4.0 ENVIRONMENTAL IMPACT ANALYSIS

INTRODUCTION TO ENVIRONMENTAL ANALYSIS

Section 4 of this Environmental Impact Report (EIR) examines the potential environmental impacts of the proposed Revised PRC 421 Recommissioning Project (Project) identified by the California State Lands Commission (CSLC) as Lead Agency under the California Environmental Quality Act (CEQA). This Section includes analyses of environmental issue areas listed below:

- 4.1 - Geological Resources;
- 4.2 - Safety;
- 4.3 - Hazardous Materials;
- 4.4 - Air Quality and Greenhouse Gases;
- 4.5 - Hydrology, Water Resources, and Water Quality;
- 4.6 - Marine Biological Resources;
- 4.7 - Terrestrial Biological Resources;
- 4.8 - Land Use, Planning, and Recreation;
- 4.9 - Public Services;
- 4.10 - Transportation and Circulation;
- 4.11 - Noise;
- 4.12 - Aesthetic/Visual Resources;
- 4.13 - Cultural, Historical, and Paleontological Resources;
- 4.14 - Energy and Mineral Resources; and
- 4.15 - Socioeconomics and Environmental Justice.

Each environmental issue area analyzed in this EIR provides background information and describes the environmental setting (baseline conditions) to help the reader understand the conditions that exist currently, prior to Project implementation, and the relationship between those existing conditions and potential Project-related impacts. In addition, each section describes the approach to analysis that results in a determination whether an impact is "significant" or "less than significant." Finally, individual sections recommend mitigation measures (MMs) to reduce significant impacts. Throughout Section 4, both impacts and the corresponding MMs are identified by a **bold letter-number designation** (e.g., Impact **TBIO-1** and **MM TBIO-1a**)**.**

Based on an initial review and analysis, it is likely that the Project would have a less than significant impact, or no impact, on the environmental issue areas identified below. The primary reasons for these determinations are as follows:

- Agricultural Resources. Activities for Recommissioning PRC 421 are located on sand, shale bedrock and artificial fill and therefore would not impact soils used for agricultural purposes. The Line 96 Modification Project EIR (Santa Barbara County 2011) fully analyzed agricultural resources along the pipeline route to Las Flores Canyon (LFC) as part of the construction and operation of the new pipeline and is incorporated by reference in Section 4.8, Land Use, Planning and Recreation of this EIR.
- Population and Housing. The Project would not require a change in the number of employees and would require only short-term construction activity for removal of Pier 421-1 infrastructure and repair and upgrade of existing facilities at Pier 421-2. The Project would neither induce substantial population growth in the area nor displace any people or housing units.
- Utilities and Service Systems. The Project would not result in additional demand for water, wastewater treatment, or solid waste disposal services in excess of current capacities.

ASSESSMENT METHODOLOGY

Environmental Baseline

The analysis of each issue area begins with an examination of the existing physical setting or baseline conditions as determined pursuant to section 15125, subdivision (a) of the State CEQA Guidelines that may be affected by the Project. The effects of the Project are defined as changes to the environmental setting that are attributable to Project components or operation.

The baseline conditions for the Project include operation of the Line 96 pipeline, which connects the Ellwood Onshore Facility (EOF) to the Plains All American Pipeline, L.P. (PAAPLP) Coastal Pipeline west of LFC. This EIR relies upon, updates, and under the guidance provided in State CEQA Guidelines section 15150 hereby incorporates by reference the findings of the Line 96 Modification Project EIR (Santa Barbara County 2011) regarding potential impacts and MMs associated with use of that pipeline.

Significance Criteria

Significance criteria are identified for each environmental issue area; these criteria serve as benchmarks for determining if a component action will result in a significant adverse environmental impact when evaluated against the baseline. According to State CEQA Guidelines section 15382, a significant effect on the environment means “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project….”

Impact Analysis

Impacts are classified as according to one of the following five categories:

- **Significant and Unavoidable** – significant adverse impact that remains significant after mitigation;
- **Less than Significant with Mitigation** – significant adverse impact that can be eliminated or reduced below an issue area's significance criteria;
- **Less than Significant** – adverse impact that does not meet or exceed an issue area's significance criteria;
- **Beneficial** – beneficial impact; or
- **No Impact** – the Project would not result in any impact to the resource area considered.

A determination will be made, based on the analysis of any impact within each affected environmental issue area and compliance with any recommended MM, of the level of impact remaining in comparison to pertinent significance criteria. If the impact remains significant, at or above the significance criteria, it is deemed to be "significant and unavoidable." If a significant adverse impact could be reduced to a less than significant level with application of identified mitigation, then it is "less than significant with mitigation." If an action creates an adverse impact above the baseline condition, but such impact does not meet or exceed the pertinent significance criteria, it is determined to be "less than significant." An action that provides an improvement to an environmental issue area in comparison to baseline conditions is recognized as a "beneficial" impact.

Formulation of Mitigation Measures and Mitigation Monitoring Program

When significant impacts are identified, feasible MMs are formulated to eliminate or reduce the severity of impacts and focus on the protection of sensitive resources. The effectiveness of a MM is subsequently determined by evaluating the impact remaining after its application. Impacts which still meet or exceed the impact significance criteria after mitigation are considered residual impacts that remain significant. Implementation of more than one MM may be needed to reduce an impact below a level of significance. The MMs recommended in this document are identified in the impact sections and presented in a Mitigation Monitoring Program (MMP), provided in Section 7.

If any MMs are ultimately incorporated as part of a project's design, they are no longer considered MMs under CEQA. If they eliminate or reduce a potentially significant impact to a level below the significance criteria, they eliminate the potential for that significant impact since the "measure" is now a component of the action. Such measures incorporated into the project design have the same status as any "applicant proposed

measures." The CSLC's standard practice is to include all measures to eliminate or reduce the environmental impacts of a proposed project, whether applicant-proposed or recommended mitigation, in the MMP.

Timing of Project Elements

This EIR addresses the impacts of both recommissioning of Pier 421-2, including construction and operation, as well as abandonment of Pier 421-1. Because Venoco proposes submittal of applications for abandonment of Pier 421-1 after production has commenced at Pier 421-2, the CSLC staff anticipates that actual abandonment of Pier 421-1 will trail construction and initiation of production at Pier 421-2 by approximately 1 year. The impact analysis reflects this assumption.

Cumulative Impacts Analysis

Each issue area in Section 4 presents the cumulative impact scenario, the focus of which is to identify the potential impacts of the Project that might not be significant when considered alone, but that might contribute to a significant impact when viewed in conjunction with the other projects.

Impacts of Alternatives

Section 5 describes the alternatives to the Project and includes the impact analysis for each alternative scenario being considered to the Project. A summary of collective impacts of each alternative in comparison with the impacts of the Project is included within the Executive Summary and Section 6.4.

FEDERAL AND STATE REGULATIONS

Each of the issue areas is considered in terms of the Federal, State, regional, and local laws, regulations, and policies that apply to the issue area. Federal and State laws, regulations and policies, including a summary of each, are provided below in Table 4.0-1, organized by issues area. Applicable regional and local laws, regulations, and policies are summarized in each of the sections.

Table 4.0-1 Major U.S. and State Laws, Regulations, and Policies Potentially Applicable to the Project

4.0 MULTIPLE ENVIRONMENTAL ISSUES		
U.S.	Coastal Zone Management Act (CZMA) (42 USC 4321 et seq.)	The CZMA recognizes a national interest in coastal zone resources and in the importance of balancing competing uses of those resources, giving full consideration to aesthetic, cultural and historic, ecological, recreational, and other values as well as the needs for compatible economic development. Pursuant to the CZMA, coastal states develop and implement comprehensive coastal management programs (CMPs) that describe uses subject to the CMP, authorities and enforceable policies, and coastal zone boundaries, among other elements. The CZMA also gives state coastal management agencies regulatory control ("federal consistency" review authority) over federal activities and federally licensed, permitted or assisted activities, if the activity affects coastal resources; such activities include military projects at coastal locations and outer continental shelf oil and gas leasing, exploration and development. The California Coastal Commission (CCC) and San Francisco Bay Conservation and Development Commission (BCDC) coordinate California's federally approved CMPs and federal consistency reviews within their respective jurisdictions.
CA	California Environmental Quality Act (CEQA) (Pub. Resources Code, § 21000 et seq.)	CEQA requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible. A public agency must comply with CEQA when it undertakes an activity defined by CEQA as a "project" that must receive some discretionary approval (i.e., the agency has the authority to deny the requested permit or approval) which may cause either a direct physical change in the environment or a reasonably foreseeable indirect change in the environment.
CA	California State Lands Commission (CSLC) Public Trust Doctrine	All tidelands and submerged lands, granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the Common Law Public Trust. The CSLC has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways, as well as certain residual and review authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions (Pub. Resources Code, §§ 6301, 6306). As general background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable lakes and waterways upon its admission to the U.S. in 1850. The State holds these lands for the benefit of all people of the State for statewide Public Trust purposes, which include but are not limited to waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation and open space. On tidal waterways, the State's sovereign fee ownership extends landward to the mean high tide line, except for areas of fill or artificial accretion. The CSLC's jurisdiction also includes a 3-nautical-mile-wide section of tidal and submerged land adjacent to the coast and offshore islands, including bays, estuaries, and lagoons; the waters and underlying beds of more than 120 rivers, lakes, streams, and sloughs; and 1.3 million acres of "school lands" granted to the State by the Federal government to support public education. The CSLC also has leasing jurisdiction, subject to certain conditions, over mineral extraction from State property owned and managed by other State agencies (Pub. Resources Code, § 68910, subd. (b)), and is responsible for implementing a variety of State regulations for activities affecting these State Trust Lands, including implementing CEQA.

Table 4.0-1 Major U.S. and State Laws, Regulations, and Policies Potentially Applicable to the Project (continued)

CA	California Coastal Act (Coastal Act) of 1976 (Pub. Resources Code, § 30000 et seq.) CCC Federal Consistency Program	Pursuant to the Coastal Act, the CCC, in partnership with coastal cities and counties, plans and regulates the use of land and water in the coastal zone. The Coastal Act includes specific policies (see Chapter 3) that address issues such as shoreline public access and recreation, lower cost visitor accommodations, terrestrial and marine habitat protection, visual resources, landform alteration, agricultural lands, commercial fisheries, industrial uses, water quality, offshore oil and gas development, transportation, development design, power plants, ports, and public works. Development activities in the coastal zone generally require a coastal permit from either the CCC or the local government: (1) the CCC retains jurisdiction over the immediate shoreline areas below the mean high tide line and offshore areas to the 3 nautical mile State water limit; and (2) following certification of county- and municipality-developed Local Coastal Programs, the CCC has delegated permit authority to many local governments for the portions of their jurisdictions within the coastal zone. The CCC also implements the CZMA as it applies to federal activities (e.g., development projects, permits, and licenses) in the coastal zone by reviewing specified federal actions for consistency with the enforceable policies of Chapter 3 of the Coastal Act.
4.1 GEOLOGICAL RESOURCES		
U.S.	The International Building Code (IBC)	The IBC sets design standards to accommodate a “maximum considered earthquake” or MCE, based on a project’s regional location, site characteristics, and other factors.
CA	California Building Code (CBC) (Cal. Code Regs., tit. 23)	The State of California provides a minimum standard for building design through the CBC, which is based on the IBC, but has been modified for conditions unique to California. The CBC is selectively adopted by local jurisdictions, based on local conditions. Relevant CBC sections include the following: Chapter 16 contains specific requirements for seismic safety; Chapter 18 regulates excavation, foundations, and retaining walls; Chapter 33 contains specific requirements pertaining to site demolition, excavation, and construction to protect people and property from hazards associated with excavation cave-ins and falling debris or construction materials; Chapter 70 regulates grading activities, including drainage and erosion control; and Construction activities are subject to occupational safety standards for excavation, shoring, and trenching, as specified in CBC section A33 and California Division of Occupational Safety and Health regulations (Cal. Code Regs., tit. 8).
CA	Alquist-Priolo Earth-quake Fault Zoning Act (Pub. Resources Code, §§ 2621-2630)	This Act requires that "sufficiently active" and "well-defined" earthquake fault zones be delineated by the State Geologist. The criteria most commonly used to estimate fault activity in California are described in this act, which addresses only surface fault-rupture hazards. Legislative guidelines to determine fault activity status are based on the age of the youngest geologic unit offset by the fault. This legislation prohibits the construction of buildings used for human occupancy on active and potentially active surface faults. However, only those potentially active faults that have a relatively high potential for ground rupture are identified as fault zones. Therefore, not all potentially active faults are zoned under the Alquist-Priolo Earthquake Fault Zone, as designated by the State of California.
CA	California Seismic Hazards Mapping Act (Pub. Resources Code, § 2690 and following as Division 2, Chapter 7.8)	These regulations were promulgated for the purpose of promoting public safety by protecting against the effects of strong ground shaking, liquefaction, landslides, other ground failures, or other hazards caused by earthquakes. Special Publication 117, *Guidelines for Evaluating and Mitigating Seismic Hazards in California* (California Division of Mines and Geology [CDMG] 1997), constitutes the guidelines for evaluating seismic hazards other than surface fault-rupture, and for recommending MMs as required by Public Resources Code section 2695, subdivision (a). To date the California Geological Survey (CGS) has not zoned offshore California under the Seismic Hazard Mapping Act.

Table 4.0-1 Major U.S. and State Laws, Regulations, and Policies Potentially Applicable to the Project (continued)

CA	Public Resources Code, Division 6, Parts 1 and 2	The CSLC issues and administers oil and gas leases covering tide and submerged lands in accordance with Division 6, Parts 1 and 2 of the Public Resources Code and Title 2 of the California Code of Regulations. Relevant provisions of the Public Resources Code include the following: section 6829 includes provisions for specifying methods of operation and standard requirements for conducting operations properly; the prevention of waste, the protection of the safety and health of the workers; and the liability of the lessee for personal injuries and property damage; section 6829.2 includes provisions for the possible arresting or amelioration of land subsidence; and sections 6873.2 and 6873.5 include provisions for carrying out the requirements of CEQA.
CA	California Code of Regulations, Title 2	The CSLC issues and administers oil and gas leases covering tide and submerged lands in accordance with Division 6, Parts 1 and 2 of the Public Resources Code and Title 2 of the California Code of Regulations. Relevant provisions of the California Code of Regulations include the following. Article 3.2 pertains to oil and gas drilling regulations. Article 3.3 pertains to oil and gas production operations on tide and submerged lands under the jurisdiction of CSLC, and is applicable to operations conducted from mobile rigs, fixed offshore structures and upland locations serving these leases. Provisions in this article include administrative prevention and elimination of any contamination or pollution of the ocean and tidelands, prevention of waste, for the protection of human health, regulations on wellhead equipment, subsurface safety valves, surface safety valves, remedial and well maintenance work, supervision and training, anomalous casing annulus pressure, subsurface injection, conversion of a well to fluid injection (requires prior approval of CSLC), waste disposal, pressure relief valves, personal protective equipment, and pipeline inspections. Article 3.4 pertains to oil and gas drilling and production to operations on State oil and gas leases located on State tide and submerged lands under the jurisdiction of the CSLC, and is applicable to operations conducted from mobile rigs, fixed offshore structures and upland locations serving these leases. The article includes provisions for administration, prohibitions of pollution and contamination, suspension of operations and corrective action, disposal of drill cuttings and drilling muds, oil spill contingency plan requirements, pollution control and removal equipment, critical operations and curtailment plans, and pollution reports to the USCG and State OES. Article 3.5, which pertains to disposal of royalty oil, gas, or other hydrocarbons, sets forth the procedures whereby the CSLC may enter into agreements for the disposition and sale of oil, gas, or other hydrocarbons. Article 3.6 (Cal. Code Regs., tit. 2, §§ 2170-2175) includes (1) requirements for operators to prepare an operations manual describing equipment and procedures which the operator employs or will employ to protect public health and safety and the environment, and (2) provisions for development and maintenance of emergency response plans that include natural disaster response planning.
CA	Coastal Act Chapter 3 Policies (see also under Multiple Environmental Issues)	With respect to geological resources, Coastal Act section 30253 requires, in part, that: New development shall: (a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard; and (b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs. Section 30243 also states in part that the long-term productivity of soils and timberlands shall be protected.

