2003).

Similar marine mammal observations were recorded during geophysical surveys along the SYU pipeline/power cable corridors (Padre Associates, Inc. 2011b, 2012b). During the April and September observation periods, 1,712 individuals representing seven taxa were recorded: common dolphin, California sea lion, California gray whale, bottlenose dolphin, killer whale, Pacific harbor seal, and southern sea otter. Twenty-five unidentified dolphins were also recorded (Padre Associates, Inc. 2011b, 2012b).

Sperm whales (*Physeter macrocephalus*), also an endangered species, are present offshore California year-round, with peak abundance from April to mid-June and again from late August through November (Dohl et al., 1981, 1983; Gosho et al., 1984; Barlow et al., 1997, 2001). They are primarily a pelagic species and are generally found offshore in waters with depths of greater than 3,200 feet (1,000 meters) (Bonnell and Dailey, 1993).

The two threatened pinniped species, Steller sea lions *(Eumetopias jubatus)* and Guadalupe fur seals *(Arctocephalus townsendi*), do not breed in the area and presently are uncommon in southern California waters (Stewart et al., 1987b; Bonnell and Dailey, 1993; DeLong and Melin, 2000).

Southern sea otters (*Enhydra lutris nereis*) now range in nearshore waters from San Mateo County in the north to Santa Barbara County in the south (FWS, 2012). Since 1998, 100-150 sea otters have moved south and east of Point Conception along the Channel in the early spring, with most returning to waters north of the Point by mid-summer (FWS, 2000). One individual was recorded in the nearshore segment of the SYU during the 2011 geophysical survey (Padre Associates, Inc. 2011b).

Two species of pinnipeds, California sea lions (*Zalophus californianus*) and harbor seals (*Phoca vitulina*), commonly occur in the Santa Barbara Channel and nearshore waters of the Santa Maria Basin. San Miguel Island is the major southern California rookery for California sea lions, the most frequently encountered marine mammals in southern California waters (Bonnell and Dailey, 1993; Koski et al., 1998; Forney et al., 2000; Environmental Consulting, Inc., 2001). Sea lions haul out on the lower decks and structures of OCS platforms and on associated mooring buoys. MMCG (2003) reported 424 sea lions but no harbor seals during the C-1 cable project observation period. Padre Associates, Inc. (2011b, 2012b) recorded 458 sea lions and harbor seals during the September 2011 and April 2012 observations.

Harbor seals haul out on nearshore rocks and beaches along the mainland coast and on the northern Channel Islands; major mainland haul-out sites near the project area are located near the Carpinteria Pier, Dos Pueblos, Ellwood Pier, Point Conception, and Rocky Point (Hanan et al., 1992). Individual harbor seals are frequently sighted in waters near the SY U facilities (MMS, unpubl. data).

Northern elephant seals (*Mirounga angustirostris*) and northern fur seals (*Callorhinus ursinus*) also breed on San Miguel Island, but are uncommon in project area waters (Bonnell and Dailey, 1993; Environmental Consulting, Inc., 2001). Elephant seals range widely at sea and spend

much of their time underwater (Le Boeuf et al., 1989, 2000; DeLong et al., 1992). Fur seals forage in deeper waters beyond the continental shelf, generally 20 nautical miles (40 kilometers) or more from shore (Bonnell et al., 1983; Bonnell and Dailey, 1993).

The small odontocetes, or toothed whales, most often seen in the project area are common dolphins (*Delphinus capensis* and *D. delphis*), Dall's porpoise (*Phocoenoides dalli*), Risso's dolphin (*Grampus griseus*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), and bottlenose dolphin (*Tursiops truncatus*) (Bonnell and Daily, 1993; Barlow et al., 1997; MMS, unpubl. data). Common dolphins, the most abundant cetaceans off California, move through area waters in groups of up to several thousand animals. Bottlenose dolphins are most commonly encountered along the shoreline. Common dolphins (all identified as the long-beaked species *C. capensis*) were most abundant species reported in MMCG (2003). Likewise, Padre Associates, Inc. (2011b, 2012b) reported common dolphin as the most abundant (1,211 individuals) but did not separate the two species. Dall's porpoise (22 individuals) and Pacific white-sided dolphins (310 individuals) were also recorded by MMCG (2003). Six bottlenose dolphin and five killer whales were reported by Padre Associates, Inc. 2011b.

The gray whale (*Eschrichtius robustus*) migrates through southern California waters twice a year on its way between Mexican breeding lagoons and feeding grounds in the Bering Sea. The southbound migration of gray whales through the Southern California Bight begins in December and lasts through February; the northbound migration is more prolonged, lasting from February through May with a peak in March (Leatherwood, 1974; Bonnell and Dailey, 1993; Rugh et al., 1999). The northward migration occurs in two "waves" (Dohl et al., 1981; Herzing and Mate, 1984; Poole, 1984). The first, composed mainly of whales other than cows with calves, begins moving northward in February (Braham, 1984). The second, cow/calf phase of the spring migration generally peaks 7 to 9 weeks after the peak of the first (Herzing and Mate, 1984; Poole, 1984). Although individual animals may be sighted throughout the year, gray whales are generally absent from southern California waters from August through November. Padre Associates Inc. (2012b) reported observing two gray whales during the month of April while surveying the SYU cable corridor.

Minke whales (*Balaenoptera acutorostrata*), the smallest of the baleen whales, occur year-round in southern California waters (Dohl et al., 1983; Barlow et al., 1997; Forney et al., 2000), where they are often sighted near the northern Channel Islands (Leatherwood et al., 1987; Bonnell and Dailey, 1993; Koski et al., 1998; Environmental Consulting, Inc., 2001). One Minke whale was reported in MMCG (2003).

1.7.2 Project Impact Assessment

The impact analysis for the marine biological resources in this document adopts significance criteria developed for all biological resources, including threatened and endangered species. An impact from the proposed project is significant if it is likely to cause any of the following:

- A measurable change in population abundance and/or species composition beyond natural variability. For threatened and endangered species, this includes any change in population that is likely to hinder the recovery of a species.
- Displacement of a major part of the population from either feeding or breeding areas or from migration routes for a biologically important length of time.

- A substantial loss or irreversible modification of habitat in several localized areas or in 10 percent of the habitat in the affected area.
- Disturbance resulting in biologically important effects on behavior patterns.

For marine mammals (including threatened and endangered species), the phrase "biologically important length of time" is assumed to mean one season or more. Depending on the species and the circumstances, a season could be a breeding season (e.g., California sea lion breeding season), feeding or foraging season (e.g., blue whale feeding period off southern California), or a migratory period (e.g., gray whale migration).

In addition to the aforementioned significance criteria, SBC uses the following additional criterion for determining significance under CEQA:

- Adverse change to or the reduction in a population or habitat used by a State or Federally listed endangered, threatened, regulated or sensitive species. Any "take" of a listed species shall be considered significant.

Cable Installation and Retrieval Impacts
As described in the OPSRB Project Description, the proposed project would involve platform modifications, and the retrieval and installation of various power cables between the shoreline and existing platforms and between platforms within the SYU. This section discusses the potential impacts to marine mammals that could result from the proposed actions and from activities associated with the "end of SYU life".

The two sources of marine mammal impacts are underwater noise generated by vessels and other cable installation and retrieval activities and the presence of project-related vessels which could increase the risk of entanglement in an anchor line or in the deployed cable, or of a collision between a marine mammal and a vessel.

Noise Disturbance: As described in Section 1.19, three to four vessels would be involved in the cable installation: a DP cable installation vessel, a support tug, and one or two dive support vessels. Several support skiffs would also be deployed in the nearshore area during the project. The offshore activities associated with the Phase 2 cable installation and retrieval activities of the proposed project would be expected to occur over a 1-2 month period. Phase 2 is scheduled to take place sometime in 2015.

Overall, the proposed project would be expected to result in a minor increase in area vessel activity. Three crew boats typically are in the SYU area at any time, and crew boats normally make 2-3 round trips per day between the SYU platforms and Ellwood Pier. ExxonMobil estimates that there will be no need for additional crew boat trips during the OPSRB project period.

In addition, one supply boat typically is in the field at any time and supply boats normally make a trip every other day between the SYU platforms and Port Hueneme. ExxonMobil estimates that there will be no need for additional supply boat trips during the OPSRB project period.

Available information on the potential impact of noise and other OCS-related disturbances on marine mammals was reviewed by Hill (1978); Geraci and St. Aubin (1980, 1985); Terhune

(1981); Gales (1982); Malme et al. (1983, 1984, 1989); Richardson and Malme (1993); and Richardson et al. (1991, 1995). Vessels are the major contributors to overall background noise in the sea (Richardson et al., 1995). Sound levels and frequency characteristics are roughly related to ship size and speed. The dominant sound source is propeller cavitation, although propeller "singing," propulsion machinery, and other sources (auxiliary machinery, flow noise, wake bubbles) also contribute. Vessel noise is a combination of narrowband tones at specific frequencies and broadband noise. For vessels the approximate size of crew and supply boats, tones dominate up to about 50 Hz. Broadband components may extend up to 100 kHz, but they peak much lower, at between 50 and 150 Hz. These sounds are within the frequency range of sounds produced and known or assumed to be heard by marine mammals, with highest levels concentrated at the low frequencies that are assumed to be most audible to large baleen whales, such as the gray whale.

The source levels and frequency ranges of sounds produced by cable- and pipe-laying vessels have apparently not been measured directly. However, diesel-powered vessels of the approximate size of the lay vessel can be expected to generate sounds at broadband source levels above 180 dB, with most of the energy below 200 Hz (Richardson et al., 1995) at the source. The use of thrusters to dynamically position the cable installation vessel would not be expected to change the overall noise level, because the thrusters are operated from the central engines, which operate continuously throughout the laying process.

Richardson et al. (1995) also gives estimated source levels of 156 dB for a 53-foot (16-meter) long crew boat (with a 90-Hz dominant tone) and 159 dB for a 112-foot (34-meter) long twin diesel (630 Hz, 1/3 octave). Broadband source levels for small, supply boat-sized ships 180 to 179 feet (55 to 85 meters) in length are between 170 and 180 dB. Most of the sound energy produced by vessels of this size is at frequencies below 500 Hz. Many of the larger commercial fishing vessels that operate off southern California fall into this class. Currently, NMFS uses 160 dB re 1 μPa at received level for impulse noises as the onset of behavioral harassment for marine mammals that are under its jurisdiction.

In general, seals often show considerable tolerance of vessels. Sea lions, in particular, are known to tolerate close and frequent approaches by boats (Richardson et al., 1995).

Although sea otters often allow close approaches by boats, they sometimes avoid heavily disturbed areas (Richardson et al., 1995). Garshelis and Garshelis (1984) reported that sea otters in southern Alaska tend to avoid areas with frequent boat traffic, but will reoccupy those areas in seasons with less traffic.

Odontocetes, or toothed whales, also often tolerate vessel traffic, but may react at long distances if confined (e.g., in shallow water) or previously harassed (Richardson et al., 1995). Depending on the circumstances, reactions may vary greatly, even within species. Although the avoidance of vessels by odontocetes has been demonstrated to result in temporary displacement, there is no evidence that long-term or permanent abandonment of areas has occurred. Sperm whales may react to the approach of vessels with course changes and shallow dives (Reeves, 1992), and startle reactions have been observed (Whitehead et al., 1990; Richardson et al., 1995).

As summarized in Richardson et al. (1995), there have been specific studies of reactions to vessels by several species of baleen whales, including gray (e.g., Wyrick, 1954; Dahlheim et al., 1984; Jones and Swartz, 1984), humpback (e.g., Bauer and Herman, 1986; Watkins, 1986; Baker and Herman, 1989), bowhead (e.g., Richardson and Malme, 1993), and right whales (e.g., Robinson, 1979; Payne et al., 1983). There is limited information on other species.

Low-level sounds from distant or stationary vessels often seem to be ignored by baleen whales (Richardson et al., 1995). The level of avoidance exhibited appears related to the speed and direction of the approaching vessel. Observed reactions range from slow and inconspicuous avoidance maneuvers to instantaneous and rapid evasive movements. Baleen whales have been observed to travel several kilometers from their original position in response to a straight-line pass by a vessel (Richardson et al., 1995).

Few quantitative data are available on the effects of dredging or trenching, and marine construction noise on marine mammals (Richardson et al., 1995). In two instances, migrating gray whales passing within less than 3 to 4 nautical miles (< 5 to < 8 kilometers) of a platform construction site in the Santa Barbara Channel were not observed to react to pile-driving activities (Dames and Moore, 1990). Observations from studies in the Arctic indicate that white whales (belugas) and bowheads may tolerate considerable dredge noise, but are more sensitive to moving tug-dredge combinations than to stationary dredges (Malme et al., 1989).

During the Exxon offshore pipelines and power cables project in 1991/1992, a Marine Mammal Monitoring Program was conducted by biologists from and under contract to the Santa Barbara Museum of Natural History (SBMNH, 1992). The monitoring program was conducted between December 1991 and March 1992, during the gray whale migration. Although no entanglement, physical contact, or overt startle reactions were observed during the monitoring study, gray whales were observed to alter course in apparent reaction to construction activities (SBMNH, 1992). Animals moved through the project area throughout the project period, and there was no evidence that the construction activities interfered with the gray whale migration.

Installation of power Cable C-1 was completed over a 15-day period in late October to early November 2003. Onboard marine mammal observers recorded all marine mammals that were visible throughout the cable removal and installation. As reported in MMCG (2003) no large whales approached the DP cable lay vessel closer than 1 nautical mile (<2 kilometers) and no noise-related effects were recorded. Padre Associates, Inc. (2011b, 2012b) reported that with institution of mitigations prescribed in the project-specific Marine Wildlife Contingency Plan, no negative effects from noise generated by the geophysical equipment and survey vessels were observed.

Although it is possible that cetaceans, including gray whales, could respond to noise produced by the cable installation vessel and associated support vessels with short-term changes in swimming speed, increased intervals between blows, and small deflections in course, and that they would resume normal course and speed after passing the source of the sound, recent observations suggest it unlikely. The temporary effects are possible during cable-laying operations but would not be expected to have a significant impact on marine mammals in the project area.

Entanglement/Collision: Proposed equipment and vessel activity in the project area also increases the probability that a marine mammal might become entangled in an anchor line and drown or that a boat might hit an animal. Mooring lines and ROV support lines may also present some risk of entanglement. However, there have been no documented cases of marine mammal entanglement in anchor or mooring lines during operations on the Pacific OCS. The MMCG (2003) reports that no whales approached the cable lay vessel closer than 1 nautical mile (<2 kilometers) and no entanglement of non-cetacean taxa were recorded.

The DP installation vessel would not anchor within the project area except for an emergency, although dive support vessels would anchor during operations in the nearshore area adjacent to the conduit terminus, and would utilize pre-positioned anchor buoys. Given the limited scope of this anchoring activity in time and space and the small associated risk, no impacts would be expected from anchor-line entanglement.

Based on experiences in southern California, accidental collisions between cetaceans and support vessel traffic are unlikely events. Although large cetaceans have been struck by freighters or tankers, and sometimes by small recreational boats (Barlow et al., 1995), no such incidents have been reported with crew or supply boats off California (MMS, unpubl. data).

Cable installation vessels move very slowly during cable deployment operations and are even less likely to present a collision risk to large cetaceans. Only one possible incident of this type has been reported- in January 2001, an injured gray whale calf was sighted in the vicinity of a fiber-optic cable-laying operation off Morro Bay (Burton and Harvey, 2001). While the cause of its injuries could not be ascertained, the animal was observed swimming within a few meters of the DP cable-lay vessel.

Pinnipeds are very nimble and considered very unlikely to be struck by vessels. The same is true for southern sea otters. However, the single documented instance of a collision between a marine mammal and a support vessel involved a pinniped- an adult male elephant seal struck and presumably killed by a supply vessel in OCS waters in the Santa Barbara Channel in June 1999.

In their 1984 Biological Opinion on the plan for proposed oil and gas development and production activities in the SYU, the National Marine Fisheries Service (NMFS) concluded that the probability of a collision between vessels and marine mammals was so low that no significant impacts on mammal populations were expected (SAI, 1984a). Since the only large vessel involved with this project will be the cable installation vessel itself, the risk of vessel collision with large cetaceans is expected to be very small. The risk of vessel collision is further reduced by the fact that, with the exception of mobilization/demobilization activities, the cable installation vessel would be moving extremely slowly as the cable is being retrieved or deployed.

Actions specified in the project-specific Marine Wildlife Contingency Plans for the 2003 C-1 cable installation and the plans for the 2011 and 2012 marine geophysical surveys included slowing vessel speed, altering direction of travel, and not crossing the path of whales. No vessel/mammal interactions were recorded by onboard observers during either of those projects (MMCG, 2003, Padre Associates, Inc. 2011b, 2012b).