Table 4.0-1 Major U.S. and State Laws, Regulations, and Policies Potentially Applicable to the Project (continued)

4.2 SAFETY		
U.S.	Oil Pollution Act (OPA) of 1990	The OPA of 1990 includes provisions to expand prevention and preparedness activities, improve response capabilities, provide funding for natural resource damage assessments, ensure that shippers and oil companies pay the costs of spills that do occur, and establish an expanded research and development program. Pursuant to a Memorandum of Understanding (MOU) established to divide areas of responsibility, the USCG is responsible for tank vessels and marine terminals, the U.S. Environmental Protection Agency (EPA) for tank farms, and the Research and Special Programs Administration (RSPA) for pipelines; each of these agencies has developed regulations for its area of responsibility. In addition, the Secretary of Interior is responsible for spill prevention, oil-spill contingency plans, oil-spill containment and clean-up equipment, financial responsibility certification, and civil penalties for offshore facilities and associated pipelines in all Federal and State Waters. The U.S. Department of Homeland Security was designated by the USCG as the lead agency for offshore oil spill response, which includes responsibility for coordination of Federal responses to marine emergencies. All facilities and vessels that have the potential to release oil into navigable waters are required by the OPA to have up-to-date oil spill response plans and to have submitted them to the appropriate Federal agency for review and approval. Of particular importance in the OPA is the requirement for facilities and vessels to demonstrate that they have sufficient response equipment under contract to respond to and clean up a worst-case spill.
U.S.	Hazardous Liquid Pipeline Safety Act of 1979	Hazardous liquid pipelines are under the jurisdiction of the U.S. Department of Transportation (DOT). This Act includes requirements for accident reporting, design, and construction requirements, and prescribes minimum requirements for hydrostatic testing, compliance dates, test pressures, and duration; test medium; and records. It also specifies minimum requirements for operating and maintaining steel pipeline systems.
U.S.	40 CFR Parts 109, 110, 112, 113, and 114	The Spill Prevention Countermeasures and Control (SPCC) plans covered in these regulatory programs apply to oil storage and transportation facilities and terminals, tank farms, bulk plants, oil refineries, and production facilities, as well as bulk oil consumers (e.g., apartment houses, office buildings, schools, hospitals, government facilities). These regulations include minimum criteria for developing oil-removal contingency plans, prohibit discharge of oil such that applicable water quality standards would be violated, and address oil spill prevention and preparation of SPCC plans. They also establish financial liability limits and provide civil penalties for violations of the oil spill regulations.
CA	California Code of Regulations, Title 2, Division 3, Chapter 1	CSLC regulations contained in the California Code of Regulations, Title 2, Division 3, Chapter 1, Article 3 pertain to oil and gas leases, exploration permits, and operating requirements, as described below. Article 3.2 pertains to oil and gas drilling regulations. Article 3.3 pertains to oil and gas production operations on tide and submerged lands under the jurisdiction of CSLC, and is applicable to operations conducted from mobile rigs, fixed offshore structures and upland locations serving these leases. Provisions in this article include administrative prevention and elimination of any contamination or pollution of the ocean and tidelands, prevention of waste, for the protection of human health, regulations on wellhead equipment, subsurface safety valves, surface safety valves, remedial and well maintenance work, supervision and training, anomalous casing annulus pressure, subsurface injection, conversion of a well to fluid injection (requires prior approval of CSLC), waste disposal, pressure relief valves, personal protective equipment, and pipeline inspections. Article 3.4 pertains to oil and gas drilling and production to operations on State oil and gas leases located on State

Table 4.0-1 Major U.S. and State Laws, Regulations, and Policies Potentially Applicable to the Project (continued)

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CA	California Public Resources Code, Division 6, Parts 1 and 2	The CSLC issues and administers oil and gas leases covering tide and submerged lands in accordance with the provisions of Division 6, Parts 1 and 2 of the California Public Resources Code, including the following sections: Public Resources Code section 6829 includes provisions for specifying methods of operation and standard requirements for conducting operations properly; the prevention of waste, the protection of the safety and health of the workers; and the liability of the lessee for personal injuries and property damage; Section 6829.2 includes provisions for the possible arresting or amelioration of land subsidence; and Sections 6873.2 and 6873.5 include provisions for carrying out the requirements of CEQA.
CA	Lempert-Keene-Seastrand Oil Spill Prevention and Response Act (OSPRA; Gov. Code, § 8670.1 et seq., Pub. Resources Code, § 8750 et seq., and Rev. & Tax. Code, § 46001 et seq.)	The OSPRA and its implementing regulations seek to protect State waters from oil pollution and to plan for the effective and immediate response, removal, abatement, and cleanup in the event of an oil spill. The Act requires applicable operators to prepare and implement marine oil spill contingency plans and to demonstrate financial responsibility, and requires immediate cleanup of spills, following the approved contingency plans, and fully mitigating impacts on wildlife. The Act assigns primary authority to the Office of Spill Prevention and Response (OSPR) division within the California Department of Fish and Wildlife (CDFW) to direct prevention, removal, abatement, response, containment, and cleanup efforts with regard to all aspects of any oil spill in the marine waters of the State; the CSLC is also provided with authority for oil spill prevention from and inspection of marine facilities. Notification is required to the Governor's State Office of Emergency Services (OES), which in turn notifies the response agencies, of all oil spills in the marine environment, regardless of size. The Act also created the Oil Spill Prevention and Administration Fund and the Oil Spill Response Trust Fund. Pipeline operators pay fees into the first of these funds for pipelines transporting oil into the State across, under, or through marine waters.
CA	Coastal Act Chapter 3 Policies (see also under Multiple Environmental Issues)	Section 30232 of the Coastal Act addresses hazardous materials spills and states that "Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur."
CA	Elder California Pipeline Safety Act of 1981 (Gov. Code, § 51010-51018) &	The California Pipeline Safety Act gives regulatory jurisdiction to the California State Fire Marshal (CSFM) for the safety of all intrastate hazardous liquid pipelines and all interstate pipelines used for the transportation of hazardous or highly volatile liquid substances. The law establishes the governing rules for interstate pipelines to be the Federal Hazardous Liquid Pipeline Safety Act and Federal pipeline safety regulations. Government Code sections 51010 through 51018 provide specific safety requirements that are more stringent than the Federal rules, including periodic

Table 4.0-1 Major U.S. and State Laws, Regulations, and Policies Potentially Applicable to the Project (continued)

	California Code of Regulations, Title 19, Public Safety	hydrostatic testing of pipelines, pipeline leak detection, and a requirement that all leaks be reported. Under California Code of Regulations, Title 19, Public Safety, the CSFM develops regulations relating to fire and life safety. These regulations have been prepared and adopted to establish minimum standards for the prevention of fire and for protection of life and property against fire, explosion, and panic. The CSFM also adopts and administers the regulations and standards considered necessary under the California Health and Safety Code to protect life and property, including California Health and Safety Code sections 13160 (Portable Fire Extinguishers) and 13195 (Automatic Fire Extinguishers Systems).
CA	Oil Pipeline Environmental Responsibility Act (Assembly Bill [AB] 1868)	This Act requires every pipeline corporation qualifying as a public utility and transporting crude oil in a public utility oil pipeline system to be held strictly liable for any damages incurred by "any injured party which arise out of, or caused by, the discharge or leaking of crude oil or any fraction thereof...." The law applies only to public utility pipelines for which construction would be completed after January 1, 1996, or that part of an existing utility pipeline that is being relocated after the above date and is more than 3 miles in length.
4.3 HAZARDOUS MATERIALS		
U.S.	Resource Conservation and Recovery Act (RCRA) (42 USC 6901 et seq.)	The RCRA authorizes the U.S. EPA to control hazardous waste from "cradle-to-grave," which encompasses its generation, transportation, treatment, storage, and disposal. RCRA's Federal Hazardous and Solid Waste Amendments from 1984 include waste minimization and phasing out land disposal of hazardous waste as well as corrective action for releases. The Department of Toxic Substances Control is the lead State agency for corrective action associated with RCRA facility investigations and remediation.
U.S.	California Toxics Rule (40 CFR 131)	In 2000, the U.S. EPA promulgated numeric water quality criteria for priority toxic pollutants and other water quality standards provisions to be applied to waters in the State of California. U.S. EPA promulgated this rule based on the Administrator's determination that the numeric criteria are necessary in the State of California to protect human health and the environment. (Under CWA section 303(c)(2)(B), the U.S. EPA requires states to adopt numeric water quality criteria for priority toxic pollutants for which the U.S. EPA has issued criteria guidance, and the presence or discharge of which could reasonably be expected to interfere with maintaining designated uses.) These criteria have been adopted by the State; together with State-adopted designated uses, they satisfy CWA requirements for the establishment of water quality standards for California inland surface waters, enclosed bays, and estuaries.
U.S.	National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR 300)	Authorized under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 USC 9605, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), Pub. L. 99 through 499; and by CWA section 311(d), as amended by the Oil Pollution Act of 1990 (OPA), Pub. L. 101 through 380. The NCP outlines requirements for responding to both oil spills and releases of hazardous substances. It specifies compliance, but does not require the preparation of a written plan. It also provides a comprehensive system for reporting, spill containment, and cleanup. The USCG and the U.S. EPA co-chair the National Response Team. In accordance with 40 CFR 300.175, the USCG has responsibility for oversight of regional response for oil spills in "coastal zones," as described in 40 CFR 300.120.
U.S.	Toxic Substances Control Act (TSCA) (15 USC 2601–2692)	The TSCA authorizes the U.S. EPA to require reporting, record-keeping, testing requirements, and restrictions related to chemical substances and/or mixtures. It also addresses production, importation, use, and disposal of specific chemicals, such as polychlorinated biphenyls (PCBs), asbestos-containing materials, lead-based paint, and petroleum.

Table 4.0-1 Major U.S. and State Laws, Regulations, and Policies Potentially Applicable to the Project (continued)

CA	NPDES Storm Water Permits Associated with Construction and Industrial Activities	The Central Coast RWQCB oversees on-site treatment of "California Designated, Non-Hazardous Waste" and enforces water quality thresholds and standards set forth in the Basin Plan. Venoco would be required to obtain a General Construction Activities Storm Water Permit under the NPDES program, and develop and implement a Storm Water Pollution Prevention Plan (SWPPP) that includes best management practices (BMPs) to control erosion, siltation, turbidity, and other contaminants associated with construction activities. The SWPPP would include BMPs to control or prevent the release of non-storm water discharges, such as crude oil, in storm water runoff. Additional information is provided in Section 4.5, Hydrology, Water Resources, and Water Quality.
CA	Other	California Health and Safety Code Regulations, Titles 22 and 26: regulates the management of hazardous materials - See above under Section 4.2, Safety Lempert-Keene-Seastrand Oil Spill Prevention and Response Act – See above under Section 4.2, Safety. Coastal Act section 30232 – See above under Section 4.2, Safety. California Seismic Hazards Mapping Act and Seismic Hazards Mapping – See above under Section 4.1, Geological Resources. Hazardous Waste Control Act (Cal. Code Regs., tit. 26) defines requirements for proper management of hazardous materials. Porter-Cologne Water Quality Control Act – See under Section 4.5, Hydrology, Water Resources, and Water Quality.
4.4 AIR QUALITY AND GREENHOUSE GASES		
U.S.	Federal Clean Air Act (FCAA) (42 USC 7401 et seq.)	The FCAA requires the U.S. EPA to identify National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. National standards are established for ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM_{10} and $PM_{2.5}$), and lead (Pb). In 2007, the U.S. Supreme Court ruled that carbon dioxide (CO_2) is an air pollutant as defined under the FCAA, and that the U.S. EPA has authority to regulate GHG emissions. Pursuant to the 1990 FCAA Amendments, U.S. EPA classifies air basins (or portions thereof) as in "attainment" or "nonattainment" for each criteria air pollutant, based on whether or not the NAAQS are achieved. The classification is determined by comparing monitoring data with State and Federal standards. An area is classified as in "attainment" for a pollutant if the pollutant concentration is lower than the standard. An area is classified as in "nonattainment" for a pollutant if the pollutant concentration exceeds the standard. An area is designated "unclassified" for a pollutant if there are not enough data available for comparisons.
CA	California Clean Air Act of 1988 (CCAA) (AB 2595)	The CCAA requires all air districts in the State to endeavor to achieve and maintain State ambient air quality standards for O_3, CO, SO_2, NO_2, and PM; attainment plans for areas that did not demonstrate attainment of State standards until after 1997 must specify emission reduction strategies and meet milestones to implement emission controls and achieve more healthful air quality. California's ambient air standards are generally stricter than national standards for the same pollutants; the State has also established standards for sulfates, hydrogen sulfide (H_2S), vinyl chloride, and visibility-reducing particles. CARB sets air quality standards for the State at levels to protect public health and welfare with an adequate margin of safety. The CAAQS describe adverse conditions; that is, pollution levels must be below these standards before a basin can attain the standard. Air quality is considered in "attainment" if pollutant levels are continuously below or equal to the standards and violate the standards no more than once each year. The 1992 CCAA Amendments divide O_3 nonattainment areas into four categories of pollutant levels (moderate, serious, severe, and extreme) to which progressively more stringent requirements apply.

Table 4.0-1 Major U.S. and State Laws, Regulations, and Policies Potentially Applicable to the Project (continued)

CA	California Global Warming Solutions Act of 2006 (AB 32)	Under AB 32, CARB is responsible for monitoring and reducing GHG emissions in the State and for establishing a statewide GHG emissions cap for 2020 that is based on 1990 emissions levels. CARB (2009) has adopted the AB 32 Climate Change Scoping Plan (Scoping Plan), which contains the main strategies for California to implement to reduce CO_2 equivalent (CO_2e) emissions by 169 million metric tons (MMT) from the State's projected 2020 emissions level of 596 MMT CO_2e under a business-as-usual scenario. The Scoping Plan breaks down the amount of GHG emissions reductions the CARB recommends for each emissions sector of the State's GHG inventory, but does not directly discuss GHG emissions generated by construction activities.
CA	Coastal Act Chapter 3 Policies (see also under Multiple Environmental Issues)	Coastal Act section 30253, subdivision (c) requires that new development shall Be consistent with requirements imposed by an air pollution control district or the State Air Resources Board as to each particular development.
CA	Other	Pursuant to SB 97, the State Office of Planning and Research prepared guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, which were adopted by the Natural Resources Agency in 2009 and became effective in March 2010. These amendments to the State CEQA Guidelines establish a framework to address global climate change impacts in the CEQA process, and include revisions to the CEQA Environmental Checklist Form (Appendix G of the Guidelines) and the Energy Conservation Appendix (Appendix F of the Guidelines). A new section was also added to the State CEQA Guidelines (§ 15064.4) that provides an approach to assessing impacts from GHGs. SB 375 (effective January 1, 2009) requires CARB to develop regional reduction targets for GHG emissions, and prompted the creation of regional land use and transportation plans to reduce emissions from passenger vehicle use throughout the State. The targets apply to the regions covered by California's 18 metropolitan planning organizations (MPOs). The 18 MPOs are required to develop regional land use and transportation plans and demonstrate an ability to attain the proposed reduction targets by 2020 and 2035. Executive Order S-01-07 set forth a low carbon fuel standard for California; the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020. Executive Order S-3-05 established statewide GHG emission targets of reducing emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80 percent below the 1990 level by 2050. Under California's Diesel Fuel Regulations, diesel fuel used in motor vehicles, except harbor craft, has been limited to 500 parts per million (ppm) sulfur since 1993. The sulfur limit was reduced to 15 ppm beginning September 1, 2006, and harbor craft were included starting in 2009. CARB's Heavy Duty Diesel Truck Idling Rule (Cal. Code Regs., tit. 13, § 2485) prohibits heavy-duty diesel trucks from idling for longer than 5 minutes at a time. Truck idling for longer than 5 minutes while queuing is allowed, however, provided the queue is located beyond 100 feet (30 meters) from any homes or schools. The Statewide Portable Equipment Registration Program (PERP) establishes a uniform program to regulate portable engines/engine-driven equipment units. Once registered in the PERP, engines and equipment units may operate throughout California without the need to obtain individual permits from local air districts.

Table 4.0-1 Major U.S. and State Laws, Regulations, and Policies Potentially Applicable to the Project (continued)

4.5 HYDROLOGY, WATER RESOURCES, AND WATER QUALITY		
U.S.	Clean Water Act (CWA) (33 USC 1251 et seq.)	The CWA is a comprehensive piece of legislation that generally includes reference to the Federal Water Pollution Control Act of 1972, and its substantial supplementation by the CWA of 1977. Both Acts were subsequently amended in 1981, 1987, and 1993. Overall, the CWA seeks to protect the nation's water from pollution by setting water quality standards for surface water and by limiting the discharge of effluents into waters of the U.S. These water quality standards are promulgated by the U.S. EPA and enforced in California by the SWRCB and nine Regional Water Quality Control Boards (RWQCBs). The CWA also provides for development of municipal and industrial wastewater treatment standards and a permitting system to control wastewater discharges to surface waters. Under CWA section 404, the USACE has primary Federal responsibility for administering regulations that concern waters of the U.S. wetlands, which are defined as those areas that are inundated or saturated by surface or groundwater at a frequency and duration that are sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.
U.S.	National Pollutant Discharge Elimination System (NPDES)	The CWA also established the basic structure for regulating discharges of pollutants into the waters of the U.S. through the NPDES, which specifies minimum standards for the quality of discharged waters. It required states to establish standards specific to water bodies and designate the types of pollutants to be regulated, including total suspended solids and oil. Under NPDES, all point sources that discharge directly into waterways are required to obtain a permit regulating their discharge. NPDES permits fall under the jurisdiction of the SWRCB or RWQCBs when the discharge occurs within the 3 nautical mile territorial limit.
U.S.	Marine Protection, Research, and Sanctuary Act	In 1972, this Act established the National Marine Sanctuary Program, which is administered by the National Oceanic and Atmospheric Administration (NOAA). Channel Islands National Marine Sanctuary (CINMS) is located within the Project study area. The primary goal of establishing and maintaining National Marine Sanctuaries is the protection of the natural and cultural resources contained within their boundaries. Designated in 1980, the CINMS surrounds the four northern Channel Islands out to a distance of six nm. Sanctuary regulations prohibit exploring for, developing, and producing hydrocarbons within the CINMS, except pursuant to leases executed prior to March 30, 1981, and except the laying of pipeline, provided specified oil spill contingency equipment is available at the site of such operations. In 2003, regulations went into effect that restrict fishing and other extractive uses in 10 marine reserves and two conservation areas within the CINMS (CDFW 2001, CINMS 2001, and CDFW 2002).
U.S.	Rivers and Harbors Act (33 USC 401)	This Act governs specified activities in "navigable waters" (waters subject to the ebb and flow of the tide or that are presently used, have been used in the past, or may be susceptible for use to transport interstate or foreign commerce). Specifically, it limits the construction of structures and the discharge of fill into navigable waters of the U.S. Under section 10 of the Rivers and Harbors Act, the building of any wharf, pier, jetty, or other structure is prohibited without Congressional approval, and excavation or fill within navigable waters requires approval from the USACE.
U.S.	Other	Oil Pollution Act – See above under Section 4.2, Safety. The Marine Plastic Pollution Research and Control Act prohibits the discharge of plastic, garbage, and floating wood scraps within 3 nm of land. Beyond 3 nm, garbage must be ground to less than one inch, but discharge of plastic and floating wood scraps is still restricted. This Act requires manned offshore platforms, drilling rigs, and support vessels operating under a Federal oil and gas lease to develop waste management plans.

Table 4.0-1 Major U.S. and State Laws, Regulations, and Policies Potentially Applicable to the Project (continued)

CA	Porter-Cologne Water Quality Control Act (Cal. Water Code, § 13000 et seq.) (Porter-Cologne)	Porter-Cologne is the principal law governing water quality in California. The Act established the SWRCB and nine RWQCBs who have primary responsibility for protecting State water quality and the beneficial uses of State waters. Porter-Cologne also implements many provisions of the Federal CWA, such as the National Pollutant Discharge Elimination System (NPDES) permitting program. Pursuant to the CWA § 401, applicants for a Federal license or permit for activities that may result in any discharge to waters of the U. S. must seek a Water Quality Certification (Certification) from the State in which the discharge originates. Such Certification is based on a finding that the discharge will meet water quality standards and other appropriate requirements of State law. In California, RWQCBs issue or deny certification for discharges within their jurisdiction. The SWRCB has this responsibility where projects or activities affect waters in more than one RWQCB's jurisdiction. If the SWRCB or a RWQCB imposes a condition on its Certification, those conditions must be included in the Federal permit or license. Statewide Water Quality Control Plans include: individual RWQCB Basin Plans; the California Ocean Plan; the San Francisco Bay/Sacramento-San Joaquin Delta Estuary Water Quality Control Plan (Bay-Delta Plan); the Water Quality Control Plan for Enclosed Bays and Estuaries of California; and the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (Thermal Plan). These Plans contain enforceable standards for the various waters they address. For example: Basin Plan. Porter-Cologne (§ 13240) requires each RWQCB to formulate and adopt a Basin Plan for all areas within the Region. Each RWQCB must establish water quality objectives to ensure the reasonable protection of beneficial uses and a program of implementation for achieving water quality objectives within the basin plans. 40 CFR 131 requires each State to adopt water quality standards by designating water uses to be protected and adopting water quality criteria that protect the designated uses. In California, the beneficial uses and water quality objectives are the State's water quality standards. The California Ocean Plan establishes water quality objectives for California's ocean waters and provides the basis for regulation of wastes discharged into the State's ocean and coastal waters. For example, the Ocean Plan incorporates the State water quality standards that apply to all NPDES permits for discharges to ocean waters.
CA	Other California Water Code sections	Section 13142.5 of the California Water Code provides marine water quality policies stating that wastewater discharges shall be treated to protect present and future beneficial uses, and, where feasible, to restore past beneficial uses of the receiving waters. The highest priority is given to improving or eliminating discharges that adversely affect wetlands, estuaries, and other biologically sensitive sites; areas important for water contact sports; areas that produce shellfish for human consumption; and ocean areas subject to massive waste discharge. Section 13170.2 of the California Water Code directs the SWRCB to formulate and adopt a water quality control plan for the ocean waters of California. The SWRCB first adopted this plan, known as the California Ocean Plan, in 1972. The California Water Code also requires a review of the plan at least every three years to ensure that current standards are adequate and are not allowing degradation to indigenous marine species or posing a threat to human health. The amendments to the Ocean Plan are reviewed and approved by the U.S. EPA under the CWA. The Ocean Plan establishes water quality objectives for California's ocean waters and provides the basis for regulation of wastes discharged into the State's coastal waters. The plan applies to point and non-point sources. In addition, the Ocean Plan identifies applicable beneficial uses of marine waters and sets narrative and numerical water quality objectives to protect beneficial uses.

Table 4.0-1 Major U.S. and State Laws, Regulations, and Policies Potentially Applicable to the Project (continued)

CA	Coastal Act Chapter 3 Policies (see also under Multiple Environmental Issues)	Section 30231 states The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams. See also: Section 30233 (Diking, filling or dredging; continued movement of sediment and nutrients); and Section 30235 (Construction altering natural shoreline), which states in part …Existing marine structures causing water stagnation contributing to pollution problems and fish kills should be phased out or upgraded where feasible.
4.6 MARINE BIOLOGICAL RESOURCES & 4.7 TERRESTRIAL BIOLOGICAL RESOURCES		
U.S.	Endangered Species Act (ESA) (7 USC 136, 16 USC 1531 et seq.)	The ESA, which is administered in California by the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS), provides protection to species listed as threatened or endangered, or proposed for listing as threatened or endangered. Section 9 prohibits the "take" of any member of a listed species. · Take is defined as "...to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." · Harass is "an intentional or negligent act or omission that creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavior patterns that include, but are not limited to, breeding, feeding, or sheltering." · Harm is defined as "...significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering." When applicants are proposing projects with a Federal nexus that "may affect" a federally listed or proposed species, the Federal agency is required to consult with the USFWS or NMFS, as appropriate, under Section 7, which provides that each Federal agency must ensure that any actions authorized, funded, or carried out by the agency are not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of areas determined to be critical habitat.
U.S.	Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 USC 1801 et seq.)	The MSA is the primary law governing marine fisheries management in U.S. Federal waters. The MSA was first enacted in 1976 and amended in 1996. Amendments to the 1996 MSA require the identification of Essential Fish Habitat (EFH) for federally managed species and the implementation of measures to conserve and enhance this habitat. Any project requiring Federal authorization, such as a USACE permit, is required to complete and submit an EFH Assessment with the application and either show that no significant impacts to the essential habitat of managed species are expected or identify mitigations to reduce those impacts. Under the MSA, Congress defined EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 USC 1802(10)). The EFH provisions of the MSA offer resource managers a means to heighten consideration of fish habitat in resource management. Pursuant to section 305(b)(2), Federal agencies shall consult with the NMFS regarding any action they authorize, fund, or undertake that might adversely affect EFH.
U.S.	Marine Mammal Protection Act	The MMPA is designed to protect and conserve marine mammals and their habitats. It prohibits takes of all marine mammals in the U.S. (including territorial seas) with few exceptions. The NMFS may issue a take permit under

Table 4.0-1 Major U.S. and State Laws, Regulations, and Policies Potentially Applicable to the Project (continued)

	(MMPA) (16 USC 1361 et seq.)	section 104 if the activities are consistent with the purposes of the MMPA and applicable regulations at 50 CFR, Part 216. The NMFS must also find that the manner of taking is "humane" as defined in the MMPA. If lethal taking of a marine mammal is requested, the applicant must demonstrate that using a non-lethal method is not feasible.
U.S.	Migratory Bird Treaty Act (MBTA) and Executive Order 13186	The MBTA governs the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts and nest, and requires harvests to be limited to levels that prevent overuse. Further, the MBTA prohibits the take, possession, import, export, transport, selling, purchase, barter, or offering for sale, purchase, or barter, of any migratory bird, their eggs, parts, and nests, except as authorized under a valid permit (50 CFR 21.11).
U.S.	Fish and Wildlife Coordination Act of 1958	The Fish and Wildlife Coordination Act requires that whenever a body of water is proposed to be controlled or modified, the lead agency must consult the State and Federal agencies responsible for fish and wildlife management (e.g., USFWS, CDFW, and NOAA). This Act allows for recommendations addressing adverse impacts associated with a proposed project, and for mitigating or compensating for impacts on fish and wildlife.
U.S.	Protection of Wetlands (Executive Order 11990)	Under this EO each Federal agency must provide leadership and take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. Each agency, to the extent permitted by law, must avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds: there is no practical alternative to such construction; the proposed action includes all practical measures to minimize harm to wetlands that may result from such use. In making this finding the head of the agency may take into account economic, environmental and other pertinent factors (Section 2(a)). Each agency must also provide opportunity for early public review of any plans or proposals for new construction in wetlands (Section 2(b)).
U.S.	Invasive Species (Executive Order 13112)	This EO addresses the prevention of the introduction of invasive species and provides for their control and minimization of the economic, ecological, and human health impacts the invasive species causes. The EO establishes the Invasive Species Council, which is responsible for the preparation and issuance of the National Invasive Species Management Plan, which details and recommends performance-oriented goals and objectives and specific measures of success for Federal Agencies.
CA	California Endangered Species Act (CESA) (Fish & G. Code, § 2050 et seq.)	The CESA provides for the protection of rare, threatened, and endangered plants and animals, as recognized by the CDFW, and prohibits the taking of such species without its authorization. Furthermore, the CESA provides protection for those species that are designated as candidates for threatened or endangered listings. Under the CESA, the CDFW has the responsibility for maintaining a list of threatened species and endangered species (Fish & G. Code, § 2070). The CDFW also maintains a list of candidate species, which are species that the CDFW has formally noticed as under review for addition to the threatened or endangered species lists. The CDFW also maintains lists of Species of Special Concern that serve as watch lists. Pursuant to the requirements of the CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any State-listed endangered or threatened species may be present in the project site and determine whether the project will have a potentially significant impact on such species. In addition, the CDFW encourages informal consultation on any proposed project that may affect a candidate species. The CESA also requires a permit to take a State-listed species through incidental or otherwise lawful activities (§ 2081, subd. (b)).

Table 4.0-1 Major U.S. and State Laws, Regulations, and Policies Potentially Applicable to the Project (continued)

CA	California Native Plant Protection Act (Fish & G. Code, § 1900 et seq.)	This Act is intended to preserve, protect, and enhance endangered or rare native plants in California. This Act includes provisions that prohibit the taking of listed rare or endangered plants from the wild and a salvage requirement for landowners. The Act directs the CDFW to establish criteria for determining what native plants are rare or endangered. Under section 1901, a species is endangered when its prospects for survival and reproduction are in immediate jeopardy from one or more causes. A species is rare when, although not threatened with immediate extinction, it is in such small numbers throughout its range that it may become endangered.
CA	Coastal Act Chapter 3 Policies (see also under Multiple Environmental Issues)	Section 30231. "The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams." Section 30232. "Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur." Section 30233, which applies in part to development activities within or affecting wetlands and other sensitive areas among other requirements, identifies eight allowable uses, requires that the proposed project be the least environmentally damaging feasible alternative, and where applicable, requires feasible and appropriate mitigation. Section 30240 states: (a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas. (b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.
CA	Other	Lempert-Keene-Seastrand Oil Spill Prevention and Response Act – See above under Section 4.2, Safety. The California Species Preservation Act (Fish & G. Code, §§ 900-903) provides for the protection and enhancement of the amphibians, birds, fish, mammals, and reptiles of California. Fish and Game Code sections 3503 & 3503.5 prohibit the taking and possession of native birds' nests and eggs from all forms of needless take. These regulations also provide that it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nests or eggs of any such bird except as otherwise provided by this Code or any regulation adopted pursuant thereto. Fish and Game Code sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), & 5515 (fish) designate certain species as "fully protected." Fully protected species, or parts thereof, may not be taken or possessed at any time without permission by the CDFW. Fish and Game Code section 3513 does not include statutory or regulatory mechanism for obtaining an incidental take permit for the loss of non-game, migratory birds.

Table 4.0-1 Major U.S. and State Laws, Regulations, and Policies Potentially Applicable to the Project (continued)

4.8 LAND USE, PLANNING, AND RECREATION		
See above under Multiple Environmental Issues for laws, regulations, and policies related to land use and planning.		
CA	Coastal Act Chapter 3 Policies (see also under Multiple Environmental Issues)	Section 30220. Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses. Section 30221. Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area. Section 30222. The use of private lands suitable for visitor-serving commercial recreational facilities designed to enhance public opportunities for coastal recreation shall have priority over private residential, general industrial, or general commercial development, but not over agriculture or coastal-dependent industry. Section 30223. Upland areas necessary to support coastal recreational uses shall be reserved for such uses, where feasible. Section 30224. Increased recreational boating use of coastal waters shall be encouraged, in accordance with this division, by developing dry storage areas, increasing public launching facilities, providing additional berthing space in existing harbors, limiting non-water-dependent land uses that congest access corridors and preclude boating support facilities, providing harbors of refuge, and by providing for new boating facilities in natural harbors, new protected water areas, and in areas dredged from dry land.
4.9 PUBLIC SERVICES		
U.S.	Code of Federal Regulations, Title 29	· Under 29 CFR 1910.38, whenever an Occupational Safety and Health Administration (OSHA) standard requires one, an employer must have an Emergency Action Plan that must be in writing, kept in the workplace, and available to employees for review. An employer with 10 or fewer employees may communicate the plan orally to employees. Minimum elements of an emergency action plan are: o Procedures for reporting a fire or other emergency; o Procedures for emergency evacuation, including type of evacuation and exit route assignments; o Procedures to be followed by employees who remain to operate critical plant operations before they evacuate; o Procedures to account for all employees after evacuation; o Procedures to be followed by employees performing rescue or medical duties; and o The name or job title of every employee who may be contacted by employees who need more information about the plan or an explanation of their duties under the plan. · Under 29 CFR 1910.39, an employer must have a Fire Prevention Plan (FPP). A FPP must be in writing, be kept in the workplace, and be made available to employees for review; an employer with 10 or fewer employees may communicate the plan orally to employees. Minimum elements of a FPP are: o A list of all major fire hazards, proper hazardous material handling and storage procedures, potential ignition sources and their control, and the type of fire protection equipment necessary to control each major hazard; o Procedures to control accumulations of flammable and combustible waste materials; o Procedures for regular maintenance of safeguards installed on heat-producing equipment to prevent the accidental ignition of combustible materials;

Table 4.0-1 Major U.S. and State Laws, Regulations, and Policies Potentially Applicable to the Project (continued)

		o The name or job title of employees responsible for maintaining equipment to prevent or control sources of ignition or fires; and o The name or job title of employees responsible for the control of fuel source hazards. o An employer must inform employees upon initial assignment to a job of the fire hazards to which they are exposed and must also review with each employee those parts of the FPP necessary for self-protection. Under 29 CFR 1910.155, Subpart L, Fire Protection, employers are required to place and keep in proper working order fire safety equipment within facilities.
CA	Other	See above under Section 4.2, Safety.
4.10 TRANSPORTATION AND CIRCULATION		
CA	Caltrans	Caltrans is responsible for the design, construction, maintenance, and operation of the California State Highway System and the portion of the Interstate Highway System within State boundaries. Chapter 2, Article 3 of the Vehicle Code defines the powers and duties of the California Highway Patrol, which has enforcement responsibilities for the vehicle operation and highway use in the State.
4.11 NOISE		
U.S.	Noise Control Act (42 USC 4910)	The Noise Control Act required the U.S. EPA to establish noise emission criteria, as well as noise testing methods (40 CFR Chapter 1, Subpart Q). These criteria generally apply to interstate rail carriers and to some types of construction and transportation equipment. The U.S. EPA published a guideline (U.S. EPA 1974) containing recommendations for acceptable noise level limits affecting residential land use of 55 dBA L_{dn} for outdoors and 45 dBA L_{dn} for indoors.
U.S.	Department of Housing and Urban Development Environmental Standards (24 CFR Part 51)	The Department of Housing and Urban Development Environmental Standards forth the following exterior noise standards for new home construction (for interior noise levels, a goal of 45 dBA is set forth and attenuation requirements are geared to achieve that goal): 65 L_{dn} or less – Acceptable 65 L_{dn} and < 75 L_{dn} – Normally unacceptable, appropriate sound attenuation measures must be provided > 75 L_{dn} – Unacceptable
U.S.	NTIS 550\9-74-004, 1974	In response to a Federal mandate, the U.S. EPA provided guidance in NTIS 550\9-74-004, 1974 (“Information on Levels of Environmental Noise Requisite to Protect Health and Welfare with an Adequate Margin of Safety”), commonly referenced as the “Levels Document” that establishes an L_{dn} of 55 dBA as the requisite level, with an adequate margin of safety, for areas of outdoor uses including residences and recreation areas. The U.S. EPA recommendations contain a factor of safety and do not consider technical or economic feasibility (i.e., the document identifies safe levels of environmental noise exposure without consideration for achieving these levels or other potentially relevant considerations), and therefore should not be construed as standards or regulations.
CA	California Administrative Code, Title 4	The California Administrative Code, Title 4, which applies to airports operating under permit from the Caltrans Division of Aeronautics, defines a noise-impacted zone as any residential or other noise-sensitive use with CNEL 65 and above. The California Administrative Code, Title 2, establishes CNEL 45 as the maximum allowable indoor noise level resulting from exterior noise sources for multi-family residences.