If the cable retrieval and installation activities occur outside of the gray whale migration period (approximately December to June), such interactions would be considered unlikely. Other large whale species, such as humpback and blue whales, do occur in the Santa Barbara Channel, but are considered uncommon in the project area (MMS, 1997, 2000; Koski et al., 1998; Environmental Consulting, Inc., 2001). No observations of those species were reported in MMCG (2003) or in Padre Associates, Inc. (2011b, 2012b). As stated above in the Environmental and Regulatory Setting section, fin and sperm whales are uncommon in the Channel. Thus, no harassment of threatened or endangered marine mammals would be expected.

If the cable retrieval and installation activities do overlap with the gray whale migration season, it would be expected that whales will continue to move through the project area, exhibiting the minor reactions observed during the 1991/92 pipelines and power cables project. In addition, the applicant would work with NMFS, BSEE, SBC and other agencies to implement appropriate mitigation in order to further reduce potential impacts, so no significant impacts would be expected. Therefore, under NEPA, the potential project impacts are considered insignificant.

Under CEQA, the project could potentially have a significant impact utilizing the additional criterion supported by SBC. ExxonMobil will implement a marine mammal monitoring program during the cable retrieval and installation operations. Based on the OPSR-A project, SBC believed that marine mammal monitoring would be appropriate for all period of cable laying operations because of the fact that other sensitive species are resident or migrate through the channel at different times of year and could potentially be in the project area. Therefore, under CEQA, the project is considered to have a potentially significant, but mitigable impact (see MM-1).

Cable Removal Impacts at End of SYU Life: This section analyzes the impacts to marine mammals that would be expected to occur to as a result of removing all remaining cable segment on the OCS at the end of SYU life.

ExxonMobil currently estimates that decommissioning of its SYU facilities will occur sometime in the future. Deferring the removal of all remaining cables and cable segments until that time would mean that this activity would occur during the larger-scale project, which would involve the dismantlement and removal of three offshore platforms and their associated pipelines and power cables. It is estimated that 2 to 3 years would be required to remove all SYU facilities. Removal of the OCS segments of the existing cables would take an estimated 3 weeks to complete. This project will be subjected to detailed NEPA and CEQA review in the future. Expected impacts would be the same as those described in the previous section.

1.7.3 Mitigation Measures

Applicant Proposed Mitigation

The applicant has proposed to implement the following mitigation measures to further reduce the potential for impacts to marine mammals.

MM-1: Applicant shall prepare and implement a marine mammal monitoring plan (MMMP) during cable retrieval and installation operations. The plan shall include the following elements:

a) A minimum of two NMFS-qualified marine mammal observers shall be located on the cable installation vessel to conduct observations, with at least one observer on duty during all cable installation activities.
b) Shipboard observers shall submit a daily sighting report to NMFS and BSEE. This report shall be used to determine whether observable effects to marine mammals are occurring.
c) The observers shall have the appropriate safety and monitoring equipment to conduct their activities (including night-vision equipment).
d) The observers shall set a 1,640-ft (500-m) radius hazard zone around the cable installation vessel for the protection of large marine mammals (i.e., whales) and shall have the authority to stop any activity if it appears likely that a whale could enter the hazard zone.
e) Applicant shall immediately contact the Santa Barbara Marine Mammal Center for assistance should a marine mammal be observed to be in distress. In the event that a whale becomes entangled in any cables or lines, the observer shall notify the Santa Barbara Marine Mammal Center and required agencies, so appropriate response measures can be implemented. Similarly, if any take involving harassment or harm to a marine mammal occurs, the observer shall immediately notify the required regulatory agencies.
f) The vessel captain shall have the final authority on vessel operations to ensure the safety of the vessel, its equipment, and the people on board and shall cooperate with the observers to minimize the potential for damage to marine mammals or the environment. The vessel captain and ExxonMobil project management shall be responsible for ensuring that the OPSRB MMMP is implemented.
g) A report summarizing the results of the monitoring activities shall be completed following completion of these activities and submitted to the required agencies.

The plan shall be submitted for review to BSEE and SLC prior to commencement of installation activities and to CCC and/or SBC prior to approval of the Coastal Development Permit.
Expected Enforcement Agency: BSEE, SLC, SBC, CCC.

MM-2: Applicant shall provide awareness training on the most common types of marine mammals likely to be encountered in the project area and the types of activities that have the most potential for affecting the animals to all project-related personnel and vessel crew prior to the start of installation activities. In addition, the applicant shall require all offshore personnel to view the Wildlife and Fisheries Training video.
Expected Enforcement Agency: BSEE, SLC.

Residual impacts would be expected to be insignificant.

Conclusions – Proposed Project
According to the significance criteria established for this project, an impact to marine biological resources would be considered to be locally significant if it is likely to directly or indirectly cause measurable change in species composition or abundance beyond that of natural variability, or a measurable change in ecological function within a localized area. Observable effects of noise and disturbance on marine mammals from the proposed project, including on-platform improvements, cable retrieval and installation operations would be expected to be restricted to possible temporary changes in direction of movement during cable retrieval and installation operations. Given the projected levels of equipment and activity and the timing of activities, the effects of noise and disturbance on marine mammals from this project would be expected to be

insignificant. Implementation of the mitigation measures proposed for in-water activities by ExxonMobil would decrease the probability that adverse impacts would occur due to collision or entanglement. ExxonMobil, in consultation with the appropriate regulatory and resource agencies, would implement an MMMP to further reduce potential impacts. No significant impacts to marine mammals in the project area would be expected under NEPA.

According to the additional significance CEQA criterion used by SBC, an impact to marine biological resources would be considered to be significant if it is likely to cause an adverse change to or the reduction in a population of or habitat used by a State or Federally listed endangered, threatened, regulated or sensitive species. In addition, any "take" of a listed species would be considered significant. As discussed above, ExxonMobil will conduct the marine monitoring effort during the entire cable retrieval and installation operations. As a result, and with incorporation of the proposed mitigations, potential impacts to marine mammals under CEQA would be considered potentially significant but mitigable.

1.7.4 Cumulative Impacts

The DEIS for Delineation Drilling Activities in Federal Waters Offshore Santa Barbara County, California (MMS, 2001) provides a detailed discussion of cumulative impacts on marine mammals in southern California waters. The EIS identifies ongoing and proposed oil and gas activities in Federal and State waters, Alaskan and foreign-import tankering, military operations, commercial fishing activities, shipping activities, subsistence hunting, whale watching, and marine pollution as potential anthropogenic sources of cumulative impacts to marine mammals in the area. Potential non-anthropogenic sources of potential cumulative impact identified include disease, marine toxins and El Niño events. The EIS concludes that incidental take in commercial fishing operations is currently the primary source of anthropogenic impacts to marine mammals in the area, although these impacts are expected to decrease as additional restrictions and mitigation measures are imposed on coastal fisheries.

Multiple sources of noise and disturbance, including stationary oil and gas activities (construction, drilling, and production), ship and boat noise, aircraft, and seismic survey noise, occur in the Santa Barbara Channel and nearby waters. Although some oil and gas activities off southern California, such as construction and seismic surveys, have declined over the last decade, overall vessel traffic, including commercial, military, and private vessels, is increasing. These increasing levels of noise and disturbance could result in more frequent masking of marine mammal communications, behavioral disruption, and short-term displacement. And, in other areas, there is some evidence for long-term displacement of marine mammals due to disturbance, particularly in relatively confined bodies of water (summarized in Richardson et al., 1995).

However, marine mammal populations in California waters have generally been growing in recent decades (Bonnell and Dailey, 1993; Barlow et al., 1997, 2001; Forney et al., 2000) despite a gradual increase in a wide variety of human activities in the area. There is no evidence that these activities have resulted in adverse impacts on marine mammal populations. Given the low levels of noise and disturbance associated with the proposed cable installation activities, and based on real-time observations during cable-laying operations within the SYU in 2003 (MMCG, 2003), this project would not be expected to add significantly to cumulative impacts on marine mammals in the Santa Barbara Channel. This is expected to be true even if the project activities overlap with the gray whale migration through the area. In their analysis of the impacts of OCS

activities on gray whales prepared in support of the determination to remove the species from the List of Threatened and Endangered Species, NMFS (1992) concluded that the cumulative impacts from oil and gas activities may have the potential to adversely affect the eastern North Pacific gray whale stock, but that these impacts are not likely to jeopardize its continued existence either through direct exposure or through the loss of food resources.

In conclusion, as mitigated, no significant impacts to marine mammals would be expected to occur from the proposed project. Further, given the low levels of noise and disturbance associated with the platform modifications and cable installation activities, this project would not be expected to add significantly to cumulative impacts on marine mammals in the Santa Barbara Channel.

1.8 Essential Fish Habitat (EFH)

1.8.1 Environmental and Regulatory Setting

Under Section 305 (b) (2) of the Magnuson Fishery Conservation and Management Act (16 U.S.C. 1801 et seq) as amended by the Sustainable Fisheries Act on October 11, 1996, Federal agencies are required to consult with the Secretary of Commerce on any actions that may adversely affect Essential Fish Habitat (EFH). The Department of Commerce published a final rule (50 CFR Part 600) in the Federal Register (January 17, 2002, Volume 67, Number 12) that detailed the procedures under which Federal agencies would fulfill their consultation requirements.

Congress defined EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S.C. 1802(10)). The EFH regulations further interpret the EFH definition as follows. "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate. "Substrate" includes sediment, hardbottom, structures underlying the waters, and associated biological communities. "Necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem. "Spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle.

Section 600.920 (e)(1) of the final rule states that Federal agencies may incorporate an EFH Assessment into documents prepared for other purposes such as NEPA documents. Section 600.920 (h) describes the abbreviated consultation process that the BSEE and SBC is following for the proposed project proposed by the applicant. The purpose of the abbreviated consultation process is to address specific Federal actions that may adversely affect EFH, but do not have the potential to cause substantial adverse impacts.

Sections of this document are intended to serve as an assessment for EFH consultation. As set forth in the regulations, EFH Assessments must include: 1) a description of the action; 2) an analysis of the potential adverse effects of the action on the managed species and EFH; 3) the Federal agency's conclusions regarding the effects of the action on managed species and EFH; and 4) proposed mitigations if applicable.

NOAA identifies four habitats of particular concern (HAPC) within the southern California area: estuaries, rocky reefs, seagrass beds, and kelp beds (NOAA, 2012). HAPCs are defined as discrete subsets of EFH that provide important ecological functions and/or are especially vulnerable to degradation. The HAPC designation does not necessarily confer additional protection or restrictions upon an area, but they help prioritize and focus conservation efforts. Although these habitats are particularly important for healthy fish populations, other EFH areas that provide suitable habitat functions are also necessary to support and maintain sustainable fisheries and a healthy ecosystem (NOAA, 2012).

The OPSRB Project Description contains a description of the proposed project. Below is a discussion of the managed species that may be present within the area where project activities would take place, and an impact analysis of the proposed project on managed species and EFH. A discussion of the potential cumulative impacts, a listing of proposed mitigations and summary conclusions are also included below.

Species Managed under Fishery Management Plans (FMP): The environmental setting for the OPSRB Project includes both nearshore and offshore locations. The Pacific Fishery Management Council (PFMC) manages 90 species of fish under three Fishery Management Plans: 1) Coastal Pelagics Fishery Management Plan; 2) Pacific Salmon Fishery Management Plan; and 3) Pacific Groundfish Fishery Management Plan. Many but not all of the managed species could be found during all or part their life cycle within the areas where the proposed project would take place.

The nearshore site is located on the Gaviota coastline in the northwestern Santa Barbara Channel. At least fifteen species listed under the Pacific Groundfish Management Plan and two species listed under the Coastal Pelagics Fishery Management Plan frequent kelp beds and reefs in less than 120 feet (40 meters) of water off the coast of Santa Barbara, California, and could be present during some life stages in the nearshore area of the OPSRB Project (Table EFH-1) (Leet et al., 2001; Love et al., 1999; Schroeder, 1999a,b). The pelagic species could be present for short-time periods as schooling adults whereas many of the groundfish species could be present for longer time periods as both adults and juveniles. The juveniles of many rockfish species use the shallow-water algae and kelp canopies during early development before settling over deeper water or to the bottom. Benthic rockfish juveniles could be found in *Sargassum* and eelgrass beds. Cabezon, lingcod and greenlings could be present as adults, in egg masses (nests) on substrate, and as settled juveniles in *Sargassum*, kelp or eelgrass beds (Leet et al., 2001; Love 1996).

The seafloor habitat within the power cable corridor is predominantly sedimentary and extends for about 16 miles (25 kilometers) in a southwesterly direction to Platform Heritage. Some rocky habitat exists along the shelf break and eelgrass and kelp have been documented within the nearshore (to water depths of approximately 45 feet [14 meters]) portion of the corridor (Padre Associates 2011a). At least 31 species listed under the Pacific Groundfish Management Plan and all species listed under the Coastal Pelagics Fishery Management Plan could be found in this region between the SYU nearshore area and around the offshore platforms and could be present during some life stages in the area of the proposed project (Table EFH-2) (Leet, et al., 2001; NMFS, 1998a,b; Orr et al., 1998).

The three platforms are located from about 15 to 18 miles (24 to 29 kilometers) to the southwest of the nearshore site. At least 39 species listed under the Pacific Groundfish Management Plan and three species listed under the Coastal Pelagics Fishery Management Plan frequent platforms within the Santa Barbara Channel and could be present during some life stages in the offshore area of the proposed project (Table EFH-3) (Love et al., 1999; Schroeder, 1999b). The pelagic species could be present for short-time periods as schooling adults whereas many of the groundfish species could be present for much longer time periods as both adults and juveniles. Adult rockfish, cabezon, lingcod and greenlings may become semi- to permanent residents and young-of-the-year rockfish may use mid-water depths under platforms as a nursery area before settling at the platforms or elsewhere (Leet et al., 2001; Love et. al.,1999). The planktonic eggs and larvae of many managed species could be present within the water column and therefore pass through the platform structure (Love, 1996).

1.8.2 Project Impact Assessment

The impact analysis for the EFH in this document adopts significance criteria developed for all biological resources. An impact from the proposed project is significant if it is likely to cause any of the following:

- A measurable change in population abundance and/or species composition beyond natural variability
- Substantially limit reproductive capacity through losses of individuals or habitat
- Substantially limit or fragment range and movement (geographical distribution and normal route of movement)
- A substantial loss or irreversible modification of habitat in several localized areas or 10 percent of the habitat in the affected area
- An HAPC is substantially affected by the proposed actions

Impacts of regional significance are judged by the same criteria as those for local significance, except that the impacts cause a change in the ecological function within several localized areas or a single large area. The affected area, relative to that available in the region, is determined in the same way as that for locally significant impacts. This determination considers the importance of the species and/or habitat affected and its relative sensitivity to environmental perturbations.

Because Phase 1 activities will not include any in-water actions, no impacts to EFH or HAPCs are anticipated from those activities. Below is a discussion of the potential effects of Phase 2 activities on EFH.

Cable Retrieval and Installation Impacts

As described in the OPSRB Project Description, the proposed project would involve retrieval of approximately 12-18 miles (19-29 km) of out-of-service power cable and the installation of 29 miles (47 km) of replacement cable in the general vicinity of the existing SYU facilities. This section analyzes impacts to managed species and EFH that would be expected to occur as a result of cable retrieval and installation activities. Impacts that would occur from removal of all cables at the end of the SYU life, are analyzed in the following section.

Three major types of activities associated with the proposed project that could impact EFH are: bottom sediment disturbance and cleaning of retrieved cables as they are brought onboard the

cable installation vessel, anchoring and placing a concrete mats or the replacement power cables on rocky outcrops. Bottom sediment disturbance and cleaning of the retrieved cables at the surface would increase turbidity that could cause gill irritation or clogging, decrease the ability of fish to sight-feed, reduce available light, and subject eelgrass, kelp and benthic biota to an increase in sediment deposition. Anchoring could crush infauna and attached epibiota or damage habitat and could also cause an increase in turbidity from resuspended sediments. Laying the power cables physically across rocky outcrops could crush epibiota and alter the seafloor habitat. There would be no impacts anticipated on hardbottom features from retrieving the out-of-service power cables to the shelf-break and around the platforms. Minimal impacts to the eelgrass HAPC from retrieval of the out-of-service cables, from excavation around the conduits, and to plants that are directly under the replacement cables are also anticipated.

Bottom Sediment Disturbance and Cleaning of Retrieved Cable. As described in the OPSRB Project Description, a number of activities would disturb seafloor sediments and increase turbidity in the upper water column both in the nearshore and offshore environments. Table WQ-3 in Water Resources Section lists sources, locations and estimated quantities of sediment that will be resuspended during the proposed project.