Table 4.0-1 Major U.S. and State Laws, Regulations, and Policies Potentially Applicable to the Project (continued)

CA	Land Use Compatibility Guidelines from the now defunct California Office of Noise Control	State regulations for limiting population exposure to physically and/or psychologically significant noise levels include established guidelines and ordinances for roadway and aviation noise under Caltrans as well as the now defunct California Office of Noise Control. The California Office of Noise Control land use compatibility guidelines provided the following: An exterior noise level of 60 to 65 dBA Community Noise Equivalent Level (CNEL) is considered "normally acceptable" for residences. A noise level of 70 dBA CNEL is considered to be "conditionally acceptable" (i.e., the upper limit of "normally acceptable" noise levels for sensitive uses such as schools, libraries, hospitals, nursing homes, churches, parks, offices, and commercial/professional businesses). A noise level of greater than 75 dBA CNEL is considered "clearly unacceptable" for residences.
4.12 AESTHETICS/VISUAL RESOURCES		
CA	Coastal Act Chapter 3 Policies (see also under Multiple Environmental Issues)	The Coastal Act is concerned with protecting the public viewshed, including views from public areas, such as roads, beaches, coastal trails, and access ways. Section 30251 states: *Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural landforms, to be visually compatible with the character of the surrounding area, and, where feasible, to restore and enhance visual quality in visually degraded areas.*
4.13 CULTURAL, HISTORICAL, AND PALEONTOLOGICAL RESOURCES		
U.S.	Archaeological and Historic Preservation Act (AHPA)	The AHPA provides for the preservation of historical and archaeological data that might be irreparably lost or destroyed as a result of (1) flooding, the building of access roads, the erection of workmen's communities, the relocation of railroads and highways, and other alterations of terrain caused by the construction of a dam by an agency of the U.S. or by any private person or corporation holding a license issued by any such agency; or (2) any alteration of the terrain caused as a result of a Federal construction project or federally licensed project, activity, or program. This Act 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 AHPA built upon the national policy, set out in the Historic Sites Act of 1935, "...to provide for the preservation of historic American sites, buildings, objects, and antiquities of national significance...."
U.S.	Archaeological Resources Protection Act (ARPA)	The ARPA states that archaeological resources on public or Indian lands are an accessible and irreplaceable part of the nation's heritage and: Establishes protection for archaeological resources to prevent loss and destruction due to uncontrolled excavations and pillaging; Encourages increased cooperation and exchange of information between government authorities, the professional archaeological community, and private individuals having collections of archaeological resources prior to the enactment of this Act; Establishes permit procedures to permit excavation or removal of archaeological resources (and associated activities) located on public or Indian land; and Defines excavation, removal, damage, or other alteration or defacing of archaeological resources as a "prohibited act" and provides for criminal and monetary rewards to be paid to individuals furnishing information leading to the

Table 4.0-1 Major U.S. and State Laws, Regulations, and Policies Potentially Applicable to the Project (continued)

		finding of a civil violation or conviction of a criminal violator. ARPA has both enforcement and permitting components. The enforcement provision provides for the imposition of both criminal and civil penalties against violators of the Act. The ARPA's permitting component allows for recovery of certain artifacts consistent with the standards and requirements of the NPS's Federal Archeology Program.
U.S.	National Historic Preservation Act (NHPA) (16 USC 470 et seq.)	This applies only to Federal undertakings. Archaeological resources are protected through the NHPA, as amended, and its implementing regulation, Protection of Historic Properties (36 CFR 800), the AHPA, and the ARPA. This Act presents a general policy of supporting and encouraging the preservation of prehistoric and historic resources for present and future generations by directing Federal agencies to assume responsibility for considering the historic resources in their activities. The State implements the NHPA through its statewide comprehensive cultural resource surveys and preservation programs coordinated by the California Office of Historic Preservation (OHP) in the State Department of Parks and Recreation, which also advises Federal agencies regarding potential effects on historic properties. The OHP also maintains the California Historic Resources Inventory. The State Historic Preservation Officer (SHPO) is an appointed official who implements historic preservation programs within the State's jurisdictions. Under the NHPA, historic properties include "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places" (16 U.S.C. 470w [5]).
U.S.	Omnibus Public Land Management Act of 2009 - Public Law 111-11 (123 Stat. 991)	Public Law 111-011 at title VI, subtitle D lays out statutory requirements for Paleontological Resources Preservation (PRP). PRP provides definitions but requires the definition of some terms, and uses other terms and concepts that need further definition or details to clarify intent or enforcement. PRP identifies management requirements, collection requirements, curation requirements, need for both criminal and civil penalties, rewards and forfeiture, and the need for confidentiality of some significant resource locations. PRP at section 6310 also states that "As soon as practical after the date of enactment of this Act, the Secretary shall issue such regulations as are appropriate to carry out this subtitle, providing opportunities for public notice and comment."
CA	California Environmental Quality Act (CEQA) *(see Multiple Environmental Issues)*	As the CEQA lead agency, the CSLC is responsible for complying with all provisions of the CEQA and State CEQA Guidelines that relate to "historical resources." A historical resource includes: (1) a resource listed in, or eligible for listing in, the California Register of Historic Resources (CRHR); (2) a resource included in a local register of historical or identified as significant in an historical resource surveys; and (3) any resource that a lead agency determines to be historically significant for the purposes of CEQA, when supported by substantial evidence in light of the whole record. The CRHR was created to identify resources deemed worthy of preservation on a State level and was modeled closely after the National Register. The criteria, which are nearly identical to those of the National Register but focus on resources of statewide significance (see State CEQA Guidelines § 15064.5, subdivision (a)(3)), are defined as any resource that meets any of the following criteria: (1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage; (2) Is associated with lives of persons important in our past; (3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or (4) Has yielded, or may be likely to yield, information important in prehistory or history. Properties listed, or formally designated as eligible for listing, on the National Register are automatically listed on the CRHR, as are certain State Landmarks and Points of Interest. A lead agency is not precluded from determining that the resource may be an historical resource as defined in Public Resources Code sections 5020.1, subdivision (j), or 5024.1 (State

Table 4.0-1 Major U.S. and State Laws, Regulations, and Policies Potentially Applicable to the Project (continued)

		CEQA Guidelines § 15064.5, subdivision (a)(4)).
CA	Coastal Act Chapter 3 Policies (see also under Multiple Environmental Issues)	Coastal Act Section 30244 states: Where development would adversely impact archaeological or paleontological resources as identified by the State Historic Preservation Officer, reasonable mitigation measures shall be required. (See also Coastal Act, under Multiple Environmental Issues)
CA	California Public Resources Code section 5097.5	Section 5097.5 of the California Public Resources Code prohibits excavation or removal of any "vertebrate paleontological site or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands." Penal Code section 623 spells out regulations for the protection of caves, including their natural, cultural, and paleontological contents. It specifies that no "material" (including all or any part of any paleontological item) will be removed from any natural geologically formed cavity or cave.
CA	Health and Safety Code section 7050.5	This code states that if human remains are exposed during construction, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code section 5097.998. The Coroner has 24 hours to notify the Native American Heritage Commission (NAHC) if the remains are determined to be of Native American descent. The NAHC will contact most likely descendants, who may recommend how to proceed.
4.14 ENERGY AND MINERAL RESOURCES		
U.S.	CFR, Titles 10, 18, and 30	10 CFR addresses energy consumption and the establishment of the Department of Energy. 18 CFR addresses the Federal Energy Regulatory Commission (FERC). 30 CFR establishes the Bureau of Ocean Energy Management (BOEM, formerly the MMS), which manages energy resources in the Federal OCS.
CA	Surface Mining and Reclamation Act (SMARA) (Pub. Resources Code, §§ 2710-2796).	The California Department of Conservation is the primary agency with regard to mineral resource protection. The Department is charged with conserving earth resources (Pub. Resources Code, §§ 600-690) and has five program divisions: California Geological Survey; Division of Oil, Gas, and Geothermal Resources; Division of Land Resource Protection; State Mining and Geology Board (SMGB); and Office of Mine Reclamation. The SMGB develops policy direction regarding the development and conservation of mineral resources and reclamation of mined lands. In accordance with SMARA, the California Geological Survey classifies the regional significance of mineral resources and assists in the designation of lands containing significant aggregate resources. Mineral Resource Zones (MRZs) have been designated to indicate the significance of mineral deposits. The MRZ categories are: MRZ-1: Areas where adequate information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence. MRZ-2: Areas where adequate information indicates significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence. MRZ-3: Areas containing mineral deposits the significance of which cannot be evaluated from available data. MRZ-4: Areas where available information is inadequate for assignment to any other MRZ.
CA	Coastal Act Chapter 3 Policies (see also under Multiple	Section 30254 states: New or expanded public works facilities shall be designed and limited to accommodate needs generated by development or uses permitted consistent with the provisions of this division; provided, however, that it is the intent of the Legislature that State Highway Route 1 in rural areas of the coastal zone remain a scenic two-lane

Table 4.0-1 Major U.S. and State Laws, Regulations, and Policies Potentially Applicable to the Project (continued)

	Environmental Issues)	road. Special districts shall not be formed or expanded except where assessment for, and provision of, the service would not induce new development inconsistent with this division. Where existing or planned public works facilities can accommodate only a limited amount of new development, services to coastal-dependent land use, essential public services and basic industries vital to the economic health of the region, state, or nation, public recreation, commercial recreation, and visitor-serving land uses shall not be precluded by other development. Section 30254.5 states in part: Notwithstanding any other provision of law, the commission may not impose any term or condition on the development of any sewage treatment plant which is applicable to any future development that the commission finds can be accommodated by that plant consistent with this division….
CA	Other	Public Resources Code section 6801 (Oil and Gas and Mineral Leases) Warren-Alquist Act, adopted in 1974 to encourage conservation of non-renewable energy resources.
4.15 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE		
U.S.	Executive Order 12898	On February 11, 1994, President Clinton issued an "Executive Order on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" (Executive Order 12898). This Executive Order was designed to focus attention on environmental and human health conditions in areas of high minority populations and low-income communities, and promote non-discrimination in programs and projects substantially affecting human health and the environment (White House 1994). The Executive Order requires Federal agencies (as well as State agencies receiving Federal funds) to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.
CA	CSLC	The CSLC has developed and adopted an Environmental Justice Policy to ensure equity and fairness in its own processes and procedures. The CSLC adopted and amended the Environmental Justice Policy on October 1, 2002, to ensure consideration of environmental justice as part of CSLC processes, decisions, and programs. The policy stresses equitable treatment of all members of the public and commits to consider environmental justice in its processes, decision-making, and regulatory affairs. It is implemented, in part, through identification of, and communication with, relevant populations that could be adversely and disproportionately affected by CSLC projects or programs, and by ensuring that a range of reasonable alternatives is identified that would minimize or eliminate environmental issues affecting such populations. This discussion is provided in this document consistent with and in furtherance of the CSLC's Environmental Justice Policy. The staff of the CSLC is required to report back to the Commission on how environmental justice is integrated into its programs, processes, and activities (CSLC 2002).

Abbreviations used in this table include (see also List of Abbreviations and Acronyms following the Table of Contents): AB = Assembly Bill; Caltrans = California Dept. of Transportation; CARB = California Air Resources Board; CCC = California Coastal Commission; CDFW = California Dept. of Fish and Wildlife; CDP = Coastal Development Permit; CEQA = California Environmental Quality Act; CFR = Code of Federal Regulations; CSLC = California State Lands Commission; CWA = Clean Water Act; CZMA = Coastal Zone Management Act; LCP = Local Coastal Program; MPA = Marine Protected Area; NMFS = National Marine Fisheries Service; NPS = National Park Service; RWQCB = Regional Water Quality Control Board; SB = Senate Bill; SWRCB = State Water Resources Control Board; USACE = U.S. Army Corps of Engineers; USC = U.S. Code; USCG = U.S. Coast Guard; U.S. EPA = U.S. Environmental Protection Agency; USFWS = U.S. Fish and Wildlife Service.

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4.1 GEOLOGICAL RESOURCES

This section of the Environmental Impact Report (EIR) discusses potential geological issues that may be associated with the Project. Specifically, this section focuses on the potential for structural instability of Project facilities given impacts on the Project from (1) seismic hazards including earthquakes, faulting, surface rupture, ground shaking, liquefaction, subsidence, and tsunamis, and (2) coastal processes including erosion, scour, coastal bluff instability and landslides. In addition, this section includes a summary of the existing geologic condition of the reservoir from which the State Oil and Gas Lease PRC 421 (PRC 421) wells have historically extracted oil. The information presented below outlines the environmental setting, regulatory setting, significance criteria, the potential for impacts to the facilities from various geological events, and the significance of these impacts. This section also presents projects identified in the cumulative impacts analysis.

This analysis is based on a review of publicly available information on the soils, stratigraphy, and geologic structures present in the study area vicinity. It does not include design-level engineering geology or geotechnical investigations, subsurface explorations, or any laboratory testing of any media, as these analyses are not required by the California Environmental Quality Act (CEQA). This document incorporates by reference the conclusions of the Line 96 Modification Project EIR (Santa Barbara County 2011) regarding geological resources associated with operation of the Line 96 pipeline to the Plains All American Pipeline, L.P. (PAAPLP) Coastal Pipeline west of Las Flores Canyon (LFC), and summarizes these where appropriate.

4.1.1 Environmental Setting

Study Area Location and Description

The primary Project study area comprises the immediate onshore and near-shore areas of the Ellwood coast that would be subject to direct impacts from geologic and structural hazards as a result of Project implementation. This area includes existing PRC 421 facilities, the access road, and the pipeline route along the access road, coastal bluff, golf course easement, and tie-in at the Ellwood Onshore Facility (EOF). The secondary Project study area includes the Gaviota Coast and is only discussed in environmental issue areas where the potential exists for impacts that are different from those identified in the certified Line 96 Modification Project EIR (refer to Section 4.1.4 below). In addition, the environmental setting includes the current pressure regime of the Vaqueros Reservoir, located in the Ellwood Oil Field, and a discussion of other wells that historically produced from the same reservoir. Figure 4.1-1 shows a schematic diagram of the Ellwood Oil Field in relation to other oil fields located along the coast in the Project vicinity.

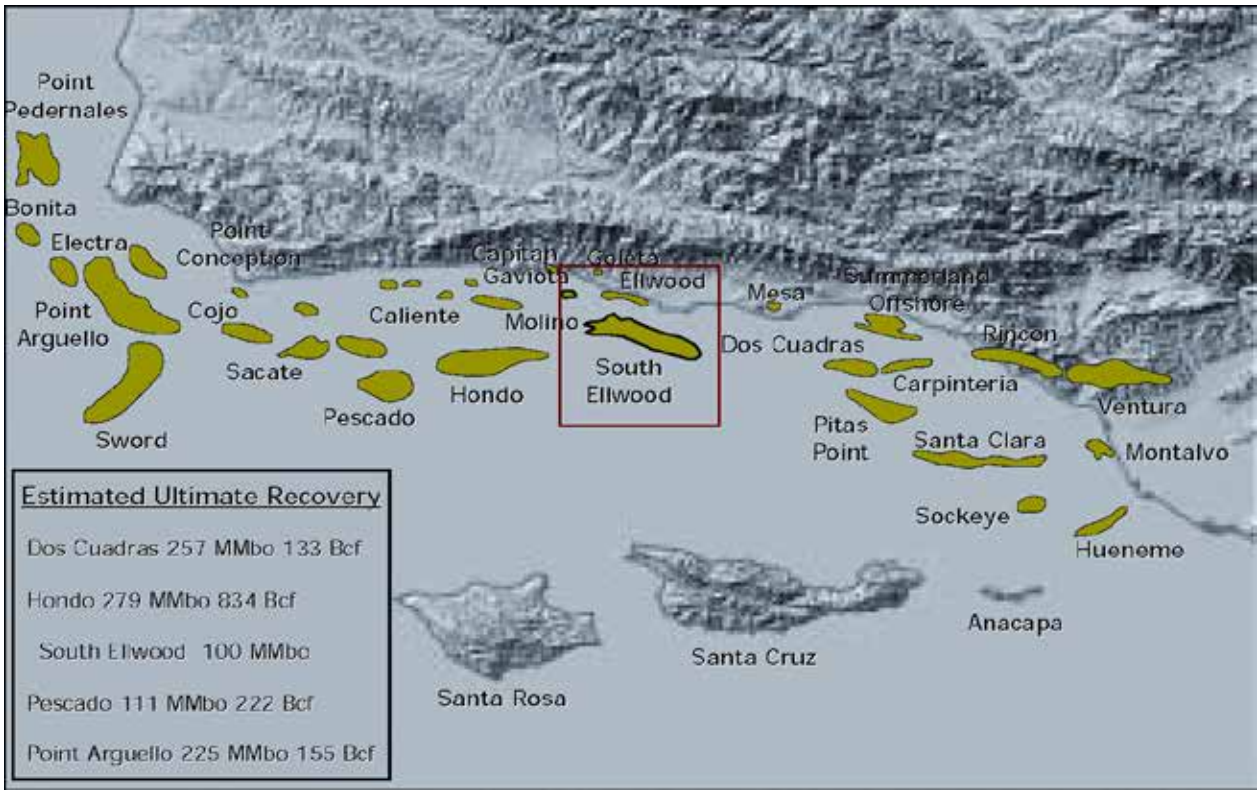


FIGURE 4.1-1. MAJOR OIL AND GAS FIELDS OF THE SANTA BARBARA CHANNEL

Source: From Venoco, Inc., presentation titled "Revitalizing South Ellwood Field, Offshore California" (West Coast Petroleum Technology Transfer Conference [PTTC] 2001).

Physiography

The PRC 421 piers are located beneath a coastal bluff that rises approximately 80 feet above mean sea level (msl). The existing access road intersects the bluff at its base (i.e., below 20 feet above msl) to the northwest of the piers near the EOF, and traverses the bluff nearly 20 feet above msl in the direction of the piers to the southeast. To the northeast, a north-south trending canyon is incised into the bluff where Bell Canyon Creek discharges into the ocean. Another small east-west trending gully exists along the bluff above the access road and piers. Accumulations of beach sand deposits exist at the base of the bluff in the surf zone (U.S. Geological Service [USGS] 1995).

The local physiography consists of a wave-cut platform with an associated sea cliff. The cliff marks the locations of older marine terraces which have been uplifted, and the beach marks the modern wave-cut platform. Bell Canyon Creek and the other incision along the sea cliff mark the locations of eroded gullies and/or fault scarps.

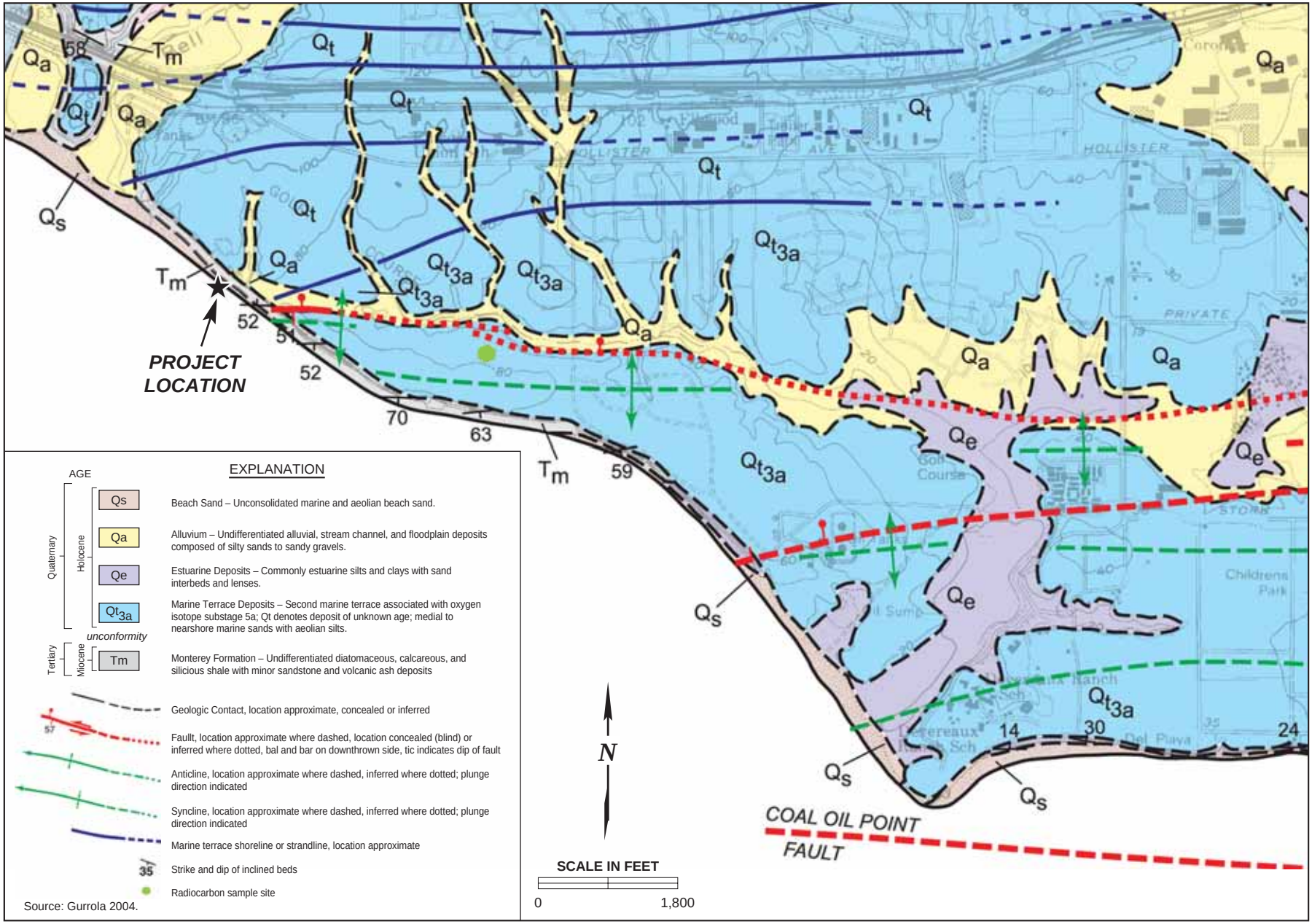
Stratigraphy

The geologic strata exposed onshore in the Project vicinity include (Gurrola 2004) (Figure 4.1-2):

- *Quaternary Beach Sand* (Qs)–unconsolidated marine and wind transported beach sand. This unit is exposed along the beach in the surf zone.
- *Quaternary Alluvium* (Qa)–undifferentiated alluvial, stream channel, and floodplain deposits composed of silty sands to sandy gravels. This unit is exposed along Bell Canyon Creek and an unnamed incision near the golf course.
- *Quaternary Marine Terrace Deposits* (Qt and Qt3a)–marine terrace deposits composed of medial to near-shore marine sands and wind transported silts. Based on Gurrola's mapping, there is a sequence of marine terrace deposits. There are also several ancient shorelines, as depicted in Figure 4.1-2 (shown as blue lines), that trend generally east-west across the Project study area. The typical thickness of these deposits is less than 100 feet (City of Goleta 2003).
- *Tertiary Monterey Formation* (Tm)–undifferentiated diatomaceous, calcareous, and silicious shale with minor sandstone and volcanic ash deposits. This unit is exposed along the coastal bluff beneath units Qt and Qt3a. The formation averages approximately 1,000 feet in thickness, and is impregnated with tar. Where exposed, Monterey Formation is usually white and stained with limonite, and the weaker portions are easily eroded by both marine and non-marine processes including wave action, wind erosion and erosion due to rainfall (City of Goleta 2003). The stratigraphy of the offshore area along the continental shelf generally consists of shale deposits overlying the Monterey Formation (PTTC 2001).

In addition to the units exposed at the surface, another unit, the *Tertiary Vaqueros Formation* (Tvq), exists in the subsurface beneath the study area. This unit consists of sandstone with siltstone and shale interbeds and is located approximately 3,000 feet below the ground surface (City of Goleta 2003).

A combination of organic-rich rocks (i.e., containing oil and gas), such as those formed in a marine environment, combined with folds and faults, allows for oil and gas to become trapped in the subsurface. Within the Vaqueros Formation, an oil and gas reservoir exists which has been folded and faulted. The Vaqueros is folded into two anticlines. The oil and gas rises to and accumulates at the top of the axes (the top of the center of the folds) of the anticlines. One of the axes of the anticlines (to the southeast – referred to as the eastern high) is higher than the other (the western high), and this corresponds to the location of the PRC 421 wells.



Source: Gurrola 2004.

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Geology in the Project Area

FIGURE 4.1-2

Structure

The Project is located in a tectonically active area. Folds consisting of anticlines (concave down), and synclines (concave up) whose axes trend east-west are shown in Figure 4.1-2 as green dashed lines. Thrust faults (i.e., reverse faults) also trend east-west in the area, and the main faults consist of the More Ranch Fault Zone, Coal Oil Point Fault, and Lavigia Fault (not exposed at the surface in the study area). The folding and faulting in the study area are characteristic of compressional forces caused by tectonic plates moving toward one another (Gurrola 2004).

A study was conducted on the More Ranch faults located just southeast of the Project site, where one of the segments is exposed in the sea cliff at Ellwood Beach. The study results show that the fault deforms the first emergent marine terrace, and is expressed at the surface as a north-facing fold scarp approximately 5 meters high. Additionally, the sea cliff exposure reveals the fault as a south-dipping reverse fault that offsets the Miocene Monterey Formation and wave-cut platform. A channel fill whose upstream reach is Devereux Creek is also exposed along the fold scarp in the sea cliff, and has been truncated by coastal erosion (Keller and Gurrola 2000).

Soils and Soil-Related Hazards

Surface soils in the Project area are generally found at the top of the coastal bluff, and were formed in alluvium derived from sedimentary rock. The soils are generally fine sandy loams over dense, very low permeable clay subsoil. The depth to the clay subsoil is approximately 30 inches. Below the bluff, no soils are formed due to active coastal processes.

The soils in the Project vicinity consist of Goleta Loam with 0 to 2 percent slopes (exposed at EOF and Bell Canyon Creek), Milpitas-Positas Fine Sandy Loams with 9 to 15 percent slopes and 30 to 50 percent slopes, eroded (exposed at EOF and Sandpiper Golf Course), and Diablo Clay with 2 to 9 percent slopes and 9 to 15 percent slopes (exposed southeast of the golf course). The Diablo series soils are well-drained, formed in soft shale and mudstone, with slight to moderate erosion hazards. Goleta Loam is formed on broad floodplains and the hazard of erosion is slight. Milpitas series soils consist of moderately well-drained soils on terraces formed in mixed alluvial deposits, runoff is rapid, and the erosion hazard potential is high (U.S. Department of Agriculture [USDA] 1981). According to a map of compressible soils, none of the soils within the Project study area are compressible (City of Goleta 2006a). However, the City of Goleta (2003) indicated that some of the soil types present at the Project area (Diablo and Milpitas) could have high expansion potential whereas Santa Barbara County has classified the Project study area as having a low to moderate potential of having problems associated with expansive soils (Moore and Taber 1979). Both of these classifications are based on the fact that smectites (a clay mineral group) are present in

the study area soils. The origin, type, and stability of fill soils used to construct the Project access road along the toe of the bluff are unknown.

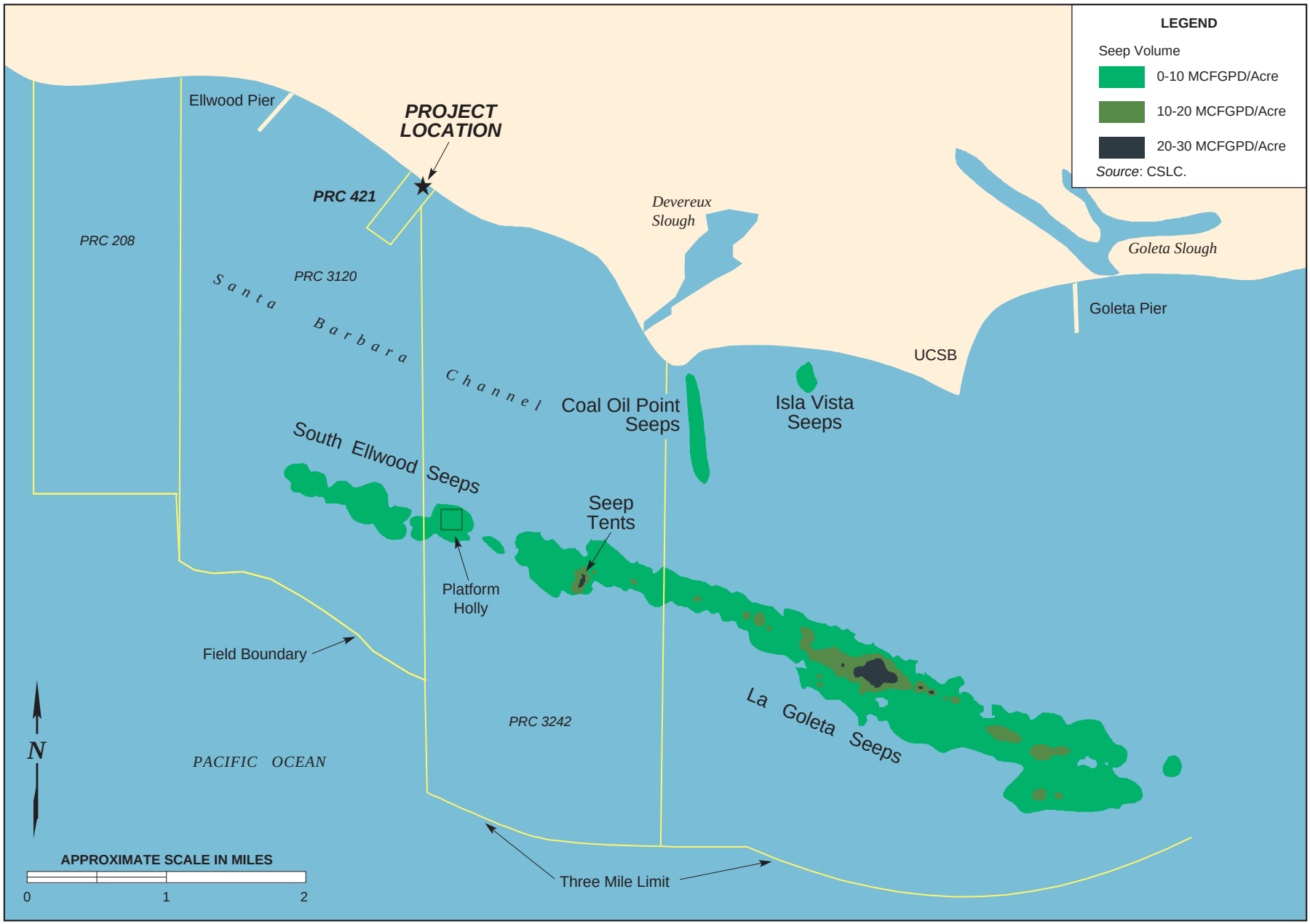
The presence of expansive soils does not by itself constitute a geologic hazard. The hazard arises when clay minerals with expansive potential exist in an environment where they are constantly subjected to periods of wetness and periods of dryness. Buildings and structures developed in these areas can then be damaged due to shrinking and swelling of the clay minerals in the soil beneath the foundations.

The study area includes both onshore and surf zone areas. The structures located in the surf zone (i.e., piers and causeways) are in a constant state of saturation; therefore, the risk of damage to the foundations of the piers and causeways caused by expansive soils is minimal, as these soils would not be expected to undergo wetting and drying periods. The onshore areas of the Project located above the high water line could undergo wetting and drying periods, and could include expansive soils.