Overall, the proposed project would be expected to result in minimal, temporary increases in turbidity from resuspended surficial sediments. Around the cable conduits, divers would excavate sandy sediment in order to uncover the out-of-service cables and clear the conduits. However, for the OPSR-A project, CDFG (Tom Napoli, pers. comm., 2002) expressed concern for the potential effects on shallow nearshore species from localized suspended sediment.

To accommodate concerns and further minimize the impacts from turbidity within the shallow nearshore rocky habitat, the permitting agencies are expected to require that the applicant cast excavated sand, via a hose, 50 feet (15 meters) south, downslope, into natural sedimentary seafloor habitat between the out-of-service cables and the POPCO pipeline away from armor rock, boulder fields, broken rock, or bedrock ridges. In addition, actual impacts to the seafloor habitat and biota around the conduits will be assessed during the post-installation surveys. Mitigations including, but not limited to, habitat restoration, transplanting of flora, etc. will be identified and instituted if significant impacts are found and following consultation with regulatory and resource agencies.

The sites where the out-of-service cables crosses the POPCO pipeline is in 80 to 85 feet (24 to 26 meters) of water are sedimentary and are too deep to support eelgrass or kelp. Excavation work around a concrete mattresses resting on top of these cables at the crossings would result in temporary and highly-localized increases in turbidity on the bottom. Offshore around the platforms, any excavation work would result in temporary and highly-localized increases in turbidity on the bottom; the water depth there also exceeds that which supports eelgrass or kelp.

Retrieval of the out-of-service cable would disturb a small amount of sediment that overlays the cables. In addition, surface cleaning of these cables would result in a temporary and highly-localized turbid cloud beneath and around the cable installation vessel beginning at least 75 feet (22 meters) south of the conduit terminus, continuing out to the shelf break, and near the offshore platforms. As reported by de Wit (2001 and 2002) and more recently by Padre Associates, 2011a, sediment found in the shallow nearshore area appears to have a sandy texture that would

rapidly resettle when disturbed either on the bottom or when washed from the out-of-service cables at the surface. In addition, the natural exposure of the nearshore Gaviota coast contributes to periods of high-energy surf with periodic strong surge and the associated increase in water column turbidity. Given the projected levels of activity and implementation of proposed mitigation measures, the effects of turbidity would be expected to be highly-localized and temporary, resulting in insignificant impacts.

Anchoring: As described in the OPSRB Project Description, anchoring would take place at the nearshore site. Use of a DP vessel would eliminate potential anchoring impacts to hardbottom habitats at the shelf-break. There are no hardbottom areas around the offshore platforms that could be affected by the proposed project.

Padre Associates (2011a) reported the results of a pre-project marine biology survey that included diver-biologist's observations within proposed nearshore anchoring sites. That report states that the macroepibiota within the proposed anchor sites was typical of that found in similar water depths and substrate throughout southern California; eelgrass was present along the cable route seaward of the 25 foot (<8 meter) isobath; and that one of the anchor sites was within 12 feet (<4 meters) of rocky substrate. Impacts to the habitats and biota along the cable route and at the anchoring sites are expected to be similar to those described in de Wit (2003) and to be limited in areal extent (i.e. anchoring will only occur within the nearshore areas in water depths of approximately 150 feet (46 meters) or less, but could be significant if sensitive species are affected.

Anchors (nearshore or at the platforms) would be lowered and retrieved vertically to and from pre-selected positions, using a differential geographic positioning system (DGPS) to assure the location of each anchor. Moorings would consist of a chain and wire rope extending from the anchor shank to a floating steel buoy that becomes the mooring buoy and also keeps the chain and wire rope off the seafloor. Nearshore moorings would have a line from the buoy to the vessel to eliminate seafloor disturbance. Controlled placement of each mooring using DGPS and the use of pre-set anchors and vertical anchor placement and retrieval would impacts to rocky habitat, or kelp plants. However, touchdown of the anchors would likely impact some eelgrass.

To mitigate the impacts from the potential destruction of eelgrass , ExxonMobil would complete a pre-installation survey within the proposed anchoring locations and the final placement of anchors would be based on the results of that survey. Relocation of proposed anchors to avoid rock and minimize eelgrass effects will be completed and the agencies would require that the applicant adhere to the Southern California Eelgrass Mitigation Policy should eelgrass mitigation be required. The temporary loss of eelgrass plants would be mitigated by measures the applicant proposes to adopt and by the additional measures the permitting agencies will require; therefore, any adverse impacts on eelgrass would be expected to be insignificant.

Placing a Concrete Mat or Power Cable on Rocky Outcrops: As described in the OPSRB Project Description, anchoring would take place at the nearshore site. Use of a DP vessel would eliminate potential anchoring impacts to hardbottom habitats at the shelf-break. There are no hardbottom areas around the offshore platforms that could be affected by the proposed project.

Padre Associates (2011a) reported the results of a pre-project marine biology survey that included diver-biologist's observations within proposed nearshore anchoring sites. That report states that the macroepibiota within the proposed anchor sites was typical of that found in similar water depths and substrate throughout southern California; eelgrass was present along the cable route seaward of the 25 foot (<8 meter) isobath; and that one of the anchor sites was within 12 feet (<4 meters) of rocky substrate. Impacts to the habitats and biota along the cable route and at the anchoring sites are expected to be similar to those described in de Wit (2003) and to be limited in areal extent (i.e. anchoring will only occur within the nearshore areas in water depths of approximately 150 feet (46 meters) or less, but could be significant if sensitive species are affected.

Anchors would be lowered and retrieved vertically to and from pre-selected positions, using a differential geographic positioning system (DGPS) to assure the location of each anchor. Moorings would consist of a chain and wire rope extending from the anchor shank to a floating steel buoy that becomes the mooring buoy and also keeps the chain and wire rope off the seafloor. Nearshore moorings would have a line from the buoy to the vessel to eliminate seafloor disturbance. Controlled placement of each mooring using DGPS and the use of pre-set anchors and vertical anchor placement and retrieval would impacts to rocky habitat, or kelp plants. However, touchdown of the anchors would likely impact some eelgrass.

Cable Removal Impacts at End of SYU Life
This section analyses the impacts to managed species and EFH that would be expected to occur to as a result of removing of all power cables within the OCS at the end of SYU life.

The applicant currently estimates that decommissioning of the SYU facilities would occur sometime in the future. Deferring the removal of existing cables within the OCS until that time would mean that this activity would occur as a small part of a large-scale project, which would involve the dismantlement and removal of three offshore platforms and associated pipelines and power cables. It is estimated that 2 to 3 years would be required to remove all SYU facilities. Removal of the OCS segments of all power cables would take an estimated 2 to 3 weeks. The project would be subjected to a detailed NEPA and CEQA review in the future. Expected impacts would be the same as those described in the previous section.

1.8.3 Mitigation Measures
In addition to the mitigations discussed above, instituting mitigations BE-1 through BE-10 (Benthic Environment section) will further minimize impacts on managed species and EFH. No additional mitigations are recommended for Phase 1 since no effects to managed species, EFH, or HAPCs are expected during those activities.

Residual impacts would be expected to be insignificant.

Conclusions – Proposed Project
According to the significance criteria established for this document, an impact on managed species, EFH, and HAPCS would be considered to be locally significant if: 1) it results in a measurable change in population abundance and/or species composition beyond natural variability, 2) substantially limits reproductive capacity through losses of individuals or habitat, substantially limits or fragments range and movement, 3) results in a substantial loss or

irreversible modification of habitat in several localized areas or 10 percent of the habitat in the affected area, or 4) an HAPC is substantially affected by the proposed actions.

To minimize the impacts from turbidity within the shallow nearshore rocky habitat, the permitting agencies would require that ExxonMobil cast excavated sand, via a hose, 50 feet (15 meters) south, downslope, into the existing sedimentary habitat between the existing cables and the POPCO pipeline away from armor rock, boulder fields, broken rock, or bedrock ridges. Increases in turbidity would be expected to be highly-localized and temporary causing insignificant impacts. The temporary loss of some eelgrass plants (number would be determined during pre-construction marine biological surveys) would, if required, be mitigated by measures ExxonMobil proposes to adopt and by the additional measures the permitting agencies would require. Therefore, any adverse impacts on eelgrass from anchoring would be expected to be insignificant. Impacts on EFH from concrete mats being placed onto the sedimentary bottom would be expected to be insignificant. Impacts from the replacement cable contacting an estimated 24 square feet (2 square meter) on the hardbottom feature at the shelf-break would be expected to be insignificant based on the amount of available rock reef within the area compared to the affected area. The cable itself will provide solid substrate that is expected to support epibiota similar to that on the surrounding rocky feature. Overall, impacts on managed species and EFH from the proposed project would be expected to be insignificant and mitigated to the maximum extent feasible.

1.8.4 Cumulative Impacts

Cumulative impacts on managed species, EFH, and HAPCs are expected to be limited to the short-term degradation or alteration of a limited amount of shallow-water rocky substrate from turbidity and sedimentation. The shallow subtidal habitat is a dynamic environment that is exposed to resuspended sediments and strong water surges and wave action. Although these areas face southward and are therefore somewhat protected, they still experience periodic storm conditions that result in freshwater runoff, increase turbidity, habitat alteration, removal of eelgrass and kelp plants, and scour the sedimentary habitat. Freshwater runoff and increased turbidity are usually short-term (days to weeks), temporary conditions, but rock movement and sand scouring may be long-term.

Cumulative impacts on offshore EFH and managed species could also include degradation of sensitive and unusual offshore hardbottom habitat and the associated epibiotic communities. These impacts are expected to be minimal in area affected, but potentially long-term.

Leet et al. (2001) discusses several fishing and non-fishing activities that may cause adverse impacts on EFH and managed species along the Pacific Coast and within the SYU. Major issues include the impact of natural events like El Niño, as well as man-induced overharvesting of fish and invertebrates, interactions between fisheries and marine mammals, pollution from human activities and competition among user groups, both consumptive and non-consumptive.

In addition, NMFS (1998a,b) has identified several fishing and non-fishing activities that may cause adverse impacts to EFH and managed species along the Pacific Coast and within the SYU. These include dredging and discharge of dredged material, water intake structures, aquaculture, wastewater discharge, oil and hazardous waste spills, coastal development, agricultural runoff, commercial marine resource harvesting and commercial fishing. Most of these activities occur

throughout the western U.S. nearshore areas, including within the southern California coastal zone. As a result, marine water quality has been impacted by municipal, industrial and agricultural waste discharges and runoff in much of the Southern California Bight (MMS, 1992).

The proposed project is not expected to add substantially to the historical and ongoing natural and anthropogenic impacts. The proposed project activities are expected to result in highly-localized, temporary turbid water conditions, potentially impact some eelgrass plants, and cover an estimated 24 square feet (2 square meter) of a rocky feature at the shelf-break. As mitigated, this project is not expected to add significantly to cumulative impacts on managed species, EFH, or HAPCs within the Santa Barbara Channel.

Table EFH-1: Fish species managed under Pacific Fishery Management Plans that could be present in the nearshore project area.

Common Name	Scientific Name
Managed under Groundfish:	
Cabezon	*Scorpaenichthys marmoratus*
Lingcod	*Ophiodon elongatus*
California scorpionfish	*Scorpaena guttata*
Kelp greenling	*Hexagrammos decagrammus*
Leopard shark	*Triakis semifasciata*
Black-and-yellow rockfish	*Sebastes chrysomelas*
Blue rockfish	*Sebastes mystinus*
Calico rockfish	*Sebastes dalli*
China rockfish	*Sebastes nebulosus*
Copper rockfish	*Sebastes caurinus*
Gopher rockfish	*Sebastes carnatus*
Grass rockfish	*Sebastes rastrelliger*
Kelp rockfish	*Sebastes atrovirens*
Olive rockfish	*Sebastes serranoides*
Treefish rockfish	*Sebastes serriceps*
Managed under Coastal Pelagics:	
Northern Anchovy	*Engraulis mordax*
Jack Mackerel	*Trachurus symmetricus*

Table EFH-2: Fish species managed under Pacific Fishery Management Plans that could be present between nearshore and the offshore platforms.

Common Name	Scientific Name
Managed under Groundfish:	
Curlfin sole	*Citharichthys sordidus*
Dover sole	*Microstomus pacificus*
English sole	*Parophrys vetulus*
Pacific sanddab	*Citharichthys sordidus*
Petrale sole	*Eopsetta jordani*
Ratfish	*Hydrolagus colliei*
Leopard shark	*Triakis semifasciata*
Soupfin shark	*Galeorhinus galeus*
Spiny dogfish	*Squalus acanthias*
California skate	*Raja inornata*
Aurora rockfish	*Sebastes aurora*
Widow rockfish	*Sebastes entomelas*
Bank rockfish	*Sebastes rufus*
Blackgill rockfish	*Sebastes melanostomus*
Bocaccio	*Sebastes paucispinis*
Calico rockfish	*Sebastes dalli*
California scorpionfish	*Scorpaena guttata*
Chilipepper	*Sebastes goodei*
Copper rockfish	*Sebastes caurinus*
Cowcod rockfish	*Sebastes levis*
Flag rockfish	*Sebastes rubrivinctus*
Gopher rockfish	*Sebastes carnatus*
Greenspotted rockfish	*Sebastes chlorostictus*
Greenstriped rockfish	*Sebastes elongatus*
Honeycomb rockfish	*Sebastes umbrosus*
Speckled rockfish	*Sebastes ovalis*
Starry rockfish	*Sebastes constellatus*
Stripetail rockfish	*Sebastes saxicola*
Thornyhead	*Sebastolobus sp.*
Lingcod	*Ophiodon elongatus*
Sablefish	*Anoplopoma fimbria*
Managed under Coastal Pelagics:	
Northern anchovy	*Engraulis mordax*
Pacific sardine	*Sardinops sagax*
Pacific mackerel	*Scomber japonicus*
Jack mackerel	*Trachurus symmetricus*
Market squid	*Loligo opalescens*

Table EFH-3: Fish species managed under the Pacific Groundfish Fishery Management Plan recorded at oil and gas platforms in southern California.

Common Name	Scientific Name
Managed under Groundfish:	
Pacific sanddab	*Citharichthys sordidus*
Widow rockfish	*Sebastes entomelas*
Bank rockfish	*Sebastes rufus*
Black rockfish	*Sebastes melanops*
Black-and-yellow rockfish	*Sebastes chrysomelas*
Blue rockfish	*Sebastes mystinus*
Bocaccio	*Sebastes paucispinis*
Brown rockfish	*Sebastes auriculatus*
Calico rockfish	*Sebastes dallii*
California scorpionfish	*Scorpaena guttata*
Canary rockfish	*Sebastes pinniger*
Chilipepper	*Sebastes goodei*
Copper rockfish	*Sebastes caurinus*
Cowcod rockfish	*Sebastes levis*
Darkblotched rockfish	*Sebastes crameri*
Flag rockfish	*Sebastes rubrivinctus*
Gopher rockfish	*Sebastes carnatus*
Grass rockfish	*Sebastes rastrelliger*
Greenblotched rockfish	*Sebastes rosenblatti*
Greenspotted rockfish	*Sebastes chlorostictus*
Greenstriped rockfish	*Sebastes elongatus*
Honeycomb rockfish	*Sebastes umbrosus*
Kelp rockfish	*Sebastes atrovirens*
Olive rockfish	*Sebastes serronides*
Rosy rockfish	*Sebastes rosaceus*
Sharpchin rockfish	*Sebastes zacentrus*
Squarespot rockfish	*Sebastes hopkinsi*
Starry rockfish	*Sebastes constellatus*
Stripetail rockfish	*Sebastes saxicola*
Treefish	*Sebastes serriceps*
Vermilion rockfish	*Sebastes miniatus*
Yelloweye rockfish	*Sebastes ruberrimus*
Yellowtail rockfish	*Sebastes flavidus*
Thornyhead	*Sebastolobus sp.*
Cabezon	*Scorpaenichthys marmoratus*
Kelp greenling	*Hexagrammos decagrammus*
Lingcod	*Ophiodon elongatus*
Pacific whiting	*Merluccius productus*
Spiny dogfish	*Squalus acanthias*
Managed under Coastal Pelagics:	
Northern anchovy	*Engraulis mordax*
Pacific sardine	*Sardinops sagax*
Jack mackerel	*Trachurus symmetricus*

1.9 Endangered Abalone Species (*Haliotis sorenseni* and *H. cracherodii*)

1.9.1 Environmental and Regulatory Setting

Although all abalone along the California coastline are considered depleted and no commercial or recreational harvesting of abalone is allowed south of San Francisco, two species, the white and black, are listed as endangered. Below is a discussion of those two taxa, an assessment of potential impacts of the proposed project, and mitigations that will be implemented by the applicant.

In the 1990s, less than one white abalone, *Haliotis sorenseni*, per acre could be found in surveys conducted by Federal and State biologists. The rarity of this species within its historical center of abundance prompted the NMFS to list it as a candidate species under the Endangered Species Act (ESA) in 1997. In May 2001, the white abalone became the first marine invertebrate to receive Federal protection as an endangered species. The ESA regulates human activities where listed species might be adversely affected by prohibiting intentional take.

In January 2009, the black abalone (*H. cracherodii*) was listed as endangered under the Federal ESA. In October 2011, NMFS published the critical habitat for that species (NMFS, 2011). Below is a summary of each species, both of which could occur within the project area.

The white abalone is a marine, rocky benthic, herbivorous, broadcast spawning gastropod. The shell is oval-shaped, very thin and deep. They can be up to 10 inches (25 centimeters), but are usually 5 to 8 inches (13 to 20 centimeters). This species usually dwells in deep waters from 80 to over 200 feet (24 to 60 meters) from Point Conception (southern California) southward to Baja California. White abalone were reported to be more common along the mainland coast at the northern end of the range, while in the mid-portion of the California range it was more common on the islands (especially San Clemente and Santa Catalina Islands) (Cox, 1960; Leighton, 1972; NMFS, 2002).

This species has occurred in shallower depths near its northernmost limit (Hobday and Tegner, 2000). Specifically, localized mainland areas in the Coal Oil Point region, west of Santa Barbara, have supported white abalone in water depths less than 60 feet (20 meters) (Greg Sanders, pers. comm., 2002; Pete Haaker, pers. comm. 2002). Speculation concerning reasons for its presence in shallow water includes competition with red abalone (*H. rufescens*) and/or a localized decrease in predation from sea otters without a concomitant increase in harvest (as reported in Hobday and Tegner, 2000). The vertical distribution limits may also be controlled by water temperature.

White abalone are found in open low relief rock or boulder habitat surrounded by sand (with a variety of algal/invertebrate cover), usually near the rock-sand interface, (Davis et al., 1996; Hobday and Tegner, 2000; Lafferty, 2001). Sand may be important in forming channels for the movement and concentration of algal drift, although white abalone are reported to feed less on drift material than congeneric species (Hobday and Tegner, 2000). Common algae in the white abalone habitat include the kelps (*Laminaria farlowii, Agarum fimbriatum*, *Macrocystis pyrifera*), and a variety of red algae. White abalone may live dozens of years and attain a length

of about 10 inches (25 centimeters). The designation of critical habitat for the white abalone was determined to not be prudent as it could increase the likelihood of poaching (NMFS, 2001).

The following is a summary of the information provided in NMFS (2011). As a result of the disease, most black abalone populations in Southern California have declined by 90 to 99 percent since the late 1980s and have fallen below estimated population densities necessary for recruitment success. The black abalone is a shallow-living marine gastropod with a smooth, circular, and black to slate blue colored univalve shell and a muscular foot that allows the animal to clamp tightly to rocky surfaces without being dislodged by wave action. Black abalone generally inhabit coastal and offshore island intertidal habitats on exposed rocky shores from Crescent City, California to southern Baja California, Mexico. Today the species' constricted range occurs from Point Arena, California, to Bahia Tortugas, Mexico, and it is rare north of San Francisco, California. Black abalone range vertically from the high intertidal zone to a depth of 20 feet (6 meters) and are typically found in middle intertidal zones. Twelve critical habitat zones were designated by NMFS; the proposed project is not within any of those zones (NMFS, 2011).

Unlike more mobile animals, abalone are slow-moving and are confined to a small area for their entire life. They reproduce by broadcasting their eggs and sperm into the seawater. For fertilization to occur, the spawners need to be within 3 feet (1 meter) of a member of the opposite sex.

In August 2001, a pre-construction marine biological survey was completed in the nearshore area for the then-proposed OPSR-A project (de Wit, 2001). The underwater survey was centered on a corridor that has armor rock over pipelines and conduits housing existing power cables including the failed Cable C1. During the initial survey, a single abalone, assumed to be a white, was observed on the armor rock in 22 feet (7 meters) of water approximately 50 feet (15 meters) shoreward (north) of the power cable conduit terminus. The specimen was not removed but the white peripodium and highly convex shell with three elevated respiratory pores were characteristic of *H. sorenseni*.

An Expanded Marine Biological Survey was completed in April 2002 (de Wit, 2002). The expanded survey was performed specifically to 1) characterize the habitats and dominant macroepibiota of the nearshore project area and to 2) locate and identify any abalone within two areas. The areas were east and west of the conduit corridor, approximately 825 feet long by 800 feet wide (200 meters x 240 meters), respectively, and centered on the terminus. The second survey did not find the initial white abalone; however, an empty shell that matched the characteristics of the shell of the single individual was found near its original location. Matching external characteristics of the shell with video taken during the August 2001 survey strongly suggested it was the same animal. The shell was retrieved and it has been confirmed that the individual was a white (hybrid) abalone (Tom Napoli, pers. comm., 2002; Ian Tanaguchi, pers. comm., 2002). A single mature sea otter was also observed at the site and it is possible that the sea otter had eaten the abalone individual during the period between the two surveys.

The second survey located 21 additional abalone one of which was thought to be a *H. sorenseni*. This white abalone was located in about 25 feet (8 meters) of water about 600 feet (180 meters) east and slightly north of the conduit terminus near the base of an isolated boulder (de Wit,

2002). In 2011, two pre-project marine biological surveys were completed. The first was a nearshore (to water depths of approximately 100 feet [33 meters]) diver and towed camera survey of the existing power cable corridors, proposed anchoring locations, power cable/POPCO pipeline crossing locations, and unidentified targets recorded during an earlier geophysical survey (Padre Associates, Inc. 2011). The second was a deeper-water diver survey at the three power cable/POPCO pipeline crossing locations that focused on identifying mollusks that were observed during the earlier survey (Padre Associates, Inc. 2012). An objective of both surveys was to observe, note, and locate abalone that were within the project area. No abalone were observed during either of the aforementioned surveys.

The proposed Phase 1 platform modifications are in water depths that exceed those known to support abalone and the platform habitat is not conducive to abalone attachment and survival.

Prior to the retrieval of the existing and installation of the replacement power cables in Phase 2, the applicant would perform a pre-installation biological survey of the nearshore project area just prior to any installation work adjacent to the conduit. At that time, if an abalone is detected within an area of potential impact, project activities would not begin until the animal(s) has/have been relocated or the agencies with jurisdiction agree to another appropriate alternative. The applicant would include the permitting agencies and NMFS and the CDFG in any discussions and/or approval for the design of a pre-installation survey. In addition, project conditions would specify that the applicant include the permitting agencies and NMFS and CDFG in any discussions and/or approval for the design of a restoration and restoration-monitoring plan that may be necessary if impacts to abalone or critical habitat are incurred.

1.9.2 Project Impact Assessment

The impact analysis for abalone resources in this document adopts significance criteria developed for all biological resources. An impact from the proposed project is significant if it is likely to cause any of the following:

- A measurable change in population abundance and/or species composition beyond natural variability. For threatened and endangered species, this includes any change in population that is likely to hinder the recovery of a species.
- Substantially limit reproductive capacity through losses of individuals or habitat.
- Substantially limit or fragment range and movement (geographical distribution and normal route of movement). A measurable loss or irreversible modification of habitat in several localized areas or 10 percent of the habitat in the affected area.
    - If the project results in any impact to an individual of a listed species (white or black abalone) or its habitat.

For an impact to be locally significant, the size of the affected area would be relatively small compared with that of an equivalent area in the region. The threshold for significance is determined by scientific judgment, and considers the relative importance of the habitat and/or species affected.

Impacts of regional significance are judged by the same criteria as those for local significance, except that the impacts cause a change in the ecological function within several localized areas or a single large area. The amount of affected area, relative to that available in the region, is determined in the same way as that for locally significant impacts. This determination considers the importance

of the species and/or habitat affected and its relative sensitivity to environmental perturbations. Although no impacts to abalone are expected from the Phase 1 activities, potential effects of Phase 2 activities are discussed below.

Cable Retrieval and Installation Impacts
As described in the OPSRB Project Description, the proposed project would involve removal of approximately 12-18 miles (19-29 km) of out-of-service power cable and the installation of 29 miles (47 km) of replacement cable in the general vicinity of the existing SYU facilities. This section analyzes impacts to the two species of endangered abalone that would be expected to occur as a result of cable retrieval and installation activities. Impacts that would occur from removal of all existing cables at the end of the SYU life, are analyzed in the following section.

No impacts to abalone or the required habitat are expected from the Phase 1 activities. Two activities associated with Phase 2 activities of the proposed project that could impact the abalone are turbidity from the resuspension of seafloor sediments and from the cleaning of retrieved cables, and from anchoring. Bottom sediment disturbance and cleaning of the retrieved cable at the surface would increase turbidity that could deposit sediment onto nearby abalone, cause physical irritation, reduce available light, and subject algal species upon which abalone feed to an increase in sediment disposition. Substantial increases in sediment deposition on rocky substrate could also reduce that habitat's value to support abalone. Anchoring could directly crush individuals or damage the rocky substrate, in addition to causing an increase in water column turbidity.

Bottom Sediment Disturbance and Cleaning of Retrieved Cable. As described in OPSRB Project Description, a number of activities would disturb seafloor sediments and increase turbidity in the upper water column in the nearshore environment. Table WQ-3 on water quality lists sources, locations, and estimated quantities of sediment that would be resuspended during the proposed project.

Overall, the proposed project would be expected to result in minimal, temporary, and localized increases in water column turbidity. In the shallow nearshore, divers working at and seaward of the conduit terminus would excavate sand in order to uncover the out-of-service cables and clear the conduits. To minimize the impacts from turbidity within the shallow nearshore rocky habitat, the applicant will cast excavated sand, via a hose, 50 feet (15 meters) south, downslope, onto the existing sedimentary habitat between the cables and the POPCO pipeline away from armor rock, boulder fields, broken rock, or bedrock ridges. The surface cable cleaning will result in a turbid cloud beneath and around the cable installation vessel. The cable installation vessel would begin to retrieve and clean cable about 75 feet (20 meters) south of the conduit terminus. As reported by de Wit (2001 and 2002), and more recently by Padre Associates (2011a), sediment found in the shallow nearshore area is sandy and would be expected to rapidly resettle onto the seafloor when disturbed or when washed from the retrieved cable at the surface. In addition, the natural exposure of the nearshore Gaviota coast contributes to periods of high-energy surf with periodic strong surge and increased turbidity. Consequently, the marine organisms found in the nearshore habitat are routinely exposed to natural turbid conditions.

Padre Associates (2011a) reported no abalone were observed during the pre-project nearshore marine biological survey and Padre Associates (2012a) found that the mollusks attached to the

existing concrete mats at the power cable/POPCO pipeline crossings were rock jingles (*Pododesmus cepio*) or rock scallops (*Hinnites multirugosus*) and not abalone.

To minimize the impacts from turbidity within the shallow nearshore habitat, the applicant will cast excavated sand, via a hose, 50 feet (15 meters) south, downslope, onto the sedimentary habitat between the failed cables and the POPCO pipeline away from armor rock, boulder fields, broken rock, or bedrock ridges. In addition, if abalone(s) is/are detected near the conduit terminus during the pre-installation marine biological survey, project activities would not begin until any individual(s) have been relocated or the agencies with jurisdiction agree to another appropriate alternative. As proposed and with the recommended mitigations, no impacts to abalone would be expected from the proposed project.

Anchoring: As described in OPSRB Project Description, anchoring would take place at the nearshore site. Padre Associates (2011a) reported the results of a pre-project diver-biologist and towed camera survey of the nearshore power cable corridor and proposed anchoring locations. No rocky substrate or abalone were observed within a 50-foot (15-meter) diameter area of the 12 proposed anchor locations or within the existing cable corridor. A pre-installation survey will be completed and the results of that survey will be used to locate the anchors away from rocky substrate.

All anchors would be lowered and retrieved vertically to and from pre-selected positions, using a differential geographic positioning system (DGPS) to assure accurate location. All nearshore moorings would consist of a chain and wire rope extending from the anchor shank to a floating steel buoy that becomes the mooring buoy and also keeps the chain and wire rope off the seafloor. A soft-line would extend from the buoy to the vessel, thus eliminating potential seafloor impacts. All anchor locations would be beyond the agency-specified distance from rocky substrate. The use of pre-set anchors and vertical anchor placement and retrieval would prevent crushing of any rocky habitat or attached biota and would limit any increase in turbidity to the initial touchdown of the anchors to the immediate vicinity and away from rocky substrate and any abalone. If a white or black abalone is detected near the conduit terminus during the pre-installation marine biological survey, project activities would not begin until any individual(s) have been relocated or the agencies with jurisdiction agree to another appropriate alternative.

Cable Removal Impacts at End of SYU Life
This section analyses the potential impacts to abalone that would be expected to occur to as a result of removing all remaining cables within the OCS at the end of SYU life.

The applicant currently estimates that decommissioning of its SYU facilities will occur sometime in the future. Deferral of the OCS portion of the cable removal until that time would mean that this activity would occur as a small part of a large-scale project, which would involve the dismantlement and removal of three offshore platforms and their associated pipelines and power cables and would require an estimated 2 to 3 years to complete. Removal of the OCS segments of all cables would take 2 to 3 weeks to complete. This project would be subjected to a detailed NEPA and CEQA review in the future, however because the water depths within the OCS exceed that within which abalone have been reported, no impacts are anticipated. Nearshore impacts would be the same as those described in the previous section.

1.9.3 Mitigation Measures

The applicant has proposed to implement the following mitigation measures to further reduce the potential for impacts to abalone.

AB-1: If a white or black abalone is detected near the conduit terminus during the pre-installation marine biological survey, ExxonMobil would not begin project activities until any individual(s) have been relocated or the agencies with jurisdiction agree to another appropriate alternative.
Expected Enforcement Agency: NFMS, SLC, SBC, CDFG

In addition to these mitigation measures, please refer to the following mitigation measures from other resource sections: BE-1 through BE-6, BE-8 and BE-10.

Residual impacts would be expected to be insignificant.

Conclusions – Proposed Project
According to the significance criteria established for this document, an impact to non-listed abalone would be considered to be locally significant if it results in a measurable change in population abundance and/or species composition beyond natural variability, or results in a substantial loss or irreversible modification of habitat in several localized areas or 10 percent of the habitat in the affected area. For listed species, any impact to an individual or its habitat is considered significant. As proposed and mitigated, no impacts to abalone are expected from the proposed project.

1.9.4 Cumulative Impacts

Currently, the white abalone is frequently found alone, and has little chance for successful fertilization (NMFS, 2002); black abalone are uncommon within the project area and no critical habitat for that species is within the project region. Because populations of both species are only small fractions of former numbers, recovery would be complicated by loss of genetic diversity from genetic bottlenecks, genetic drift, and founder effects. Abalone are also vulnerable to various bacterial and parasitic infections. The fishery was historically managed using size limits and seasons, but such methods failed because they did not account for density dependent reproduction and assumed regular successful settlement of the larvae (Lafferty, 2001). The other two more common abalone species, red (*H. rufescens*) and pink (*H. corrugata*) are no longer as abundant as they once were and recreational and commercial harvesting of all abalone is illegal within the project region.

Cumulative impacts on abalone could result from degradation or elimination of rocky shallow subtidal habitat in the coastal region west of Santa Barbara. This shallow subtidal habitat is a dynamic environment that experiences regular resuspension of sediments and water surges and pounding through wave action. Although the Gaviota coast faces southward and is therefore somewhat protected, periodic strong winter storm conditions (especially during El Niño events) that result in substantial freshwater runoff, increase turbidity, altered habitat the removal of eelgrass and kelp plants, and scour sedimentary habitat. Freshwater runoff and increased turbidity are usually short-term (days to weeks), temporary conditions, but habitat alteration and sediment scouring can be long-term. In addition, sea otter predation may have a substantial

impact on all abalone taxa, particularly those that are within the normal otter diving depths of 80 feet (24 meters).

There are several activities that may cause adverse impacts to abalone along the Pacific Coast, particularly in southern California (NMFS 1998a,b). These include dredging and discharge of dredged material, water intake structures, aquaculture, wastewater discharge, hazardous waste spills, coastal development, agricultural runoff, commercial marine resource harvesting, and commercial fishing. Most of these activities occur throughout the western U.S. coastal area and all of these activities and impacting agents exist in the southern California coastal area, including the Santa Barbara Channel. As a result, marine water quality has been impacted by municipal, industrial, and agricultural waste discharges and runoff in much of the Southern California Bight (MMS, 1992). The proposed project, as mitigated, is not expected to add to the cumulative effects to abalone or their habitat.