Natural Oil Seeps

Prolific natural marine hydrocarbon seepage in the Project vicinity occurs offshore in the Santa Barbara Channel (Figure 4.1-3) (University of California Santa Barbara [UCSB] 2006; Quigley et al. 1999a; Hornafius et al. 1999). Natural oil and gas have been released from submarine seeps in the Channel for thousands of years. The seeps emit both liquid and gaseous hydrocarbon phases, with gas predominating. The most active gas seeps form visible boils where they intersect the sea surface. Based on the mapping of the seep locations and comparison with other data, the oil and gas are thought to migrate upward through the overlying cap rock (Sisquoc Formation) along fractures on the axis of the South Ellwood anticline and the Coal Oil Point fold complex. The seep locations follow linear trends that mirror the axes of the folds, suggesting that the release of oil and gas along seeps in the Channel is controlled by geologic structure (Bartsch et al. 1999). Seepage is most intense at submarine fault conduits and at structural closures along anticline axes (Quigley et al. 1999a; Hornafius et al. 1999).

Evidence of the natural oil seeps can be directly observed on the beach at the study area. Black tar ball deposits exist and are mixed in with the sand on the beach. Because the natural oil seeps originate offshore, the source of the seeps is not the Vaqueros Formation, the reservoir for the PRC 421 wells. This conclusion is supported by multiple lines of study including seep location, seep discharge, variations of seep emissions through time, and by geochemical analyses performed on oil samples from offshore platforms and beach tar balls. Based on the laboratory analysis, the beach tar ball geochemistry is most similar to oil samples collected from Platform Holly, which produces from the Monterey Formation (Lorenson et al. 2004). Therefore, the tar balls are considered to originate offshore, from where they travel onshore via wave action and other coastal processes.



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Hydrocarbon Seeps in the Project Area

FIGURE 4.1-3

Faulting and Seismicity

Regional Seismicity

The Santa Barbara/Goleta area is located in the Western Transverse Ranges, which is a seismically active region of Southern California. The North Branch of the More Ranch Fault trends roughly east-west to northwest-southeast less than 0.25 mile south of the Project study area (Gurrola 2004). The Santa Barbara County General Plan Safety Element classifies the More Ranch Fault Zone as *active*, which the California Geological Survey (CGS), formerly the California Division of Mines and Geology (CDMG), defines as those along which movement has occurred within the last 11,000 years. *Potentially active* faults have displayed evidence of movement during the past 1.6 million years. *Inactive* faults demonstrate no evidence of movement in the same timeframe (CDMG 1994). However, the More Ranch Fault Zone has not been zoned as *active* by the State of California (Jennings 1994; CDMG 1999), or through the creation of an Alquist-Priolo special studies zone (City of Goleta 2003). The North Branch of the More Ranch Fault has deformed a 45,000-year old marine terrace deposit, and is therefore considered *potentially active* (Gurrola 2004).

The reverse Lavigia Fault is located beneath the Project area, but is buried in the Project vicinity. This fault is believed to act as a trap for oil and gas in the Vaqueros Reservoir at depth and is classified as *potentially active* (Keller and Gurrola 2000).

Ground motion in the Project vicinity is generally the result of sudden movements of large blocks of the earth's crust along *active* faults, which result in an earthquake. Southern California is recognized as one of the most seismically active areas in the U.S. having been subjected to over 50 major earthquakes of magnitude 6 or greater since 1796. Earthquakes of magnitude 7.8 or greater occur at the rate of about two or three per 1,000 years, corresponding to a 6 to 9 percent probability in 30 years.

The Santa Barbara/Goleta area has experienced numerous seismic events over the last two centuries, including a few historic large-scale (magnitude greater than 6.0) events, such as the 1812 earthquake, which had a probable Richter magnitude of 7.1 (Toppozada et al. 1981) and likely occurred either offshore, on the San Cayetano Fault to the east (Dolan and Rockwell 2001), or on the Santa Ynez River Fault to the northwest (Santa Barbara County 2004; UCSB 2004; Sylvester and Darrow 1979). Other destructive earthquakes struck the Santa Barbara/Goleta area in 1857 (San Andreas Fault, magnitude 8.4), in 1925 (Santa Barbara vicinity, possibly the More Ranch or Mesa Fault, magnitude 6.3), in 1927 (offshore Point Arguello, magnitude 7.3), and in 1978 (offshore North Channel Fault, magnitude 5.9). A magnitude 4.4 earthquake was centered near the Project site in Isla Vista in 2004 (USGS 2004).

Movement along active and potentially active faults, either onshore or offshore near the Project area, including the San Andreas Fault, Santa Ynez/Santa Ynez River Fault

Zone, More Ranch Fault Zone, Lavigia Fault, and several others could induce seismic shaking. The Project location is classified as an area where shaking from earthquakes will occur 1 to 2 times per century, and those events will exceed 20 percent of the force of gravity. At this level, significant damage to older buildings is expected to result (Southern California Earthquake Center [SCEC] 1995).

Additional geologic hazards associated with seismicity include surface rupture, liquefaction, subsidence, and tsunamis. These hazards which also have the potential to affect the Project are described in detail below.

Surface Rupture and Other Types of Seismic Ground Failure

Surface ruptures comprise the displacement and cracking of the ground surface along a fault trace. Surface ruptures are visible instances of horizontal or vertical displacement, or a combination of the two, typically confined to a narrow zone along the fault. Developments near the More Ranch faults, which would include the Project, would have the most significant potential to be affected by surface rupture (City of Goleta 2003).

Differential settlement is a process whereby soils settle non-uniformly, potentially resulting in stress and damage to pipelines or other overlying structures. Such movement can occur in the absence of seismically induced ground failure, due to improper grading and soil compaction or discontinuity of naturally occurring soils; however, strong ground shaking often greatly exacerbates soil conditions already prone to differential settlement, resulting in distress to overlying structures. Elongated structures, such as pipelines, are especially prone to damage as a result of differential settlement.

Lateral spreading is a type of seismically induced ground failure that occurs when cracks and fissures form on an unsupported slope, resulting in lateral propagation and failure of slope material in a downslope direction. This type of failure is common in unconsolidated river or stream bank deposits, where lateral stream scour creates oversteepened banks in unconsolidated silts and sands.

Liquefaction

Liquefaction is a form of earthquake-induced ground failure that occurs primarily in relatively shallow, loose, granular, water-saturated soils. Liquefaction is defined as the transformation of a granular material from a solid state into a liquefied state as a consequence of increased pore pressure, which results in the loss of grain-to-grain contact. Unconsolidated silts, sands, and silty sands are most susceptible to liquefaction. While almost any saturated granular soil can develop increased pore water pressures when shaken, these excess pore water pressures can lead to liquefaction if the intensity and duration of earthquake shaking are great enough. During recent large earthquakes where liquefaction occurred, structures that appeared to be most

vulnerable to liquefaction included buildings with shallow foundations, railways, buried structures, retaining walls, port structures, utility poles, and towers.

Santa Barbara County identifies the Project study area as having moderate liquefaction hazard (Moore and Taber 1979). According to the City of Goleta, there is no historical evidence of structures being damaged by liquefaction in the city or adjacent unincorporated portions of Santa Barbara County (City of Goleta 2003). However, areas of beach sand could have a high liquefaction potential, due to unconsolidated sand layers below the water table at shallow depths. During ground shaking, loose saturated soils and beach sands can undergo liquefaction, and differential settlement of buildings and structures can occur. In addition, as noted above, the types of soils used in construction of the Project access road are unknown. Portions of this access road appear to be saturated due to inflow from springs in the bluff which may increase the potential for liquefaction of these fill soils of unknown origin.

Subsidence

Subsidence is a type of ground failure, defined as settlement or compression of subsurface soils following the loss of interstitial materials such as water or gas. Subsidence can also result from wetting of collapsible soils, typically loose deposits of silt or sand. Subsidence can occur over a broad region or in localized areas, and can occur gradually over time or as a sudden collapse. The loss of interstitial material can result from shaking of the soil mass during an earthquake, or it can result from other non-seismic factors such as the extraction of oil and gas reserves. Because the Vaqueros Reservoir is thought to naturally repressurize due to influx of groundwater into the reservoir rock, subsidence is not expected to occur in the study area as a result of the Project.

Tsunamis

Tsunamis are large ocean waves generated by large-scale, short duration submarine earthquakes, volcanic activity, and submarine landslides. A seismic event on any moderate offshore fault could result in a tsunami in the Project vicinity. A major earthquake that occurred off the coast of Point Arguello in 1927 initiated a tsunami, which was recorded on tsunami gages as far away as Hawaii and reached heights of 6 feet above msl along the coast. Another historical tsunami may have resulted from an 1812 earthquake that was generated along a fault in the Santa Barbara Channel (Keller and Gurrola 2000). Tsunamis affecting the Project area can also be generated by distant earthquakes, such as the one that occurred in March 2011 in Japan. A significant tsunami in the area could affect areas as high as 40 feet above msl; areas most susceptible to the effects of a tsunami would be along the oceanfront (Santa Barbara County 2001).

The stream discharge area of Bell Canyon Creek and the beach area to the southeast of the Project site are designated as potential tsunami runup areas. The runup area was calculated by the University of Southern California using a tsunami model and potential earthquake sources. The calculated runup area of Bell Canyon Creek includes the area occupied by the EOF (City of Goleta 2006a).

Coastal Process Hazards

Erosion and Scour

Erosion of exposed soils and rocks along the coastal bluff, and in gullies and creeks, naturally occurs as a result of physical weathering and ongoing coastal processes. Active erosion caused by water and wind action is evident along the sea cliff where outcrops expose old filled channels and fault planes (Keller and Gurrola 2000). Scour can be considered an aggressive form of water erosion where soil or sediment particles are removed from gullies, creeks, and the sea cliff exposed to wave action. Erosion and scour, while ongoing and naturally occurring in a beach environment, can be affected by human-induced changes including changes to topography, addition of structures, roads, and artificial fill, or other disturbances to the existing natural setting. In areas of increased erosion, deeper incision of gullies and creeks can occur, which causes accumulation of sediments downstream where slopes are less steep and sediments can settle out of the water column. In areas of increased scour, a net increase in removal of mass including soil, sediment (beach sand), and bedrock can occur.

The Project is located within the active wave-cut platform along the coast of the Pacific Ocean. Historical wave-cut platforms and ancient shorelines exist at the top of the coastal bluff, and are marked by emergent marine terraces. The terrace deposits record a geologic history of ongoing coastal erosion processes that have created the sequence of marine terraces. Accumulation and removal of soil (or beach sand) are transient features, and in a wave-cut platform environment, there is an overall net removal of soil, rock, and beach sand. This area has been continually eroded and scoured through time as waves have cut into the existing soil and rock to form the wave-cut platform and coastal bluff. This continual cutting into the sea cliff by waves will continue to erode the coastal bluff over time. This process would be expected to continue for the foreseeable future (on the order of thousands of years).

The southwest-facing shoreline of the beach in the Project area is subject to direct wave energy which causes off-shore migration of sediments. Sediment removal is greatest in the winter when wave action increases in response to tidal variation (see Section 4.5, Hydrology, Water Resources and Water Quality). Beach width ranges from 35 meters to 90 meters and is subject to seasonal variation and long-term weather patterns including El Niño and the Pacific Decadal Oscillation. A 65-year study of beach width (1938–2003) in the Project area found that beach width was the lowest during 1983 and 1998,

following El Niño events (Revell and Griggs 2003). The maximum beach width was observed in 2001 and 2003. The seasonal change in beach width also exposes the pier structures and tops of the caissons to greater level of wave action during winter months.

As mentioned previously, the soils in the Project vicinity are classified as having moderate to high erosion potentials. Because these soils are formed on the terraces at the top of the bluff and along Bell Canyon Creek, there is a potential for these soils to erode. Erosion of the terrace soils could result in downstream sedimentation at the mouth of Bell Canyon on the beach. Any eroded soil or sediment particles from the discharge area at Bell Canyon Creek are likely transported away by wave action and scour processes.

As noted in Section 2.1.1, Project History, Venoco made several repairs to PRC 421 structures in 2001, including to the existing access road between the two PRC 421 piers which was severely eroded. During the initial repair project, approximately 200 tons of rip-rap rock was placed within the gaps of the existing beachside mixed timber and rock revetment to allow for vehicle access to the piers. This repair included only reinforcement of the existing revetment, and did not include seaward encroachment. The access road also was graded, compacted, and topped with at least 3 inches of road base gravel. Float rock was installed beneath the road base in areas where poor subsurface drainage had been observed.

In 2004, additional repair was needed when a large section of the original outer caisson wall of Pier 421-1 sheared off during a storm. According to the 2006 Mitigated Negative Declaration (MND), the damage resulted from increased wave action on the structure (City of Goleta 2006b).

In September 2010, CSLC inspectors noted that significant new damage to Pier 421-2 had occurred during the previous year and the lower portion of the original caisson wall at the southwest corner was fully exposed to storms and ocean waves. Emergency permits for repair of the caisson wall were issued by the City of Goleta (10-120-EMP), California Coastal Commission (CCC) (E-10-013-G), and U.S. Army Corps of Engineers (USACE) (2010-959-JWM), and repairs were completed in July 2011.

Coastal Bluff Instability and Landslides

Because the Project study area includes a coastal bluff, the potential exists for slope failure and landslides to impact the Project. The stability of slopes is affected by a number of factors including gravity, rock and soil type, amount of water present, and amount of vegetation present. The Santa Barbara County Seismic and Safety Element and the City of Goleta General Plan/ Coastal Land Use Plan (GP/CLUP) Safety Element have classified the Project area as having a high potential for slope instability (Moore and Taber 1979; City of Goleta 2006).

Failure of the bank below the access road during the winter of 2000/2001 occurred in areas where previously buried pipelines were exposed beneath the access road. During the road repair project, some of the pipelines were removed and the bank failure areas were back-filled. In addition, a French drain and wooden dam were installed to divert water flow around the perimeter of the Pier 421-2 approach area and to relieve hydraulic pressure on the access road. The diverted water is directed onto the beach.

Previous measures to prevent slope undercutting and destabilization included placement of a 12-foot-wide limit to the access road repairs, minimizing cut and fill volumes during access road repairs, and best management practices (BMPs) designed to prevent additional soil erosion during the road repair activities. It appears that the temporary vibrations generated during pile driving in 2001 did not result in further destabilization of the road or slope.

During the well repair projects in 2001 and 2004, issues with a broken sprinkler head and a damaged water line occurred in association with the golf course at the top of the sea cliff. These issues caused saturation of soil in some areas of the slope and access road. Saturation of the soil in the slope can contribute to slope failure and landslides.

4.1.2 Regulatory Setting

Many Federal and State laws and regulations govern security of oil and gas production and transport facilities, and emergency response/contingency planning. These laws address, among other things, design and construction standards, operational standards, and spill prevention and cleanup. The primary Federal and State laws, regulations, and policies that pertain to the Project are summarized in Table 4.0-1, while local laws, regulations, and policies are summarized below.

Local

City of Goleta General Plan, Coastal Land Use Plan, and Ordinances

Development in the city is subject to and must conform with the city's GP/CLUP and unified zoning code, both of which include regulations applicable to inland and coastal areas, and Venoco would need to obtain all applicable permits with the City for construction of Project components. Because the City's GP/CLUP has not yet been certified by the CCC, Venoco would also need to obtain a Coastal Development Permit (CDP) from the CCC.

Santa Barbara County Fire Department (SBCFD)

The SBCFD is the Certified Unified Program Agency (CUPA), a consolidation of six state environmental regulatory programs under one authority, responsible for administering state environmental programs in Santa Barbara County. The SBCFD Fire

Prevention Division (FPD) Site Mitigation Unit coordinates with the Regional Water Quality Control Board (RWQCB) for sites involving both groundwater and solvent contamination and provides regulatory oversight for the assessment and remediation of all unauthorized material releases other than petroleum releases from underground storage tanks and crude oil releases.

System Safety and Reliability Review Committee (SSRRC) and Safety Inspection, Maintenance and Quality Assurance Plan (SIMQAP)

The Santa Barbara County Board of Supervisors originally established the SSRRC—a committee of County departments plus the Santa Barbara County Air Pollution Control District (APCD)—in 1985 to identify and require correction of possible design and operational hazards for oil and gas projects prior to construction and startup of the project and for project modifications. The goal of the SSRRC is to substantially reduce the risks of project-related hazards that may result in loss of life and injury and damage to property and the natural environment. The SSRRC has delegated authority to review the technical design of facilities, as well as to review and approve the SIMQAP. The purpose and scope of the SIMQAP is to identify procedures that will be used during the operation of a facility and to insure that all equipment will function as designed. The SIMQAP identifies items to be inspected, maintained or tested, defines the procedure for such inspection, maintenance, or testing, and establishes the frequency of inspection, maintenance or testing. SIMQAP audits are conducted on facilities to ensure compliance, and are conducted annually at the EOF. For some projects, the City of Goleta contracts with the County Energy Division for energy related planning services, which includes SSRRC project review; however, the County Energy Division is not currently providing energy planning services for the PRC 421 Project.