1.10 Cultural Resources

1.10.1 Environmental and Regulatory Setting

Cultural resources include any prehistoric or historic sites, buildings, districts, structures, traditional use areas or objects considered to be important to a culture, subculture or community for scientific, traditional, religious or other reasons. Cultural resources encompass three categories: archaeological resources (both historic and prehistoric), architectural resources and traditional cultural resources.

Onshore: The onshore portion of the project has been subject to numerous archaeological investigations by professional archaeologists. Floodplain areas at the mouth of Corral Canyon (in the vicinity of onshore work) have been subject to extensive subsurface monitoring and testing programs that (a) assessed the location, integrity and the scientific, historic and ethnic significance of cultural resources in the floodplain; and (b) resulted in the recommendation of professionally adequate mitigation measures for future construction in the floodplain areas. Five sites were identified within a ¼ mile area near the mouth of Corral Canyon at the southern end of the ExxonMobil property. These sites are identified as SBA-85, SBA-1675, SBA-1731, SBA-1733, and SBA-1732.

The earliest archaeological work was conducted by Rodgers (1929) who identified SBA-85, a large prehistoric site on a marine terrace overlooking the mouth of Corral Creek. Surveys in 1973 (Spanne and Fagan) documented the boundaries of SBA-85, documented its disturbance and recorded SBA-1344, a prehistoric and historic site since determined to be insignificant (Perez, 1975). SBA-1733 was identified by Spanne in 1982. The site is a prehistoric archaeological site in the floodplain of Corral Canyon Creek. Subsequent investigations by the Office of Public Archaeology (OPA) (Neff, 1983) indicated that SBA-1733 may be a scientific and ethnically significant cultural resource because it has vertical and horizontal integrity, is ethnically significant to local Native Americans and because the site can yield information important to the study of prehistory.

In 1982, OPA conducted investigations at a prehistoric village site (SBA-1731) near the beach at the mouth of Corral Canyon. These investigations were conducted to mitigate impacts resulting from

the installation of the POPCO pipeline. Results of the investigation (Moore and Luce, 1983), indicates that SBA-1731 may also be scientifically and ethnically significant.

Prior to initiation of construction, ExxonMobil was required to prepare a Cultural Resources Management Plan (CRMP), approved by the County and the State Office of Historic Preservation. All construction activities were required to be performed in accordance with the approved plan. Four of the sites identified in the EIR (SBA-1801, SBA-1344, SBA-1731 and SBA-1733) were determined to be subject to the CRMP. Impacts included capping sites with fill, cutting into site deposits, removal of structures, surface disturbance and off road vehicle use. The CRMP provided procedures to minimize impacts to these and newly discovered cultural resources including, but not limited to, test excavations, additional historical research and data recovery excavations prior to construction and monitoring during construction activities.

Offshore: The BSEE (previously MMS), under various Federal laws and regulations, ensures that regulated OCS activities do not adversely affect significant cultural resources. The National Historic Preservation Act of 1966, Section 106, requires Federal agencies to identify historic properties that their actions could affect, determine whether or not there could be a harmful or adverse affect, and if so, to try to avoid or reduce the effect. The section also requires consultation with State historic preservation officers and tribal historic preservation officers. The Archaeological and Historic Preservation Act of 1974 requires Federal agencies to notify the Secretary of the Interior when they find that any federally permitted activity or program may cause irreparable loss or destruction of significant scientific, prehistoric, historical, or archaeological data.

The applicant received approval of the Historic Properties Treatment Plan (HPTP) for the original SYU project in January 1988 from the U.S. Army Corps of Engineers and the California State Office of Historic Preservation (Dames and Moore, 1988). Many of the potential archaeological resources described herein are included in the approved HPTP.

Four potential cultural resource nautical sites were located during geophysical surveys of the SYU offshore facilities in the 1980s. Of the four nautical sites with possible cultural potential, three are in Federal waters and one is in State waters in the general vicinity of the proposed project area. Two of the sites described below, number three (in OCS waters) and four (in State waters), could be within the zone of potential disturbance from operations described for the proposed project.

According to Macfarlane (1982) and Dames and Moore (1988), the archeological resources listed below occur within the *general* area of the proposed project. *Only items 3 and 4*, below, are near the current power cable project. The actual locations are not listed in this public document in order to preserve the potential archaeological resources.

1. A large rectangular feature measuring 100 feet (30 m) long by 40 feet (12 m) wide by 6.3 feet (2 m) high, with an associated scatter of smaller objects; a possible scour or drag mark was also noted. Although this feature may be a mound of sediment deposited by anchoring activity, its height above the sea floor and the possible debris surrounding it suggest that it may be a cultural resource.

2. A "T" shaped configuration of four objects, measuring 25 feet (8 m) across and 100 feet (30.5 m) long. The linear configuration suggests a cultural origin; it may be associated with oil exploration activities or may be an archeological resource.

3. A complex feature measuring approximately 50 - 100 feet (15 to 30 m) wide, 160 feet (49 m) long, and as much as 16 feet (5 m) high. The lack of bedrock or hard sediments in the area that might indicate a geologic origin for the feature means that this site must be considered a potential cultural resource. Although the feature may have resulted from anchoring, lack of specific identification, regarding the site means that the feature must be considered to be potentially significant.

4. A linear feature of variable height that may either be a construction-related feature or a cultural resource.

ExxonMobil contracted with Fugro for the OPSR-A power cable project to conduct a side scan sonar survey of the proposed Cable C1 and D1 routes from the nearshore area to the three SYU platforms (Fugro, 2001). In addition, ExxonMobil contracted with Fugro for the OPSRB power cable project to conduct a side scan sonar survey of the proposed Cable A2 or B2, F2 and G2 routes from the nearshore area to the three SYU platforms (Fugro, 2011).

The reported locations of site #3 and #4 are 500 to 600 feet (150 to 185 meters) from the centerline of the proposed power cable location.

In 2008, video of the seafloor southeast of Platform Heritage revealed two potential archeological features in approximately 1,300 feet (396 meters) of water. A review of that video footage by a marine archaeologist indicated that both were rock features and were not significant archaeological or cultural resources (C&C Technologies, 2010).

In September 2011, a marine geophysical survey, which included side scan sonar and magnetometer to detect potential archaeological resources on the seafloor, was completed within the power cable corridors (Fugro Consultants, 2011). That survey resulted in the listing of 116 potential seafloor “targets”, two of which were listed a possibly significant cultural resource features. Other items that were listed as of possible significance were surveyed by divers during the 2011 pre-project marine biological surveys (Padre Associates, Inc. 2011a and 2012) and were found not to of significant archaeological or cultural value. One “target” (T-035 in the final listing) corresponded to a previously-identified potential shipwreck and the other (T-033) was identified as a small rock reef from video footage.

1.10.2 Project Impact Assessment

Significant impacts to cultural resources occur when the integrity of a significant or potentially significant site or isolated artifact is eliminated or reduced. In Section 5.6.2 of the SYU FEIS/R (SAI, 1984a), local cultural resources were described as significant in terms of criteria established in the Code of Federal Regulations (36 CFR 60.6), in that the sites may be likely to yield information important in history or prehistory. These criteria are complemented, and sometimes nearly duplicated by criteria set forth in Section 21083.2 of the California Public Resources Code (PRC) which modifies the CEQA provisions pertaining to cultural resources. Section 21083.2 states that mitigation measures may only be applied to "unique" resources,

defined as those that have a high probability of meeting any of the following criteria: (1) contain information needed to answer important, research questions that are of demonstrable public interest; (*2*) have special or particular qualities, such as being the oldest of its type or best available example; and (3) are directly associated with a scientifically recognized important prehistoric or historic event or person. In addition, PRC Section 6313(c) states that any submerged cultural site or submerged historic resource remaining in state waters for more than 50 years shall be presumed to be culturally or historically significant.

Cable Retrieval and Installation Impacts: As described in the OPSRB Project Description, the proposed project would involve retrieval of approximately 12-18 miles (19-29 km) of out-of-service power cable and installation of 29 miles (47 km) of replacement cable in the general vicinity of the existing SYU facilities. This section analyzes impacts to cultural resources that would be expected to occur as a result of cable retrieval and installation activities. Impacts that would occur from removal of all power cables at the end of SYU life are analyzed in the following section.

Onshore: No cultural or ethnic resources or human remains would be adversely impacted by the proposed project. One site, SBA-1733, appears to be potentially located in the immediate project area, however, the site was capped by approximately 10-15 feet of fill material during original project construction. Excavation required as part of the project would be limited to 8-9 feet below ground surface. A small trench may need to be dug in native soil from the fill pad to an existing pull-box (approximately 50-100 ft.) to connect the fiber optic cable. Existing LFC protocol will be followed. All documented sites are on private property (owned by ExxonMobil) with strict security; therefore the likelihood for vandalism or other disturbance to resources is low.

Offshore: The two sources of potential offshore cultural resource impact under the proposed project are from the anchoring of vessels and from the installation and retrieval of power cables.

Anchoring: The applicant proposes to use a DP cable installation vessel for this project. The applicant estimates that the Phase 1 activities on the platforms could take 12-14 months while the Phase 2 offshore cable installation and retrieval phase of the operations would take approximately one to two months. The DP cable installation vessel would not anchor during the project activities except for an emergency situation. However, dive support vessels could anchor adjacent to the conduit terminus in the nearshore area and are expected to use an anchor up to 10,000 lbs. (4500 kg). The anchors would be positioned a minimum distance of 250 feet (75 m) from any active pipeline or power cable. The anchor handling procedures are proposed by the applicant to include the following: use of an anchor handling plan, anchor placement in pre-selected areas, utilizing work vessel anchor installations and removals techniques such as straight up and down placement of the anchors and use of anchor-tenders, where necessary, to help place the anchors. During an emergency/safety situation there may be the unplanned need for deployment of anchors by the support vessel.

All emergency/safety anchor deployments would be beyond the 300 feet (90 m) protective buffer zone surrounding any identified cultural resource, and any anchor lines that may cross over the buffer zone would be suspended in the water column, (i.e., no anchor would contact the bottom near the cultural resource). With implementation of those operational features, no impacts to any identified cultural resources would be expected to result from anchoring activities.

Cable Installation and Retrieval. The zone of disturbance from power cable installation is expected to be generally limited to a corridor defined by the length and width of the power cables. Retrieval of the cables will necessarily disturb the overlying sediments and thus the width of the disturbance would be slightly wider (estimated to be up to 2 feet [<1 meter]). The power cable routes for this project would be within the area previously surveyed and evaluated for cultural resources (see above) and the one potential resource will be avoided by all cables.
The retrieval of the out-of-service cables and installation of replacement power cables by the DP cable installation vessel would not be expected to impact the identified cultural resource sites as they are located away from the power cable corridor.

Cable Removal Impacts at End of SYU Life: This section discusses the potential impacts of the removal of all power cables to cultural resources within the OCS at the end of SYU life.

ExxonMobil estimates that decommissioning of its SYU facilities would occur sometime in the future. Deferring removal of all cables within the OCS until that time would mean that this activity would occur as a small part of a large-scale decommissioning and removal project. It is estimated that 2 to 3 years would be required to remove all SYU facilities. Removal of the OCS segments of the power cables is estimated to require up to 3 weeks to complete. The decommissioning and final removal of the project will be subjected to detailed NEPA and CEQA review in the future. Expected impacts would be the same as those described in the previous section.

1.10.3 Mitigation Measures

As stated above, only one potentially-significant cultural resource site is within the zone of potential disturbance from the proposed cable installations. The potential threat to this site is minimal as it is located several hundred feet from the nearest power cable and will not be within any proposed vessel anchoring location.

The applicant has committed to the protection of cultural resources during cable placement and retrieval and has proposed the following procedures as agreed to in previous consultation with the California State Office of Historic Preservation and included in the SYU Expansion Project Cultural Resource Plan. In addition, FDP conditions of approval already in-place (Conditions XIII – XIII-6) will be implemented for the onshore portion of the proposed project.

Offshore

ARCH-1: Require contractors to avoid potential offshore cultural resources by a 300 feet (90 m) radius to the extent possible during all offshore installation activities. This protective zone is to account for routine uncertainties in using remote sensors to precisely locate potential cultural resources in deep waters.
Expected Enforcement Agency: BSEE.

ARCH-2: Provide all vessel operators working in these areas with the coordinates of the probable location of the previously-identified site and instruct them to remain outside of the 300 foot-diameter (90 meter-) protective zone.
Expected Enforcement Agency: BSEE.

If complete avoidance of the zone is not possible, further investigations of the affected zone may be conducted through more intensive geophysical field surveys or ROV inspection. If further study indicates that the affected location is the remains of a shipwreck, the significance of the resource would be evaluated, and a mitigation plan would be developed, if appropriate.

ARCH-3: Include a review of avoidance procedures for the cultural resource areas during the pre-installation environmental compliance meeting.
Expected Enforcement Agency: BSEE.

ARCH-4: Utilize an ROV to monitor power cable retrieval and installation activities in the areas of potential cultural resources. The ROV would allow real time monitoring and detection of potential cultural resources. If a potential cultural resource site is encountered during cable placement or removal operations, the operator would immediately notify the BSEE.
Expected Enforcement Agency: BSEE.

ARCH-5: The applicant shall immediately halt cable laying operations if a previously undetected cultural resource site that could be impacted by ongoing operations is discovered. After the applicant has notified BSEE of the discovery, if investigations determine that the resource is significant, BSEE shall inform the operator how to protect the resource.
Expected Enforcement Agency: BSEE.

ARCH-6: ExxonMobil shall use an ROV equipped with a color-imaging sonar with a range of at least 300 feet (90 meters) in polar-scanning mode to monitor cable placement and retrieval activities in the area of the previously-identified possible cultural resource. . If a previously undetected resource site is discovered, then mitigation ARCH-10 will be instituted
Expected Enforcement Agency: BSEE.

ARCH-7: In the event that a power cable needs to be laid outside of the previously-surveyed area, ExxonMobil shall use the ROV described in ARCH-6, above, to identify potential cultural resources within the revised corridor prior to installation. If a previously undetected resource site is discovered, then mitigation ARCH-10 will be instituted.
Expected Enforcement Agency: BSEE.

ARCH- 8: The applicant shall arrange for responsible agencies to attend a meeting with the cable installation contractor ship's captain to review cultural site avoidance procedures prior to commencing cable installation activities.
Expected Enforcement Agency: BSEE, SLC.

ARCH-9: The BSEE and/or SLC retain the option for inspectors to be present on a vessel at the sites to ensure that proper cable installation and retrieval procedures are conducted.
Expected Enforcement Agency: BSEE, SLC.

ARCH-10: If a previously undetected resource site is discovered, the applicant shall immediately notify BSEE and SLC and avoid the site. If the resource site is unavoidable, the applicant shall immediately halt cable installation or retrieval operations and perform an investigation, according to BSEE/SLC instructions, to assess whether the site is significant. If the site is significant, the BSEE/CSLC shall inform the applicant how to protect the resource.

Expected Enforcement Agency: BSEE, SLC.

Onshore

While impacts to onshore archaeological resources from the proposed project are not expected to be significant, the following mitigation measures would minimize potential impacts to the maximum extent feasible. In addition, FDP conditions of approval already in-place (Conditions XIII – XIII-6) will be implemented for the onshore portion of the proposed project.

ARCH-11: All onshore construction plans shall clearly state that excavation shall be limited to approximately 8-9 feet below ground surface and to 3-6 feet below the cable from the entry point at the tunnel north wall for a distance of approximately 400 feet north of the wall. Evidence of compliance with this mitigation measure shall be documented prior to land use clearance and monitored by the County's EQAP Monitor or County Staff in the field.
Expected Enforcement Agency: SBC.

ARCH-12: If potential cultural material is encountered during excavation, work shall be halted until a Planning and Development-qualified archaeologist and Native American representative are consulted. Protection of archaeologically significant material shall be in accordance with County Guidelines.
Expected Enforcement Agency: SBC.

ARCH-13: A pre-construction meeting shall be organized to educate onsite construction personnel as to the sensitivity of archaeological resources in the area. ExxonMobil personnel shall instruct all construction and project personnel to avoid removing cultural materials from the property. Evidence of compliance with this mitigation measure shall be documented prior to land use clearance. Agency personnel shall be invited to attend the meeting.
Expected Enforcement Agency: SBC.

As proposed and mitigated, residual impacts to onshore and offshore cultural resources are expected to be less than significant.

Conclusions – Proposed Project
The one offshore site within the general area of the proposed project is potentially significant under the criteria described above. Significant impacts to cultural resources occur when the integrity of a significant or potentially significant site or isolated artifact is eliminated or reduced. All anchor deployments would be located outside of the 300 foot (90 meter) wide protective buffer zone, centered on the resource location. This avoidance measure, coupled with the suspending of anchor lines that might cross previously-identified resource sites, ensures that disturbances to known potential cultural resources would be minimized. Therefore, anchoring operations would not impact known cultural resources. The one identified site is located away from the cable installation and retrieval locations, therefore, these activities would not result in impacts. As proposed and mitigated, the proposed actions are expected to result in less than significant impacts to known offshore cultural resources.

Excavation work in the lower canyon would not be expected to result in any adverse impacts to onshore cultural resources due to the depth of excavation and amount of fill material over known

sites. As such, impacts to known onshore cultural resources would be insignificant, assuming the implementation of mitigation measures.

1.10.4 Cumulative Analysis

The source of cumulative impacts to submerged cultural resources is physical disturbance from non-project related activities. The sources include commercial trawl fishing, non-project vessel anchoring, other cable/pipe laying activities, and unauthorized removal of artifacts by recreational scuba divers. Because of stringent monitoring and mitigation of actions that could affect cultural resources by local, State, and Federal agencies, project actions are likely to cause little cumulative impact.

Since no other offshore operations are expected to take place during the Phase 1 platform modifications and the Phase 2 cable retrieval and installation operations in this area, and given the insignificant impacts of the ExxonMobil's OPSRB project on cultural resources, the incremental addition of the proposed action to cumulative impacts on cultural resources would be insignificant.

1.11 Energy

1.11.1 Environmental and Regulatory Setting

Energy needs for both onshore and offshore SYU facilities are typically supplied by a 49 MW cogeneration plant, comprised of a gas and steam turbine. Natural gas produced offshore and processed at LFC provides fuel for the 39-MW gas turbine and steam from process boilers runs the 10 MW steam turbine. Any excess power may be sold to the local utility. If additional electrical power is needed, it may be purchased from the Southern California Edison grid.

1.11.2 Project Impact Assessment

A project may be expected to have the potential for significant impacts to energy if it creates a substantial increase in demand upon existing energy sources or requires the development or extension of new sources of energy. The proposed project would not significantly increase demand for energy. The replacement of the existing power cables would re-establish the initial level of power system distribution redundancy to the platforms and enhance overall SYU reliability. Energy needs for the project would be supplied by existing sources or from onsite generation (via ExxonMobil's cogeneration plant). There would be a slight decrease in energy production and consumption during the time SYU is down for cable connections at platforms, onshore and during tunnel work. The proposed project would not require the development of new sources of energy.

1.11.3 Mitigation Measures

No mitigation would be required as there would be no impacts from the proposed project.

1.11.4 Cumulative Impacts

Given the fact that the proposed project would re-establish the original level of power system redundancy to the platforms and the project adds no substantial electrical load, there are no cumulative impacts on energy usage foreseen.

1.12 Environmental Justice

On February 11, 1994, President Clinton issued Executive Order 13084 to address questions of equity in the environmental and health conditions of impoverished communities. In response to this Executive Order an Environmental Justice analysis of the community affected by a Federal action is required. The U.S. Census Tract (Tract 2910) directly affected by the proposed project had a year 2000 minority population of 33.7 percent which is lower than the State of California minority population of 40.5 percent, and higher than the 24.9 percent for the entire U.S. The 1999 median annual income of the directly affected community was $70,550 compared to $47,493 for the State of California and $41,994 for the United States. The percentage of the population living at or below the poverty level in 1999 was 5.5 percent or approximately one-half of the 10.6 percent experienced in California, and 58 percent of the United States poverty level of 9.6 percent. Based on the demographic and economic characteristics of the directly affected community there does not appear to be an Environmental Justice concern from the project.

1.13 Fire Protection

1.13.1 Environmental and Regulatory Setting

Onshore: Las Flores Canyon is a designated high fire hazard zone. Fire risk was identified as a Class I impact (significant and avoidable with mitigation) in the Exxon FEIR (83-EIR-22). Design safety features were incorporated into the overall facility design to minimize fire and explosion probability, including automatic shutdown valves, emergency relief devices and control of ignition sources. In addition, a comprehensive training program and operations procedures have been implemented as part of the Safety Inspection and Maintenance Plan (SIMP). Lastly, the integrated canyon-wide Fire Protection Plan (FPP) was implemented to evaluate the potential fire hazards associated with the ExxonMobil onshore facilities and explain the measures taken to mitigate fire-related hazards. Design features, including the selection of equipment and process systems, were incorporated to minimize fire and explosion probability.

As part of the development of the FPP, qualified fire protection engineers performed a fire hazard analysis of the facility using national standards and industry practices as guidelines. In addition to the fire hazard analysis, the following five additional analyses were conducted or used as part of ExxonMobil's Risk Management Program: 1) LFC Facilities Hazards Identification Analysis (Arthur D. Little, Inc., 1988); 2) SYU Expansion Project, Hazards and Operability Study HAZOPS), (NUS Corp., 1989); 3) SYU Expansion Project, Preliminary HAZOPS Review (Technica, 1991); 4) SYU Expansion Project Risk Assessment of LFC Facilities (Technica, 1993); and 5) Final Risk Assessment for Ammonia Transportation to the Chevron Gaviota Facility (Arthur D. Little, Inc., 1991).

Offshore/Platforms: Design safety features were incorporated into the overall platform design to minimize fire and explosion probability, including automatic shutdown valves, emergency relief devices and control of ignition sources. The platforms must comply with Code of Federal Regulations 30 CFR 250.803(b)(8), fire fighting systems, and 30 CFR 250.803(b)(9), fire and gas detection system. In addition, the platforms must comply with American Petroleum Institute (API) Recommended Practice (RP) 14G Fire Prevention and Control on Open Type Offshore Production Platform and API RP 14 F, Recommended Practice for Design and Installation of

Electrical Systems for Offshore Production Platforms, as incorporated by reference in 30 CFR 250.

1.13.2 Project Impact Assessment

A project would be expected to have the potential for significant impacts to fire protection if it introduced development in an existing high fire hazard area without appropriate fire prevention measures or involved high fire risk operations.

Onshore: Las Flores Canyon is a designated high fire hazard zone and is located in a high fire area. The proposed project would not increase the risk of fire beyond that analyzed in previous environmental documents and would not introduce new development into the area. There would be no additional operational risk associated with this project upon completion of the cable installation. However, construction activities in the lower canyon and tunnel areas do present a fire risk.

Existing fire fighting equipment onshore includes adequate firewater pressure, storage, hydrants and other ancillaries. The proposed project would not hamper fire prevention techniques as the project would be located within the existing area of development and Santa Barbara County Fire Station #18 is located approximately 5 miles (8 km) west of Las Flores Canyon. According to County Fire Department officials, response time is 3 to 10 minutes. (See Hazardous Materials/Risk of Upset section for further discussion.)

The tunnel is currently classified Class I, Division 1. The tunnel contains three electrical power cables, a gas pipeline, an oil emulsion pipeline and a produced water line. When ExxonMobil's oil emulsion pipeline was installed in 1993, a flange/isolation assembly was installed on the 20" Oil Emulsion Pipeline inside the tunnel. According to the manufacturer's cut sheet drawing and the information provided by ExxonMobil engineers, the flange/isolation assembly has been welded, epoxy-sealed and pressure-tested. According to American Petroleum Institute (API) Recommended Practice (RP) 500, Classification of Locations for Electrical Installations at Petroleum Facilities and National Electric Code (NEC) 70, the area is classified as Class I, Division 1 due to the presence of the flange/isolation assembly inside the tunnel and below grade location of the tunnel with inadequate ventilation. Class I Division 1 locations are locations where flammable gases or vapors could be present during normal operations. Any equipment present within such classified areas must meet certain specifications for fire protection. In addition, any work in classified areas must be performed in accordance with specific safety procedures as outlined in API RP 500 and NEC 70. Due to inadequate ventilation, the tunnel is also classified as confined space.

Offshore: The proposed project would not increase the risk of fire and would not introduce new unprotected development into the area. The GIS Building to be installed in Phase 1 will have an independent fire suppression system that will be connected into the platform fire systems. Existing fire fighting equipment offshore includes adequate fire hose stations, handheld portable fire extinguishers and both dry chemical and hard line deluge fire suppression systems. Operators are required to test fire detection and suppression systems at prescribed regular intervals. BSEE conducts inspections of platform fire detection and suppression systems. There would be no additional operational risk associated with this project upon completion of the project.

1.13.3 Mitigation Measures

The Las Flores Canyon Facilities FPP was prepared pursuant to Santa Barbara County Final Development Plan Permit Condition XI-2.i to mitigate fire-related hazards associated with the project facilities. The plan addresses each area of the facility and associated risks and hazards, fire protection measures, process control and monitoring instrumentation, fire suppression systems and emergency training. As the FPP does not specifically address the tunnel, the FPP should be supplemented as necessary.

FIRE-1: A project-specific onshore Fire Protection Plan (FPP) shall be prepared for the project. The plan shall be submitted to Santa Barbara County System Safety Reliability Review Committee for review and approval prior to approval of the Santa Barbara County Coastal Development Permit.
Expected Enforcement Agency: SBC

FIRE-2: The applicant shall work with SBC Building and Safety to ensure that the proposed project complies with applicable code and with API RP 500 and NFPA 70 (NEC) for the tunnel area.
Expected Enforcement Agency: SBC.

Residual impacts would be expected to be insignificant.

1.13.4 Cumulative Impacts

Although the SYU facilities are located in a rural, high fire hazard area, the proposed project with mitigation would not exacerbate existing fire risk conditions.

1.14 Geologic Processes

1.14.1 Environmental and Regulatory Setting

Onshore: The onshore portion of the project is located within the western portion of the Transverse Ranges Province, characterized primarily by east-west trending topographic and structural elements. The local topography consists of a narrow beach area, coastal plain, foothills belt and the southern slopes of the Santa Ynez Mountains. The coastal plain is generally less than 3000 feet wide and ranges in elevation from 50 to 200 feet. The area is overlain by alluvial sediments that have been deposited on one or more of the uplifted marine abrasion platforms. The present surface is flat and slopes gradually seaward. The underlying geologic units that consist of cemented sandstone tend to develop steep canyon slopes and narrow valley floors.

The original project EIR (83-EIR-22) analyzed impacts associated with regional geologic formations, including faults. Seismic capabilities of faults within 60 miles (100 km) of the project were evaluated. Seventeen active faults and 12 potentially active faults were identified. Potential impacts from seismic conditions were not determined to be significant.

Offshore: Numerous regional and site-specific seismic investigations have been conducted to assess geologic conditions over the life of the project, including several for the proposed project. The project area is located in the Smooth Slope and Fan Provinces, two of three physiographic provinces that comprise the SYU area. Water depths range from 300 feet (at the shelf edge) to over 1500 feet.

Slope gradients are generally low, ranging from a maximum of 7 degrees (12 percent) to a minimum of 2 degrees (4 percent) or less at the slope/basin interface (Exxon, 1983).

A geophysical survey was conducted in September 2011 to document current conditions of the existing and proposed cable route (*Pre-Project Geophysical / Archaeological Survey Report*, Fugro Consultants, Inc., November 2011 (Revised December 2011). In addition, the proposed cable route in shallow water, from 15 to 75 feet ocean depth, was surveyed and reported in a separate report (*Pre-Project Nearshore Marine Biological Survey*, Padre Associates, Inc., December 2011 and *Cable Crossing Locations Diver Survey*, Padre Associates, Inc., May 2012). The objectives of the surveys included mapping the location of the proposed cable routes, identifying and mapping seabed features in the project area, identifying and mapping submarine cables and pipelines within the project area, identifying and mapping bathymetric data in the project route and providing coordinates of any anomalies.

Data was collected using single beam bathymetry, side scan sonar, sub-bottom profiler and magnetometer. Seafloor features were mapped along the proposed cable routes from the sonar data. Features identified included topographic sea floor features such as mounds, depressions, rises, scour and areas of disrupted seabed, anchor drag and trawl scars. Areas of seafloor change, debris and bedrock outcrop were also mapped as part of the survey.

Prominent seafloor features identified along the proposed cable routes primarily include anchor scars, impact depressions and rock or hard bottom areas near Platforms Harmony and Heritage and at the shelf break. In addition, a fan channel is located between Platforms Harmony and Heritage. The seabed floor surrounding Platform Heritage is relatively free of features with the exception of several large areas of rock south of the structure.

1.14.2 Project Impact Assessment

Impacts are considered potentially significant if the proposed project, including all mitigation measures, could result in substantially increased erosion, landslides, soil creep, mudslides or unstable slopes. In addition, impacts are considered significant if people or structures would be exposed to major geologic hazards upon implementation of the proposed project. Impacts related to geology have the potential to be significant if the proposed project is located on land having substantial geologic constraints or involves excessive grading or cut and fill operations. Impacts are also considered significant if they would result in a prominent permanent change in topography or bathymetry.

Onshore: The proposed project would be located within the existing SYU development. The lower canyon area where onshore work would be located is flat and graded with compact fill. Approximately 800 to 1000 cubic yards of excavation would be required to expose the north end of the tunnel and power cables. All earthmoving work would be limited to the previously graded areas. A small trench may need to be dug in native soil from the fill pad to an existing pull-box (approximately 50-100 ft.) to connect the fiber optic cable. Existing LFC protocol will be followed. Approximately 75-125 cubic yards of fill consisting of thermal material, sand and concrete would be required to stabilize the replacement cables prior to filling in the trench. Approximately 125-175 cubic yards of excess fill material would be either stored on site or transported off site to a suitable location.

The proposed project would not exacerbate or produce unstable earth conditions, due to the relatively small quantity of excavation and the location. There would be no significant cuts, fills or grading with the proposed project and no significant temporary or permanent changes in topography. The area of the proposed onshore excavation is not located in an area of any unique geologic, paleontologic or physical feature. Due to the location and limited amount of excavation, no increase in wind or water erosion of soils is expected, either on or off the site. However, a Storm Water Pollution Prevention Plan has been developed and will be implemented for the onshore activities and used during any rain events. Work in the lower canyon would be outside the creek setback and work on the south side of Highway 101 would be limited to tunnel access from a paved bike and pedestrian path.

Offshore: The replacement cables would be anticipated to conform to the fan channel; no long spans are anticipated nor would there be the need for any cable supports. The replacement cables, measuring approximately 7 inches in diameter, would likely be covered with sediment over time and not result in a measurable change to the bathymetric profile of the seafloor. No permanent modifications to the ocean floor would be anticipated as anchoring has been minimized by use of a dynamically positioned vessel. An anchoring plan has been prepared for non-DP vessels that would ensure that anchor locations are in areas with no potential for impacts (e.g., hard bottom impacts). Installation of the cables and retrieval of several sections would not cause any subsea landslides or other potentially damaging geologic process. Temporal and localized turbidity would result, however the effect of such action would not be significant (see Water Quality section).

1.14.3 Mitigation Measures

The applicant has proposed to implement the following mitigation measures to further reduce the potential for impacts to geologic resources.

GEO-1: Contractors shall be required to utilize current industry standards in engineering designs. *Expected Enforcement Agency: BSEE, SLC, SBC.*

GEO-2: Utilize an ROV that shall monitor selected portions of the installation activities during the cable installation operations. If previously unidentified hard bottom areas are observed, the cable route shall be adjusted, as necessary, with agency approval, to avoid resources.
Expected Enforcement Agency: BSEE, SLC.

Residual impacts would be expected to be insignificant.

1.14.4 Cumulative Impacts

The proposed project would not substantially contribute to any onshore cumulative impacts as the area of temporary disturbance is not in a sensitive geologic area. Further, excavation would be limited to previously developed portions of the canyon.

The proposed project would contribute to the accumulation of manmade structures and oil and gas infrastructure on the sea floor until the end of the SYU life. For the purposes of this analysis, it is not anticipated that the proposed project would significantly contribute to cumulative impacts associated with modifications to geologic processes. As conditioned, the replacement cables would be removed at the end of the SYU life so as not to contribute to manmade seafloor structures in perpetuity.

1.15 Greenhouse Gases

1.15.1 Environmental and Regulatory Setting

The Council on Environmental Quality's (CEQ) first Annual Report in 1970 discussed climate change, concluding that "man may be changing his weather." At that time, human activities had increased the mean level of atmospheric carbon dioxide to 325 parts per million (ppm). Since 1970, the concentration of atmospheric carbon dioxide has increased at a rate of about 1.6 ppm per year (1979-2008) to the present level of approximately 400 ppm (2013 globally averaged value). The atmospheric concentrations of other, more potent greenhouse gases (GHGs) have also increased to levels that far exceed their levels in 1750, at the beginning of the industrial era. As of 2004, human activities annually produced more than 49 billion tons of GHG measured in carbon dioxide equivalents (CO_2e), according to the Intergovernmental Panel on Climate Change (IPCC). Nearly every aspect of energy choices and use affect the development of fossil fuel and other energy resources, either adding to or reducing the cumulative total of GHG emissions.