4.1.3 Significance Criteria

Impacts are considered significant if any of the following conditions apply:

- Ground motion due to a seismic event that could include surface rupture, liquefaction, subsidence, landslides or tsunami and damage to structural components;
- Substantial soil erosion or the loss of topsoil;
- Unstable soils which result from Project implementation and cause landslide, slope failure, lateral spreading, subsidence, liquefaction or collapse;
- Damage of structural components as a result of soil expansion;
- Soil settling that could substantially damage structural components of the wells;
- Deterioration of structural components of PRC 421 due to corrosion, weathering, fatigue, or erosion that could reduce structural stability;

- Damage to petroleum pipelines and/or valves along the pipelines from any of the above conditions that could release crude oil into the environment; or
- Erosion-induced siltation of nearby waterways as a result of ground disturbing activities.

4.1.4 Impact Analysis and Mitigation

The Project was evaluated to identify potential geologic hazards that could result in impacts to people or structures over the Project's production horizon. A qualitative evaluation of potential Project impacts was conducted based on the site-specific information described in Section 4.1.1, Environmental Setting.

Project-related geologic impacts would be confined primarily to the Project study area and would be associated with seismic hazards; seismically induced hazards including earthquakes, ground shaking, slope failure and landslides, and tsunamis; and coastal-process-related hazards including erosion and coastal bluff instability. Potential geologic impacts associated with the Line 96 pipeline (e.g., seismically related potential for pipeline rupture) within the secondary study area were fully addressed and considered as part of the certified Line 96 Modification Project EIR (Santa Barbara County 2011) and are incorporated by reference.

As Pier 421-1 would be decommissioned upon operation of the Project and all related infrastructure would be removed, it would be exposed to potential geologic impacts only during the initial operating phases of Pier 421-1 (e.g., 1 year) and potential impacts are considered in this context. In general, given the limited time that Pier 421-1 would remain in place and the lack of any active oil production activity at this pier and caisson, geologic impacts would be less than significant. Project implementation is not anticipated to result in substantial soil erosion or loss of topsoil when compared to the overriding coastal processes of the Pacific Ocean. Removal of Pier 421-1 would result in some additional sand being exposed to wave action, but this would represent resumption of a natural condition.

Table 4.1-1, located at the end of Section 4.1.4, provides a summary of impacts associated with geological resources impacts and recommended mitigation measures (MMs) to address these impacts.

Impact GEO-1: Seismic and Seismically Induced Hazards

Seismic activity along the More Ranch Fault Zone or other regional faults could produce fault rupture, seismic ground shaking, liquefaction, or other seismically induced ground failure that could expose Pier 421-2 facilities, including the pier, caisson and pipeline, to damage during the Project life; Pier 421-1 would be exposed to seismic hazards for approximately 1 year before decommissioning is completed (Less than Significant with Mitigation).

Impact Discussion

The Project is located in an area that is subject to seismic and seismically induced hazards, such as earthquakes, surface rupture, ground shaking, slope failure and landslides, liquefaction, subsidence, and large wave events. If movement were to occur along the active North Branch More Ranch Fault, people or structures in the study area could be exposed to seismic hazards. Given the study area's proximity to this fault segment (less than 0.25 mile away), the potential exists for surface rupture, ground shaking, slope failure and landslides to impact the Project site. Any one of these hazards or a combination of these hazards could occur during the life of the Project, and can neither be accurately predicted nor avoided in the Santa Barbara/Goleta region.

Because the Project is also located along the coast, movement along an offshore fault in the Santa Barbara Channel or in more distant faults could result in a large wave event at the study area. Santa Barbara County has indicated that the wave height in the area could reach as high as 40 feet, which could overtop the piers and access road and potentially compromise the structural integrity of the Pier 421-1 or 421-2 caissons (see also, Section 4.2, Safety; Impacts S-2 and S-3).

Pier 421-1 would remain in place for an estimated further 1 year after commencement of production at Pier 421-2. During this period, this pier and caissons could be exposed to damage from seismic events, including both earthshaking and tsunamis. Although the seaward caisson face at Pier 421-1 was upgraded in 2001, potential exists for damage to the pier during this interim 1 year. Such impacts would be considered less than significant as the pier is proposed for removal and active oil production equipment and facilities would not be exposed to damage. Full removal of Pier 421-1 would eliminate seismic impacts to this facility.

Based on the engineering design information for existing Pier 421-2 infrastructure, the Project design may be inadequate to sustain the effects of seismic loading, which could result in damage to structural components during a seismic event. While the Project includes major upgrades to the caissons at Pier 412-2, including drilling pilings and installation of sheet piles walls on all sides, some existing structures at Pier 421-2 that would be recommissioned as part of this Project were constructed in 1928. Repairs to portions of the structures in the surf zone were conducted in 2001 and 2011; these included installation of a seaward-facing sheet pile walls at the caissons at Piers 421-1 and 421-2, replacing decking and pilings at both piers and placing rock revetment at gaps in the aging timber bulkhead seawall. The design of these repairs and the Project include an assumption that subsurface conditions for the repair were accurately characterized by one soil boring that was completed approximately 80 feet north of the structure in the access road as part of the 2001 repair project.

Based on a review of engineering plans associated with those repairs and the current Project, it does not appear that the previous engineering designs or current Project specification included analysis of seismic loading. Although Pier 421-2 would be greatly strengthened by proposed caisson improvements, the Project infrastructure would be at risk of being damaged in a seismic event. A seismic event could also damage sections of the pipeline connecting Pier 421-2 to Line 96 as well as Line 96 itself. Therefore, impacts to Project facilities resulting from seismicity or seismically induced hazards are considered to be less than significant with mitigation.

Mitigation Measures

In addition to the MMs described below, MM GEO-4c Seismic Inspection from the Line 96 Modification Project EIR (described in Appendix H) would ensure protection of the Line 96 pipeline from seismic events during Project operation.

MM GEO-1a. Include Seismic Loading Evaluation. Venoco shall have the caisson at Pier 421-2 evaluated to ensure its ability to withstand effects of dynamic earth pressures, seismic overturning and base shear, and to support Project facilities through the production life of the facility. Results of the evaluation, together with any redesign plans determined to be necessary to ensure the ability of the caisson to withstand effects of dynamic earth pressures, seismic overturning and base sheer, and to support Project facilities through the production life shall be reviewed and certified by a professional engineer and submitted to California State Lands Commission staff for approval. Prior to recommencement of production, and subject to receipt of all necessary approvals and permits to undertake the work, Venoco shall construct the necessary improvements to meet the criteria of this mitigation measure.

MM GEO-1b. Field-Verify Subsurface Condition Assumptions. Venoco shall establish a procedure to field-verify that the subsurface conditions used in the design of the past repairs and proposed improvements at the 421-2 caisson are representative of actual conditions to be encountered. The procedure established by Venoco for field-verification shall be submitted to California State Lands Commission (CSLC) staff for approval prior to implementation. If the field conditions encountered require a design modification of past repairs and proposed improvements, then the revised design plans shall be reviewed and certified by a registered professional civil/structural engineer, and shall be submitted to the CSLC staff for approval. Prior to recommencement of production, and subject to receipt of all necessary approvals and permits to undertake the work, Venoco shall construct the necessary improvements to meet the criteria of this mitigation measure.

MM GEO-1c. Seismic Inspection. Venoco shall inspect the structures, including Pier 421-2, pipeline, and associated infrastructure following any seismic event in the region (for these purposes defined as Santa Barbara County and offshore waters of the Santa Barbara Channel and Channel Islands) that exceeds a Richter magnitude of 4.0 (see also Appendix H, MM GEO-4c

Seismic Inspection). Venoco shall report the findings of such inspection to the California State Lands Commission staff and City of Goleta staff. Venoco shall not reinstate operations of the pipeline within the City of Goleta until authorized by the City of Goleta.

MM GEO-1d. Tsunami Preparedness. In the event that a tsunami warning is issued for an area that includes PRC 421, Venoco shall cease production activities at PRC 421 as quickly as possible within the constraints of operations and safety. When the tsunami warning is lifted, Venoco shall conduct a thorough inspection of Pier 421-2, pipeline, and associated infrastructure before resuming production. Venoco shall report the findings of such inspections to the California State Lands Commission and City of Goleta staffs.

Rationale for Mitigation

Based on the local geologic environment, which includes seismic and seismically induced hazards, Pier 421-2 should be designed to account for seismic loading. Because the structural components of Pier 421-2 are located in the surf zone, the potential for a large wave event also exists; therefore, wave loading would also be included in the design (see Section 4.2, Safety; MM S-2a). Seismic inspections and any necessary improvements would test the effectiveness of the design and ensure that the design is adequate for the Project life.

Evaluation of subsurface conditions is necessary to ensure that previous assumptions are sufficient since the design must rely on existing subsurface conditions in the vicinity of the structures. Regular inspections of Project facilities, such as the pipeline from Pier 421-2 to the tie-in at the EOF after seismic events, would permit timely repairs. Cessation of operation during tsunami threat warnings would avoid or minimize potential for spills during a large wave event.

Implementation of MMs GEO-1a through GEO-1d would reduce impacts associated with damage from seismicity and tsunamis to Project facilities to less than significant. See also Section 4.2, Safety, for a discussion of accidental release of oil.

Impact GEO-2: Landslide and Slope Failure

The Project would be located on a geologic unit or soil that is unstable, which could create potentially significant damage to the project access road and pipeline from a landslide or slope failure (Less than Significant with Mitigation).

Impact Discussion

The Project is located within an active wave-cut platform beneath a coastal bluff. All components of the Project (e.g., access road, coastal cliff, Pier 421-2) are located on soil units or fill that overlie the Monterey Formation. The Monterey Formation is visibly eroded and weathered on the face of the cliff where it is exposed to wave action and

other physical and chemical weathering processes. The Monterey Formation and the soils that overlie it in this area are considered to be geologically unstable, and have the potential for slope failure or landslide. The potential instability of the coastal bluff increases when saturated with water, which may occur due to the presence of several springs along the bluff face. Saturation has also occurred from past sprinkler leaks from the Sandpiper Golf Course that reached the bluff. The existing rock revetment reduces, but does not eliminate, the potential for slope failure. The pipeline that is buried beneath the access road is partially protected from wave-caused erosion by the existing rock revetment, if the revetment is properly maintained (see Impact S-2). However, if the coastal bluff experiences slope failure, the pipeline in the access road may be damaged. Although the Project includes measures to ensure the integrity of this section of pipe (including hydrotesting, internal plastic coating, and enhanced cathodic protection), the pipeline may still be damaged or broken during slope failure or landslide. Further, the Line 96 pipeline from the EOF to the connection with the PAAPLP Coastal Pipeline traverses several steep hillsides, including those underlain by the highly unstable Rincon Shale Formation.

Therefore, the impact to the Project area that could result from unstable soils or rocks is considered less than significant with mitigation. A detailed geologic impacts evaluation for the Line 96 pipeline, with MMs to reduce the risk of failure related to unstable slopes, was conducted as part of the Line 96 Modification Project EIR (Santa Barbara County 2011) and is incorporated by reference (refer to Appendix H).

Mitigation Measures

MM GEO-2a. Monitor Coastal Bluff and Access Road. Venoco shall monitor the coastal bluff and access road weekly for signs of water saturation, including during and/or heavy rains, or after a sprinkler line leak from the Sandpiper Golf Course. If saturation is apparent, the source of the water infiltration shall be evaluated and, diverted (if possible) or removed. Venoco shall provide written weekly statements regarding bluff and access road stability and saturation conditions to the City of Goleta. If saturation is apparent, Venoco shall immediately report such finding to the City of Goleta. Within 24 hours of such a finding, Venoco shall identify the source of water infiltration and shall divert or remove the water source within 24 hours, and shall provide a written report with photo documentation to the City within one week of the action. If native habitats could be impacted as a result of related activities, Venoco shall coordinate the activities with the Project Biologist and implement MM TBIO-1b Project Biological Monitors and MM TBIO-1c Restoration Plan/Restoration.

MM GEO-2b. Maintain Existing Seawall and Rock Revetment. Venoco shall inspect the existing seawall and rock revetment weekly for signs of erosion or need for repairs. If eroded areas are observed, these shall immediately be filled in, and any areas in need of repair or addition of rip-rap shall be repaired consistent with applicable permit requirements. Venoco shall provide written weekly reports regarding existing seawall and rock revetment stability to the

City of Goleta. If erosion is observed, Venoco shall immediately report such finding to the City of Goleta. Within 24 hours of such a finding, Venoco shall repair the erosion and shall provide a written report with photo documentation to the City within one week of the action. Venoco shall coordinate the activities with the Project Biologist and implement MM TBIO-1b Project Biological Monitors and MM TBIO-1c Restoration Plan/Restoration.

MM GEO-2c. Inspect and Repair Access Road and Pipeline after Landslide Events. Venoco shall monitor the access road and pipeline after bluff failure or landslide events and shall repair any damaged areas or add rip-rap consistent with applicable permit requirements. In addition to clearing the road of debris, Venoco shall test or inspect the pipeline immediately after any major slope failure to determine if pipeline damage has occurred and shall implement repairs to this infrastructure. If damage is observed, Venoco shall immediately report such finding to the City of Goleta. Within 24 hours of such a finding, Venoco shall repair the erosion and shall provide a written report with photo documentation to the City within one week of the action. Venoco shall coordinate the activities with the Project Biologist and implement MM TBIO-1b Project Biological Monitors and MM TBIO-1c Restoration Plan/Restoration.

Rationale for Mitigation

Because water-saturated soils have been observed along the coastal bluff in the past, and because saturation could cause the slope to fail, routine monitoring for water saturated soils is necessary to mitigate the risks associated with a potential slope failures or landslides. The seawall and revetment must also be maintained since these structures provide added stability to the base of the bluff, which reduces the potential for slope failure. Although the potential for major bluff failures to occur over the Project life is unknown, in the event of such a failure, inspection and any required repair of the road and pipeline would be necessary to prevent potential releases of oil. Implementation of MMs GEO-2a through GEO-2c would reduce this impact to less than significant.

Impact GEO-3: Soil Settlement and Liquefaction

The recommissioning of PRC 421 could potentially expose Project facilities such as the caisson and proposed pipeline to soil settlement or liquefaction that could damage these facilities, particularly the pipeline (Less than Significant with Mitigation).

Impact Discussion

Soils beneath the structural components of the caissons and wells at PRC 421 are composed of beach sands on the active wave-cut platform, which are underlain by Monterey Formation bedrock. Because the structural design did not include placing foundations of any portions of the structures in the beach sand, settlement of the beach

sand beneath the structure would not be anticipated to result in settlement problems beneath the pier.

Other portions of the Project, including the access road, seawall, and revetment, may have been constructed on beach sand and may consist of fill soils of unknown origin. The subsurface conditions of the beach sand, including potential for saturated unconsolidated sands are not known. One soil boring was drilled through the access road during the caisson wall repair for Pier 421-1 in 2004. However, the subsurface conditions were not logged for the first 20 feet below the surface of the road. Therefore, the potential for settlement and liquefaction of these soils must be assumed until evaluated. If settlement or liquefaction of the fill or soils beneath the access road were to occur, the pipeline in the access road could be damaged and an oil spill could potentially occur. Impacts related to settlement beneath these structural components are considered less than significant with mitigation.

Mitigation Measures

MM GEO-3. Perform Subsurface Evaluation. An evaluation of soils within and beneath the Pier 421-2 caisson, seawall, revetment, and access road shall be performed to ascertain if the soil is fit for purpose. The evaluation shall be performed by a California-registered Geotechnical Engineer, and shall propose maintenance and repair procedures as needed to ensure these areas remain fit for purpose for the life of the Project. The conclusions and recommendations shall be incorporated into Project engineering design components, as applicable, and submitted to the California State Lands Commission, City of Goleta, and California Coastal Commission staffs for review and approval prior to issuance of permits for construction clearance.

Rationale for Mitigation

Because the previous subsurface evaluation did not assess the conditions within the upper 20 feet of the ground surface, a subsurface evaluation is needed to address the potential for settlement and/or liquefaction. The findings would be incorporated into the engineering design to improve the ability of the Project infrastructure to withstand expected localized conditions. If MM GEO-3 is implemented, the potential for damage to Project infrastructure would be reduced to less than significant.

Impact GEO-4: Corrosion, Weathering, and Erosion

Corrosion, weathering, fatigue, or erosion could cause deterioration of structural components of PRC 421 (Less than Significant with Mitigation).

Impact Discussion

The Project is located in a naturally corrosive and erosive environment. Weathering of soils, rocks, and structures is active where there is constant action by wind and waves.