It is now well established that rising global GHG emissions are significantly affecting the Earth's climate. These conclusions are built upon a scientific record that has been created with substantial contributions from the United States' Global Change Research Program (USGRP, formerly the Climate Change Science Program), which facilitates the creation and application of knowledge of the Earth's global environment through research, observations, decision support, and communication.

Based primarily on the scientific assessments of the USGCRP and National Research Council (NRC), EPA issued a finding that the changes in our climate caused by GHG emissions endanger public health and welfare. Ambient concentrations of GHGs do not cause direct adverse health effects (such as respiratory or toxic effects), but public health risks and impacts as a result of elevated atmospheric concentrations of GHGs occur via climate change. For example, EPA has estimated that climate change can exacerbate tropospheric ozone levels in some parts of the U.S. Broadly, EPA states that the effects of climate change observed to date and projected to occur in the future include, but are not limited to, more frequent and intense heat waves, more severe wildfires, degraded air quality, more heavy downpours and flooding, increased drought, greater sea-level rise, more intense storms, harm to water resources, harm to agriculture, and harm to wildlife and ecosystems. [Source: *Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emission*, February 18, 2010, available at ceq.hss.doe.gov/ current_developments/new_ceq_nepa_guidance.html.]

Regulations enacted at the federal level that could potentially affect the proposed project include:

- EPA's Greenhouse Gas Reporting Rule, requiring annual reporting for specified industrial facilities, and
- EPA's Greenhouse Gas Tailoring Rule, establishing GHG emissions thresholds at which permits are required under EPA's New Source Review Prevention of Significant Deterioration and Title V Operating Permits programs.

The CEQ has also issued draft (not yet finalized) guidance on addressing GHGs and climate change under NEPA (op cit.) While CEQ has not recommended a specific threshold at which GHGs

should be considered significant, CEQ recommends that agencies consider whether additional analysis is required for long-term actions with direct emissions of 25,000 metric tons CO_2e or greater per year. The CEQ notes that 25,000 metric tons CO_2e per year is a useful, presumptive threshold for GHG emissions discussion and disclosure, because it has been used and proposed in various EPA rulemakings.

Programs enacted at the state level that could potentially impact the proposed project include:

- Enactment of the California Global Warming Solutions Act (AB 32), requiring implementation of programs to reduce California's GHG emissions to 1990 levels by 2020;
- Adoption of the California Climate Change Action Plan, requiring GHG reductions from specified sources and activities; and
- Adoption of the GHG Cap-and-Trade program, establishing a system of market-based declining annual aggregate emission caps for GHG emission sources.

Under provisions of SB 97 (Dutton, 2007), the California Natural Resources Agency revised the state's CEQA guidelines in December 2009 to require analysis and mitigation of potential effects of a project's GHG emissions on climate change. The revisions, however, did not recommend a specific significance threshold. The SBCAPCD recommends that project CEQA documents include a quantification of GHG emissions from all project sources, direct and indirect, as applicable. In addition, the SBCAPCD recommends that climate change impacts be mitigated to the extent reasonably possible, whether or not they are determined to be significant. [*Scope and Content of Air Quality Sections in Environmental Documents*, December 2011, available at www.sbcapcd.org/apcd/landuse.htm.] In May 2011, the SBCAPCD proposed a GHG emissions significance threshold of 10,000 metric tons CO_2e per year for stationary sources. [*CEQA Significance Thresholds for GHGs – Questions and Answers*, May 2011, available at www.sbcapcd.org/apcd/landuse.htm.] This threshold has not yet been adopted by the District.

1.15.2 Project Impact Assessment

The impact of GHG emissions on global climate change is inherently a global and cumulative impact, not a project-specific impact. This is because no single project would be capable of generating sufficient GHG emissions to noticeably affect global temperature. However, the combination of GHG emissions from past, present, and future projects could contribute substantially to global climate change. Thus, project-specific GHG emissions are evaluated in terms of whether or not they would result in a cumulatively significant effect on global climate change.

As indicated above, the CEQ recommends use of 25,000 metric tons CO_2e per year as a useful, presumptive threshold for GHG emissions disclosure in NEPA documents, but does not recommend a specific significance threshold. The SBCAPCD has recommended 10,000 metric tons CO_2e per year as a significance threshold for stationary sources. Even through the SBCAPCD has not yet formally adopted this threshold, it has provided substantial evidence under CEQA that this threshold is appropriate. [*CEQA Significance Thresholds for GHGs – Questions and Answers*, May 2011.] Therefore, for this project, a significance threshold of 10,000 metric tons CO_2e per year is appropriate for all cable retrieval, installation, and other construction activities, onshore and offshore, proposed as part of this project. Since cable removal activities at the end of the SYU life are not proposed to be changed, these activities are not included in the analysis.

Anticipated cable retrieval and installation activities and other associated construction activities proposed as part of this project are described in Section 1.3. Based on anticipated operations, assuming compliance with SBCAPCD Rule 202, GHG emissions are expected to be 759 metric tons CO_2e over Phase 1 (15-21 months), and 3,787 metric tons CO_2e over Phase 2 (8-12 months). Since the cumulative GHG emissions for Phase 1 and Phase 2 activities fall below 10,000 metric tons CO_2e per year, the project's emissions are expected to have a less than cumulatively significant effect on global climate change.

1.15.3 Mitigation Measures

Proposed air quality mitigation measures AQ-1, AQ-2, and AQ-5 will act to reduce GHG emissions, in addition to criteria pollutant emissions.

Residual impacts would be expected to be insignificant.

1.15.4 Cumulative Impacts

As discussed above, the impact of the project's GHG emissions on climate change is inherently a global and cumulative impact, and is discussed in Section 1.15.2.

1.16 Hazardous Materials/Risk of Upset

This section provides an estimation of potential upset events associated with the proposed project and provides estimates of their probability of occurrence. The referenced analysis was conducted for the OPSR-A project and the expectation is that the results would be essentially the same for the OPSRB project due to the similarities in retrieval and installation activities.

An upset is defined as an accident or other event that results in the release of petroleum hydrocarbons or other hazardous materials. An accident or upset must occur before there is an impact to assess. This section describes upset events that could occur, regardless of how likely or unlikely the event. The information below describes the potential upset events, regulatory setting, oil spill response capability, and risk analysis methodology and probabilities. This section also describes mitigation measures agencies would require to ensure the risks of oil spills and potential environmental impacts are mitigated to the maximum extent feasible.

Cable Installation and Removal Operations

As described in the OPSRB Project Description, the project would involve retrieval of out-of-service cables and installation of three replacement cables (A2 (or B2), F2 and G2) in the vicinity of the project facilities described above.

In the nearshore area, the project would involve removing Cable A (or B) and C1 from the conduit and the tunnel that convey the cable through the surf area. After each cable is cut onshore and prepared for removal, the cables could be removed by either of two different approaches. In one case, the DP vessel would pull the cut portion of the cable through the tunnel and the conduit. This would be done using the reeling/winching equipment onboard the vessel with a control winch at the splice point in the lower LFC area. In the second case, the cable would be cut outside the conduit terminus and a winch at the splice point in the lower LFC area

would pull the cut portion of the cable through the conduit and tunnel. A control line would be attached to the DP vessel.

Cables A (or B) and C1 cross the POPCO gas pipeline within the State waters approximately 1,600-1,800 feet offshore of the cable conduit terminus. A recent shallow water survey performed in May 2012 (reference *Cable Crossing Locations Diver Survey*, Padre Associates, Inc.) showed the POPCO gas line to be buried by several feet of sediment in the area of Cable C1 and relatively clear in the area of Cable A (or B). An articulated concrete mat, laid at the time of original installation, covers each power cable to keep it in place. Removal of each cable in the vicinity of the gas pipeline would be done with the help of divers and remotely operated vehicle (ROV). Divers would cut out concrete blocks along the length of the mat to free each cable. The remaining portions of the mat would remain in place.

Cable A2 (or B2) and F2 would then be installed through the same conduits and placed in the same location in the tunnel where the out-of-service Cable A (or B) and C1 are currently situated. Cable A2 (or B2) and F2 would be installed within the proposed corridors in the OCS, in the State waters the replacement cables would essentially take the place of the existing cables.

The cable installation vessel that would be involved in the cable installation and retrieval would maintain at least 250-500 feet (76-152 meters) distance from the tops of each platform, which is well within the vessel's capability to safe maneuver in the vicinity of the structures without a collision in any foreseeable weather conditions. (Under 33 CFR 147, 500 meters is the radius of the three platforms safety zone for the vessels over 100 feet long that do not service the facilities.)

The proposed cables would be installed from a cable installation vessel equipped with a dynamic positioning 2 (DP 2) system that is specifically designed for installations of cables in deep waters. The cable installation vessel is anticipated to be approximately 325 to 425 feet long, with the capability to store all of the replacement cables. The vessel will have storage space to handle the retrieved cable but may be required to return to port to unload cable during the project.

The vessel will be powered by diesel generator sets that are designed to maintain vessel position under adverse weather conditions. The vessel fuel capacity may be limited and could require refueling at a local port during the project.

The vessel will be equipped with sophisticated computer-controlled dynamic positioning systems that are capable to maintain the vessel's position over the cable in various sea conditions without use of anchors or tug boats. The same cable installation vessel would be utilized in the retrieval of the out-of-service cable portions.

Crude Oil and Gas Physical Properties

A spill of crude oil from the pipeline could damage the environment if oil is spilled on land or in rivers, creeks, or the ocean, and could produce public safety concerns from fires that may arise if the oil burns. Flammable vapors (i.e., propane, butane, and pentane) may also emanate from the crude oil, and there may be safety hazards arising from toxic vapors in the crude oil (primarily benzene and hydrogen sulfide).

Physical properties of crude oil are needed to assess the effects of a potential spill from a damaged pipeline. These data are summarized below.

Table of Project Crude Oil Properties

API Gravity at 60ºF	15.5 (Heritage) – 21.9 (Harmony)
Water Content	~40%
H_2S content, ppm	25
Sulfur Content, wt% dry	4.30-5.18
Viscosity, centistokes at 50ºF	818 (Hondo) – 36,500 (Heritage)

Source: ExxonMobil Oil Spill Response Plan, 2000.
Notes: F = Fahrenheit

Because the emulsion mixture transported by the project pipelines has a large percentage of water (approximately 40%) impacts would be limited to environmental as opposed to safety impacts. The large volume of water in the emulsion inhibits the release of flammable vapor in the event of an oil spill, thus minimizing potential fire and explosion hazards.

The gas pipelines (Heritage to Harmony, Harmony to Hondo, and Hondo to LFC) contain sour gas with an H_2S content of 3,800 to 20,000 ppm. The pipelines operate at 1,100 psig. The Hondo to LFC portion of the line has a maximum flow rate of 90 mmscfd.

1.16.1 Environmental and Regulatory Setting

Potential upset events for the proposed project can be characterized as minor accidents or major accidents (Table RMM-1). Minor accidents could result in small spills of petroleum hydrocarbons, including fuels, lubricants, waste oils, and hydraulic fluids in volumes ranging from a few drops to several gallons. For the previous similar project, SBC and MMS (currently BOEM/BSEE) identified two potential spill scenarios for minor accidents: (1) incidental spills of lubricating oils, hydraulic fluids, and waste oils, and (2) incidental spills of fuel oil during offshore refueling operations.

Major accidents are those which have the potential to result in larger spills. For the previous similar project, SBC and MMS (currently BOEM/BSEE) identified four potential major accident scenarios that could result in an oil spill: (1) anchoring damage to a pipeline, (2) dropping cable and damaging a pipeline, (3) vessel collisions with the platform, and (4) damage to a pipeline during cable installation and removal work in the onshore tunnel.

Table RMM-1: Overview of Potential Upset Events and Estimated Probability of Occurrence (OPSR-A)

Minor Accidents	***Probabilities****
1. Incidental spillage of petroleum hydrocarbons from the DP and support vessel.	Unlikely
2. Incidental fuel oil spills.	Unlikely
Major Accidents	
1.Dropping or dragging of anchor with possible damage to pipeline.	Unlikely
2. Accidental release of cable with possible damage to pipeline.	Highly Improbable
3. Impact by the DP vessel with a platform	Rare
4. Removal and installation of the cable in the conduit tunnel with possible damage to the pipeline.	Highly Improbable

* The numerical probabilities are provided in Table RMM-2

The MMS (currently BOEM/BSEE) and SBC determined for the previous similar project, based on technical information and analyses provided by ExxonMobil, and a review conducted by an independent consultant, that the potential for these upset events ranges from unlikely (such events occur, but are not likely during this project) to rare (such events have occurred on a worldwide basis, but only a few times) to highly improbable (such events have never occurred but conceivably could) (Table RMM-2). The information presented below describes the upset events that could result from routine operations and an accident in greater detail, and ExxonMobil's and industry's oil spill response capability. The information demonstrates that oil spill response planning and capabilities are more than adequate to respond to any spills that could reasonably result from this project. The text also identifies additional mitigation measures to further minimize the potential for an oil spill.

Regulatory Setting

Many regulations and standards exist to assure the safe construction and operation of pipelines carrying materials such as crude oil and natural gas, and facilities associated with these pipelines. The SYU facilities were built to meet these standards and are currently in compliance with applicable Federal, State and local pipeline safety requirements. Cable installation and retrieval activities on the OCS and State Tidelands would be conducted in accordance with Federal OCS oil and gas regulations (Title 30, Part 250, Code of Federal Regulations) and State oil and gas regulations, respectively. Furthermore, Federal, State, and local regulatory requirements would apply to any potential accidental release that could occur during power cable retrieval and installation.

Title 30, Part 254 of the Code of Federal Regulations defines the requirements for oil spill response for all operators in the OCS. In addition, condition XI-2.e of the ExxonMobil Final Development Plan issued by the County also outlines requirements for oil spill contingency planning for SYU operations. Among other things, each operator must have an approved Oil Spill Response Plan (OSRP) and be capable of implementing the plan in the event of an oil spill. ExxonMobil's OSRP was most recently updated and submitted to BSEE in the June of 2012 (ExxonMobil, 2012). The information below is provided as an overview of ExxonMobil's response capabilities.

SYU Oil Spill Response Capability

ExxonMobil maintains an OSRP for the three SYU platforms and the associated pipelines. The OSRP is approved by the BSEE and undergoes biennial revisions. The SYU OSRP contains the full range of response and coordination actions, reporting and notification information, information on the response capabilities of the company and various response contractors, spill identification and assessment procedures, sensitive resources identification and protection methods, response and cleanup planning, and oil and debris removal and disposal procedures. The plan also contains detailed description of the actions that would be undertaken in case of an oil spill at the SYU offshore facilities.

ExxonMobil and Clean Seas are the primary response equipment providers for incidents at the SYU facilities. The equipment is located on all three SYU platforms and on the crew and supply boats, and includes various booms, sorbent pads, storage bags, skimmers and hand tools (a list of the available equipment is located in Appendix E of the SYU OSRP).

Clean Seas' Oil Spill Response Vessels (OSRV) are normally moored near Santa Barbara Harbor (2.5-3.5 hours response time) and Point Conception (1.3-2 hours response time). The closest piers that can be used to load the support vessels with the response equipment from the various facilities and contractors are Ellwood Marine Terminal and the Gaviota Marine Terminal.

The company's emergency response organization operates under the tiered response concept in which resources are cascaded to the appropriate level as dictated by incident circumstances. The first tier of the response organization, comprised of onsite personnel and equipment dedicated to a specific ExxonMobil facility or operation, is the Onsite Response Team (ORT). The ORT response times range from several minutes (for the incidents at the facilities) to 1-2 hours (for incidents at different sections of the pipelines). Clean Seas fast-response vessel could also be summoned for site characterization assistance, if needed. The Clean Seas various vessels response times range from 1.3 to 2 hours.

If resources exceeding those of the ORT are required, the second tier of ExxonMobil's response organization – the Santa Barbara Channel Emergency Local Interfunctional Response Team (SBC ELIRT) - would respond. The SBC ELIRT is one of several ELIRTs established by ExxonMobil to provide spill response capabilities for regional areas of operation in the continental United States. ExxonMobil periodically holds SBC ELIRT tabletop drills involving many regulatory agencies and contract personnel. In the event that an incident is beyond the response capabilities of the SBC ELIRT, the third tier of ExxonMobil's response organization – the North America Regional Response Team (NARRT) – would be mobilized to supplement SBC ELIRT response operations.

Risk Analysis Methodology
An analysis of risk considers two components:

- The probability or likelihood of the occurrence of the upset event, and
- The result of the upset event.

Definitions of various probabilities of occurrence are presented in Table RMM-2. This table has been modified from a similar systems safety table in the Joint EIS/EIR prepared for the San Miguel Project (URS, 1985) and used in similar offshore oil projects. The occurrence of an upset event has been defined for probabilities ranging from virtually certain (0.999) to highly improbable (less than 1 in a million or 10^{-6}).

Table RMM-2: Definitions of Probability of Occurrence

Group	Descriptor	Probability of Occurrence	Description
1	Highly Improbable	Less than 1 in a million ($< 10^{-6}$)	Such events have never occurred but conceivably could
2	Rare	Between 1 in a million and 1 in ten thousand ($> 10^{-6} < 10^{-4}$)	Such events have occurred on a worldwide basis, but only a few times
3	Unlikely	Between 1 in ten thousand and 1 in one hundred ($> 10^{-4}$ to $< 10^{-2}$)	Such events occur, but are not likely during this project
4	Likely	Between 1 in one hundred and less than one ($> 10^{-2}$ to < 1)	Such events are likely to occur during this project
5	Virtually Certain	0.999	Such events can be expected to occur more than once during the project

1.16.2 Project Impact Assessment

The potential upset events that could occur for this project and result in an oil spill are:

1. Incidental spills of lubricating oils, hydraulic fluids, and waste oils.
2. Incidental fuel oil spills.
3. Anchoring accidents.
4. Accidental release of the cable during lifting operations.
5. Collision of the DP vessel or Supply/Work vessel with a platform.
6. Accident during removal and installation of the cable in the onshore tunnel.

Potential risks associated with the project are described below along with applicant recommended mitigation measures.

Potential Upset Event 1 - Incidental Spills of Lubricating Oils, Hydraulic Fluids and Waste Oils

The operation of supply and crew vessels as well as the DP vessel would involve the use of petroleum hydrocarbons. Such materials include:

- Lubricating oils
- Hydraulic fluids
- Waste oils

Transfer of these materials to or from the DP vessel or spillage of these materials on any vessel could result in their release to the marine environment. The probability that this upset event would occur is estimated to be unlikely (such events occur, but are not likely during this project).

MMS (currently BOEM/BSEE) believed for a previous similar project that incidental spillage of lubricating oil, hydraulic fluids, and waste oil would be very unlikely to result in a significant impact to the marine environment due to the small volume of such spills, oil spill response capability, and resources in the immediate area.

SBC considers any reportable spill to the marine environment to be potentially significant. SBC has therefore determined that Potential Upset Event 1 could result in potentially significant impacts. The risk of such an occurrence, however, would be mitigated to a level of insignificance by implementing mitigation measure RMM-1 (see Section 1.16.3).

Potential Upset Event 2 - Incidental Fuel Oil Spills

Project vessels would refuel at Port Hueneme or another local port. Although allowed, refueling will not occur at the platforms using tote tanks. The SYU project is permitted to use this method of refueling and has used it on rare occasions in the past.

There would be no boat-to-boat fuel transfers. Skiffs on the DP vessel would be fueled only when they are onboard the DP vessel. The DP vessel carries a 20-40 day fuel supply. Due to the duration (~1 to 2 months) of cable installation and retrieval activities, refueling of the DP vessel may be required during the project. Refueling would take place at a local port.

Supply boats currently transfer diesel fuel to permanent tanks onboard the platforms. These refueling operations are comparable in scope to refueling operations involving tote tanks. From January 1993 to November 2000, a total of 36 diesel spills occurred during supply boat refueling operations at Pacific OCS platforms. The spills resulted in a total release of approximately 50 gallons (189 liters) of diesel fuel. Of these, 11 spills occurred at ExxonMobil facilities where a total of about 5 gallons (19 liters) were spilled.

Refueling of the project vessels from platform-based tote tanks will not occur during the project and therefore, there is no possibility of a release of diesel oil to the marine environment due to a leaking connection, failed loading hose or incorrect practices and procedures. The probability that this upset event would occur is estimated to be very unlikely (such events occur but are not likely during this project). This risk would be present in the OCS region (offshore environment) only, since that is where the platforms are located. The risk would be mitigated to insignificance through implementation of the measures outlined in Section 1.16.3.

Potential Upset Event 3 - Anchoring Accidents

Some project activities would require the use of anchors, some of which would be as large as 10,000 pounds (4,500 kg). While anchors would only be placed in pre-surveyed locations, a safe distance from the existing cable and pipeline facilities, the potential exists for inadvertent anchor placement and damage to the existing cables and pipelines. The probability that this upset event would occur is estimated to be unlikely (such events occur, but would not be likely during this project). There have been no upset events involving anchors and pipelines in the history of oil and gas operations in the Pacific Region. Only one event has occurred in State waters. That event resulted in a spill of 126 gallons of oil (Platform Emmy in the Long Beach area, 1989). Anchoring accidents have occurred in the Gulf of Mexico Region where the location of many pipelines was not known, or where other forces, such as hurricanes, caused mobile drilling or vessels to drag their anchors. In the Pacific Region, the locations of offshore pipelines and power cables have been accurately mapped and the severity of storms is much less severe. Consequently, the chances of similar events occurring are very remote.

ExxonMobil will anchor within previously surveyed anchor zones that are located a safe distance from pipelines, cables, platforms, hard bottom areas, and cultural features. Pursuant to SLC requirements, all anchors must be set a minimum of 250 feet (75 meters) from active pipelines and power cables in State waters.

ExxonMobil estimates the following preliminary information on vessels and anchoring requirements for the proposed project based on a previous similar project (OPSR-A):

1. Pre-Installation Marine Biological Surveys
    a. Dive support vessel would deploy 2-4 anchors of up to 5,000 pounds (2,268 kg) each.
    b. Anchors would be placed in one of 9 pre-surveyed anchoring zones or another surveyed anchor zone.
2. Inspection of Conduit Terminus
    a. Support vessel would deploy 4-6 anchors spread of up to 10,000 pounds (4,536 kg) each.
    b. Anchors would be placed in one of 9 pre-surveyed anchoring zones or another surveyed anchor zone.
3. Conduit Preparation, Clearance and Cable Cutting at Conduit Terminus
    a. Support vessel would deploy 4-6 anchors spread of up to 10,000 pounds (4,536 kg) each.
    b. Anchors would be placed in one of 9 pre-surveyed anchoring zones or another surveyed anchor zone.
4. Conduit Cable Installation Support
    a. Support vessel would deploy 4-6 anchors spread of up to 10,000 pounds (4,536 kg) each.
    b. Anchors would be placed in one of 9 pre-surveyed anchoring zones or another surveyed anchor zone.
5. Post-Installation Marine Biological Survey

a. Dive support vessel would deploy 2-4 anchors of up to 5,000 pounds (2,268 kg) each.
b. Anchors would be placed in one of 9 pre-surveyed anchoring zones or another surveyed anchor zone.

If an anchor was accidentally dropped on a power cable or if an anchor came into contact with a cable (e.g. an anchor drag due to storm conditions or during retrieval operations), damage to the cable could occur and result in a partial or total shutdown of the SYU operations. All three SYU platforms have back up generator equipment for controlled safe shutdowns in the event of a power failure. Depending on when the incident occurs in the project, one or more of the SYU platforms would have redundant power supply cable; therefore, the power to these platforms could be quickly restored. For platforms without a redundant power supply, the platform would be shutdown until one of the replacement power cables could be energized and used to power the platform.

An anchor that is dropped on a pipeline or comes into contact with a pipeline could cause a rupture in the pipeline. If a gas pipeline were punctured, some produced gas could reach the surface, depending on the depth of the release. A gas release would have minimal public health or environmental impacts due to the remote location of the platforms and the natural process of water-soluble components in the produced gas being absorbed by seawater. Dispersion through the water column would prevent toxic concentrations of hydrogen sulfide gas, which is soluble in water, from being present at the sea surface.

A release from the SYU treated water pipeline would cause a release of water that meets the NPDES Permit requirements for ocean discharge and would have minimal impacts on the marine environment.

Assuming that anchor damage to an oil pipeline has occurred and the impact is great enough to produce a leak in the pipeline, the fate of the released crude oil can be estimated using both the National Oceanic and Atmospheric Administration (NOAA) GNOME model and the BOEM/BSEE (formerly MMS) OSRA models (see ExxonMobil OSRP 2012). Oil spill trajectories were reviewed in previous environmental analyses for the SYU Project (SAIC, 1984; ADL 1987). Emergency response operations would rely on the local ExxonMobil and regional Clean Seas capabilities. Additional information on response capabilities are discussed in ExxonMobil's SYU Oil Spill Response Plan.

The likelihood of an oil spill from the emulsion pipeline under this scenario is considered very unlikely due to the design of the pipeline (concrete coated) and the protective measures that have been taken to minimize the potential for anchoring accidents. However, under the SBC significance criteria, risks from anchoring would be considered potentially significant. The mitigation measure described in Section 1.16.3 would reduce the risk to insignificant levels.

Potential Upset Event 4 – Accidental Release of Cable and Damage to Nearby Structures

Under one potential upset event scenario, an accidental release of cable during cable retrieval and/or installation activities could damage existing oil and gas infrastructure, thereby causing a release of crude oil, produced gas or produced water to the marine environment. The probability that this upset event would occur is considered to be highly improbable (such events have never

occurred but conceivably could). Four things would have to happen in order for this upset event scenario to occur:

1. The cable would have to be accidentally and uncontrollably released in water depths in excess of 400 feet (120 meters);
2. The cable would have to fall in the "plunging stalk" mode, as described below;
3. A simultaneous failure of the DP vessel navigation system (or human error) would have to occur; and,
4. The dropped cable would have to hit a pipeline and produce a leak.

If these four events occurred, the cable could potentially impact one of the existing emulsion, gas, or water pipelines causing failure of those facility components.

Risks to seafloor facilities (pipelines and power cables) are a function of the length of cable associated with the break (the depth), the associated weight of any equipment attached to the cable and the mode of cable laydown. A study conducted for ExxonMobil for the previous similar OPSR-A project by Petro-Marine (September 2002) assessed various potential cable "failure" locations and the associated dynamics and potential impact damage. This report is included as Appendix B of this document. [A similar study will be completed for OPSRB once detailed information is available to update the results of the analysis.]

The chance of an accident that resulted in the release of the cable was assumed to be one-in-a-thousand. ExxonMobil was not able to find any statistical data to better define this situation. Discussions between ExxonMobil and installation contractors determined that this estimate was appropriate for the types of activities contemplated for this project. This is based on the installation contractor's cable installation and removal experience, which spans a period of 17 years (1986-2003). Only two cables has ever been dropped during that time; therefore this probability analysis is considered to be conservative. In addition, SBC's independent risk consultant, MRS Environmental, supports the use of this release rate based on work performed on similar offshore fiber optics cable installation and retrieval projects off the California Coast.

The report indicated that there are a number of different cable laydown modes that could occur given a cable failure. These are:

1. Stiff catenary laydown - the cable essentially lays down on the seabed floor, most likely in shallow water (< 50 feet [15 m]);
2. Hammerhead laydown - the cable end lays down quicker than the rest of the cable causing a more sudden impact, most likely in shallow water (< 50 feet [15 m]);
3. "Spaghetti pile" without clamp - the cable loops around like spaghetti with no clamp attached to the end, normally occurs in deeper water; [This was mode for the release of Cable D1]
4. "Spaghetti pile" with clamp - the cable loops like spaghetti but has a 200 pound (91 kg) clamp on the end, normally occurs in deeper water, and
5. Plunging stalk - the cable plunges directly downward, normally occurs in deeper water (> 400 feet [122 m]).

Velocities and impact forces were based on engineering calculations made by ExxonMobil and reviewed by MMS, SLC and an independent consultant MRS Environmental, under contract to

SBC. Damages to seafloor equipment were assessed using finite element analysis assuming that any deformation of the pipe or other electrical cables would constitute damage.

As seen in Table RMM-3, for OPSR-A the plunging stalk failure mode produces substantially more force upon impact than any other failure mode. The plunging stalk mode is the only mode that could cause damage to the emulsion pipeline. Both the "spaghetti pile" with clamp and the plunging stalk modes could cause damage to the electrical cables. Analysis of failures at 1,250 feet (380 meters) depth produced the same results.

Table RMM-3: Cable Laydown and Damage Assessment Results at 450 Ft (135 meter) Depth

Impact Mode	Velocity (ft/sec)	Water Depth (ft/m)	Impact Force (lbs./kg)	Cable Damage	Pipeline Damage
Stiff catenary laydown	NA	<50/15	NA	None	None
Hammerhead laydown	NA	<50/15	NA	None	None
Spaghetti pile without clamp	5.5	All depths	1,248/566	None	None
Spaghetti pile with clamp	5.5	All depths	1,883/854	Yes	None
Plunging stalk	67.3	>400/122	137,000/62,143	Yes	Yes

Source: ExxonMobil SYU Offshore Power System Repair, Amended Project. Cable Retrieval Risk Assessment, PMBCI, September 2002.

A "plunging stalk" failure mode cannot occur in water depths less than 400 feet (120 meters). This occurs primarily on the shelf and is where the cables are in close proximity to the emulsion, gas or water pipelines.

Failure in the "hammerhead laydown" mode could cause damage and potential failure to one of the existing electrical cables.

An inadvertent cable release during retrieval would most likely occur if the cable has been cut and is suspended from the vessel while being raised or lowered. This could occur during cable removal at the shelf break where the existing out-of-service cable would be cut on the sea floor by the ROV and raised to the DP vessel. It could also occur at Platform Harmony or Heritage during cable installation and at the near-shore location near the conduit entrance.

Risks to the existing facilities on the seafloor would be similar in all of the above listed cases and would be a strong function of water depth and the mode of cable laydown. Current facility design and environmental conditions would help to minimize the impact damage. These include coating of some of the pipelines with concrete and self-burying of the near shore pipelines and power cables.

In order to put the potential risk in context, event probabilities have been estimated for the various accident scenarios and potential consequences (e.g., damage to existing cables and pipelines). Tables RMM-2 and RMM-3 present the probabilities of occurrence of damage to seafloor infrastructure in the event a cable is dropped during OPSR-A cable installation or retrieval. Table RMM-4 provides a more detailed evaluation of potential for damage to active SYU pipelines and power cables from a dropped cable during OPSR-A, taking into consideration factors such as the distance to these existing structures and water depth. As these tables show, the probability of the various cable accidents and resultant equipment failures range from zero to

seven in ten million. While these low probabilities indicate that most events are highly improbable for damage to seafloor infrastructure to occur**,** to meet the CEQA requirements to address potential worst-case impacts, and to identify mitigation measures, all potential damage scenarios to the project cables and pipelines were evaluated.

Damage to other power cables and the pipelines by a dropped cable would be similar to those from anchoring accidents. The potential for releases of gas, water and oil, would also be similar. The possibility of damaging multiple cables is considered extremely remote because the only scenarios that could cause cable damage are those that have small impact areas (the clamp and the plunging stalk), and thus a low likelihood of occurring. Damage to a power cable could result in a partial or total shutdown of SYU operations. Due to the depths at which the plunging stalk mode would occur (minimum 400 feet), any gas that could be released from a ruptured gas pipeline would dissipate before it reached the surface.

As discussed for Upset Event 3, the fate of a crude oil release can be estimated using both the NOAA GNOME model and the BOEM/BSEE OSRA models, as was done in the ExxonMobil OSRP. The likelihood of an oil spill from the emulsion pipeline under this scenario is considered to be virtually impossible, because the following series of very unlikely events would have to occur: (1) the cable would have to be accidentally and uncontrollably released in water depths in excess of 400 feet (120 meters), (2) the cable would have to fall in the "plunging stalk" mode (described above), (3) a simultaneous failure of the DP vessel navigation system (or human error) would have to occur, and (4) the dropped cable would have to hit an oil pipeline and produce a leak.

Due to remote possibility of such an event occurring, a discussion of impacts associated with such an event is limited to this section of the document. The mitigation measures outlined below would reduce potential impacts to insignificant levels

Potential Upset Event 5 – Collision of the DP Vessel or Supply/Work Vessel with a Platform

A DP vessel or a supply/work vessel operating near a platform could collide with a platform due to human error or if the propulsion systems of the vessels failed. Such an event could result in an oil spill. ExxonMobil estimates that the DP installation vessel would remain at least 245 to 500 feet (76-152 meters) from the platform during the cable retrieval and installation operations. Both types of vessels would have state-of-the-art navigation and GPS positioning systems. The vessels would also have back-up propulsion systems that can be used if the primary power supply system fails. This would minimize the potential for a vessel/platform collision. The probability that this upset event would occur is estimated to be rare (such events have occurred on a worldwide basis, but only a few times) and therefore considered insignificant for this project. Therefore there are no mitigation measures proposed for this upset scenario.