Previous deterioration of the existing structures has been documented, and resulted in emergency repairs in 2001, 2004, and 2011. During those repairs, corrosion of structural components was noted. The Project design plans indicate that corrosion protection will be included as part of the upgrades to the existing structural components, including the steel piles and exposed metal. However, the design plans do not include the corrosion protection specifications. Based on the record of emergency repairs, corrosion-related impacts to Project structures require mitigation and would be less than significant with mitigation.

Because the geologic environment is highly conducive to physical weathering, the potential exists for impacts associated with weathering of the caisson wall to occur. Further, pipeline and valves associated with the Project may be exposed to cyclic and continual wave action in the surf zone and could experience fatigue as a result (see Impact S-2).

With regard to erosion, the Project design plans indicate that the sheet piles will be founded four inches into the underlying bedrock (Monterey Formation). Based on the continual erosion that occurs at the wave-cut platform on which Pier 421-2 is located, there is a potential for the sheet pile foundations to be eroded at the base.

Issues Related to Sea Level Rise

Sea levels have risen between 4 and 10 inches during the past century and are projected to be affected by climate change in the future. Global average sea level rose at an average rate of 0.07 inch per year from 1961 through 2003 and at an average rate of about 0.12 inch per year from 1993 to 2003 (Intergovernmental Panel on Climate Change [IPCC] 2007). Whether this faster rate for 1993 to 2003 reflects decadal variation or an increase in the longer-term trend is unclear. The IPCC (2007) predicts that sea level rise for the next century could range between 0.59 and 1.94 feet. However, a range of projections exists for sea level rise and sea level rise could be much greater depending on the rate and extent of polar ice sheet melting. Ice-sheet disintegration is a complex phenomenon and still involves many uncertainties which are reflected in the lack of published literature regarding the issue. Because of this lack of consensus, sea level estimates do not include the full effects of changes in ice sheet flow. For example, complete melting of the Greenland ice sheet could contribute approximately 23 additional feet to average global sea level rise (IPCC 2007).

The National Research Council (2012) has also projected sea-level rise for California, Oregon, and Washington, taking into account both global and regional factors. For the California coast south of Cape Mendocino, the NRC projects that, relative to 2000, sea level will rise 2 to 12 inches (4 to 30 centimeters [cm]) by 2030, 5 to 24 inches (12 to 61 cm) by 2050, and 17 to 66 inches (42 to 167 cm) by 2100. These projections are close to global sea-level rise projections. However, for the Washington, Oregon, and California coasts north of Cape Mendocino, sea level is projected to change between -2

inches (–4 cm, sea-level fall) and +9 inches (23 cm) by 2030, –1 inch (-3 cm) and +19 inches (48 cm) by 2050, and 4 to 56 inches (10 to 143 cm) by 2100.

Higher water levels result in greater wave energy reaching higher on the shoreline and directly onto the face of cliffs. According to the best available models, a 4.6-foot increase in sea level by 2100 would cause the coastline of Santa Barbara County to recede by an average of 178 feet (California Climate Change Center 2009). Sea level rise of these higher magnitudes could potentially affect the Project because the loss of beaches would likely result in greater wave force on Pier 421-2, resulting in increased weathering and corrosion. If sea level rise and resultant beach erosion were to occur at much greater rates than currently forecast, Venoco could potentially request construction of seawalls, groins, or beach nourishment projects to protect PRC 421 infrastructure and other coastal oil infrastructure such as the EOF. Coastal protection structures are documented to often have adverse effects on beaches and sand supply, whereas beach nourishment projects can be expensive and require repeat applications of sand (Titus 1991). However, due to the limited Project lifetime, such protective structures are highly unlikely to be needed or requested.

Mitigation Measures

MM GEO-4a. Corrosion Protection Design Specifications. The corrosion protection design specifications shall be included on the design drawings. Once included, the revised design plans shall be reviewed and certified by a registered corrosion engineer or qualified mechanical or electrical engineer, and submitted to the California State Lands Commission staff for approval. Prior to commencement of production, and subject to receipt of all necessary approvals and permits to undertake the work, Venoco shall construct all corrosion protection improvements specified in the approved plans. If corrosion protection is required for the Project, with the exception of the caisson walls which are just beyond the City limits, all design plans shall be submitted to the City of Goleta for review and approval.

MM GEO-4b. Check Overall Structural Stability against Wind and Wave Action. The Project design shall include evaluation of cyclic wind and wave action on structural components. Once included, revised design plans shall be reviewed and certified by a professional civil/structural engineer then submitted to the California State Lands Commission staff for approval. These revised design plans shall identify any additional construction required as part of the Project. Prior to commencement of production, and subject to receipt of all necessary approvals and permits to undertake the work, Venoco shall construct all structural improvements specified in the approved plans. Venoco shall submit the design plans to the City of Goleta, for review and approval for any part of the Project within City limits.

MM GEO-4c. Evaluate Embedment of Concrete Panels and Lean Concrete Backfill. Venoco shall include in the Project design an evaluation of the potential depth of scour and erosion during the lifetime of the Project within the

Monterey Formation in the area of Pier 421-2. Venoco shall ensure that the concrete shoring panels and lean concrete backfill shall be embedded into the Monterey Formation to a depth greater than the maximum potential scour depth. Venoco shall submit all plans to the City of Goleta for work within City limits and California State Lands Commission staffs.

MM GEO-4d. Inspect Structures During and/or After Storm Events. Venoco shall conduct inspections of the structural components including the pier, caisson, causeway, seawall and revetment during and after major storm events. Venoco shall immediately report inspection results to the California State Lands Commission and the City of Goleta staffs and conduct repairs accordingly and per agency authorization.

Rationale for Mitigation

The Project would be located in an environment that could cause deterioration of structural components if the components are not appropriately designed. Therefore, incorporating these hazards into the structural design should anticipate and prevent potential deterioration. Additionally, once construction is complete, routine inspections of Project facilities conducted during and after major storm events would ensure that the structural components have not deteriorated and provide opportunities for repairs to be conducted immediately following the detection of any deterioration. With implementation of MMs GEO-4a through GEO-4d, impacts are anticipated to be less than significant.

Impact GEO-5: Erosion-Induced Siltation

Erosion-induced siltation could occur during ground disturbing activities (Less than Significant).

Impact Discussion

Erosion-induced siltation may occur along nearby waterways from ground-disturbing activities during Project construction, such as trenching for electrical cable installation, and during the decommissioning and removal of Pier 421-1. In compliance with the Clean Water Act (CWA) Section 402, Venoco would obtain a National Pollutant Discharge Elimination System (NPDES) storm water discharge permit and develop a Storm Water Pollution Prevention Plan (SWPPP) prior to Project construction; separate permits would be required for the future decommissioning and removal of PRC 421 infrastructure. The SWPPP includes erosion and sedimentation control measures and monitoring specific to the activities being performed at the construction site. Based on implementation of these measures, impacts related to erosion-induced siltation during construction activities would be less than significant.

Mitigation Measures

None required.

Table 4.1-1. Summary of Geological Resources Impacts and Mitigation Measures

Impact	Mitigation Measures
GEO-1: Seismic and Seismically Induced Hazards	**GEO-1a.** Include Seismic Loading Evaluation. **GEO-1b.** Field-Verify Subsurface Condition Assumptions. **GEO-1c.** Seismic Inspection. **GEO-1d.** Tsunami Preparedness.
GEO-2: Landslides and Slope Failure	**GEO-2a.** Monitor Coastal Bluff and Access Road. **GEO-2b.** Maintain Existing Seawall and Rock Revetment. **GEO-2c.** Inspect and Repair Access Road and Pipeline after Landslide Events.
GEO-3: Soil Settlement and Liquefaction	**GEO-3.** Perform Subsurface Evaluation.
GEO-4: Corrosion, Weathering, and Erosion	**GEO-4a.** Corrosion Protection Design Specifications. **GEO-4b.** Check Overall Structural Stability Against Wind and Wave Action. **GEO-4c.** Evaluate Embedment of Concrete Panels and Lean Concrete Backfill. **GEO-4d.** Inspect Structures During and/or After Storm Events.
GEO-5: Erosion-Induced Siltation	None Required.

4.1.5 Cumulative Impacts Analysis

With regard to geologic hazards, Project implementation is not anticipated to add to the cumulative impacts of other projects in the area. Because geologic hazards such as seismicity and seismically induced hazards exist in the region that includes the study area, implementation of the Project and other projects would not increase the likelihood of such events.

Structural development of individual projects is subject to California Building Code requirements and would be completed in accordance with recommendations by a licensed civil/structural engineer and the City of Goleta Planning and Environmental Review Department or its designee. Therefore, impacts associated with projects in the Project vicinity would generally be site-specific and less than significant. Impacts to human health associated with oil spills are addressed in Section 4.3, Hazardous Materials. Therefore, cumulative impacts with regard to geological resources are expected to be less than significant.

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4.2 SAFETY

This section addresses potential upset conditions during Project construction and operation that could result in release of oil or hazardous materials, fire, explosion or other conditions that could be hazardous to the public and environment. Detailed analyses of impacts of upset conditions on specific resources are addressed in their respective sections (e.g., Section 4.6, Marine Biological Resources). Potential safety effects of the Project are based on a change from existing conditions. Significance criteria are used to assess the significance of the impacts, and whether mitigation measures (MMs) can be applied to reduce the level of significance.

Assembly of information presented in this section involved a review of PRC 421 production facilities by licensed structural and petroleum facility engineers to address the adequacy and ability of these facilities to operate safely throughout the life of the Project. The assessment of the physical integrity of primary existing and proposed facility components serves as the basis for analyzing the potential hazards of resuming production from State Oil and Gas Lease PRC 421 (PRC 421). The engineering assessments incorporate existing conditions and facility improvements implemented by Venoco since 1997 and further improvements proposed as part of this Project. The facility engineering assessment is provided as a technical report in Appendix C.

This section relies upon information contained in the South Ellwood Field Emergency Action Plan (EAP), the California Department of Fish and Wildlife (CDFW) Office of Spill Prevention and Response (OSPR) Area Contingency Plan for Region 4, Los Angeles/Long Beach, and Venoco's EAP and Fire Prevention and Preparedness Plan. This document incorporates by reference the conclusions of the Line 96 Modification Project Environmental Impact Report (EIR) (Santa Barbara County 2011) regarding impacts to safety associated with operation of the Line 96 pipeline extension to the Plains All American Pipeline, L.P. (PAAPLP) Coastal Pipeline west of Las Flores Canyon (LFC), and summarizes these where appropriate. Where this document relies upon MMs contained in the Line 96 Modification Project EIR to address Project impacts, these are summarized to allow report reviewers to understand their relationship to the Project.

4.2.1 Environmental Setting

Study Area Location and Description

The primary Project study area comprises the immediate onshore and near-shore areas of the Ellwood coast that would be subject to direct impacts from safety hazards as a result of Project implementation. This area includes existing PRC 421 facilities, access road, and the pipeline route along the access road, coastal bluff, golf course easement, and tie-in at the existing Ellwood Onshore Facility (EOF), as well as areas up and down coast that may be subject to the effects of an oil spill, a 2-mile reach of coast that

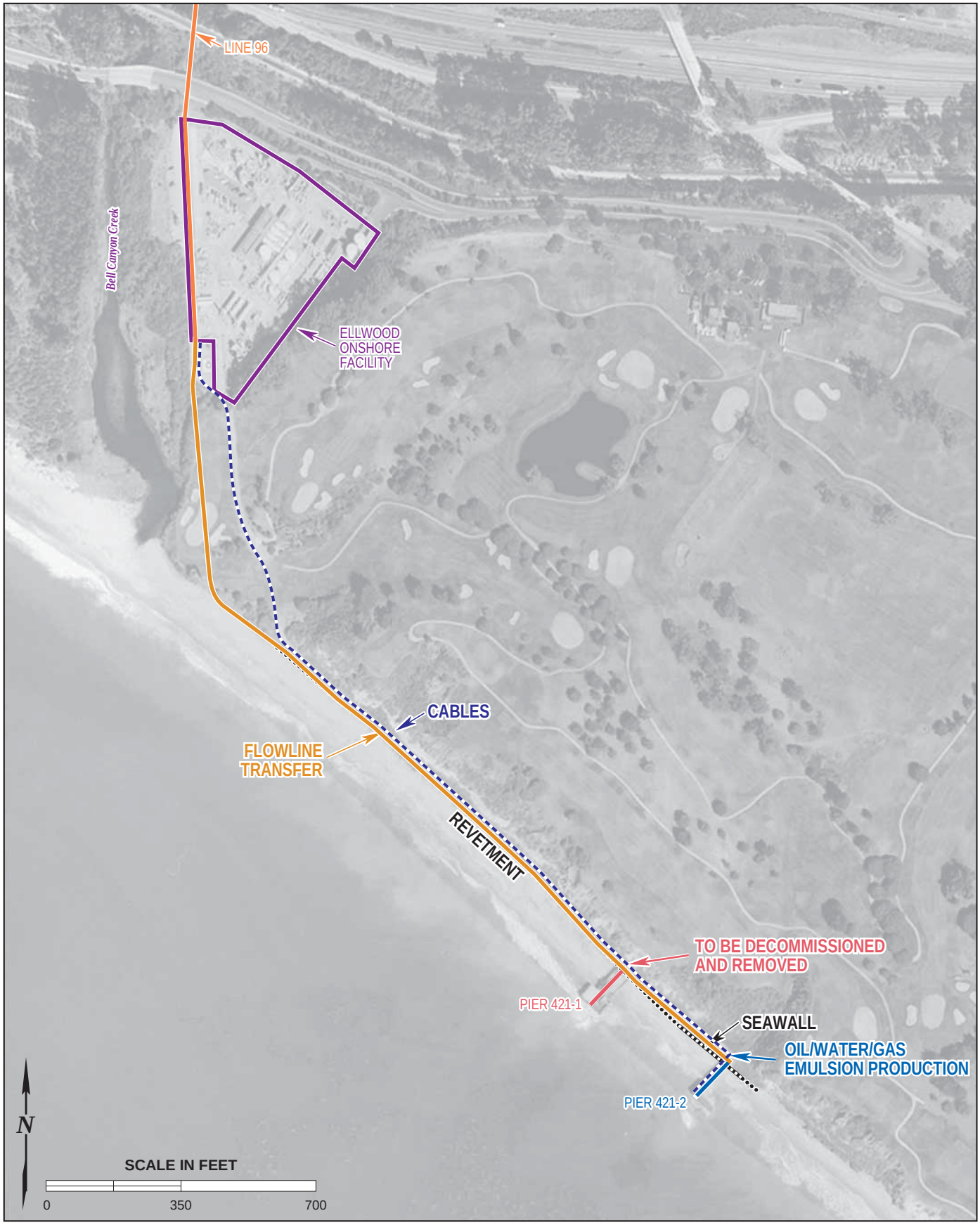
extends roughly from Coal Oil Point west to the Tecolote Creek estuary. The secondary Project study area includes the Gaviota Coast and is only discussed in environmental issue areas where potential exists for impacts that are different from those identified in the certified Line 96 Modification Project EIR.

Existing Conditions

The Project would use a number of existing facilities integral to historic PRC 421 operations and involve upgrades to some of these facilities, new construction, and use of, but not substantial alteration to components of the EOF (Figure 4.2-1). Most of the existing facilities at PRC 421 were originally constructed in the late 1920s or early 1930s. As a result, the age of these facilities and their ability to support continued oil and gas production safely has been a focus of agency attention and public concern regarding the safety and potential impacts of recommissioning PRC 421 (see comments on the Notice of Preparation [NOP] in Appendix B).

Project piers and caissons were subject to structural engineering review in 2000 (Thomas and Beers 2000). That report assessed the condition of the existing caissons and noted that construction plans were unavailable to fully identify construction characteristics and provide support for detailed structural engineering review. The report also disclosed that corrosion had collapsed the upper reaches of the seaward-facing portions of both caisson walls in the early 1980s and that both seaward-facing walls had been subject to major repairs completed in approximately 1985. The report concluded although it was “impossible to know for certain if the caisson islands have adequate structural integrity” that the caissons have survived 50 years of inclement weather and that the repairs completed in 1985 appear to be in good condition and that it appeared likely that sound engineering and design had been used in these caissons along with “robust” construction. As discussed below, four years after completing this assessment, major portions of the previously repaired seaward-facing wall on Pier 421-1 collapsed during a severe weather event.

Since Venoco’s acquisition of the lease, both PRC 421 and some Ellwood area facilities have undergone rigorous inspection and review by regulatory agencies, and Venoco has implemented a series of upgrades and improvements. These improvements have been designed to repair degraded or failing facility components and to correct potential safety deficiencies. In particular, major improvements were performed on the Project piers in 2004 and 2011 incorporating the detailed engineering recommendations of the Thomas and Beers report.



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Project Facilities and Functions [Revised]

FIGURE 4.2-1

The Project would use the EOF for processing of the oil/gas/water emulsion produced at Pier 421-2 as well as support functions (control-room functions, security, and power) and create an additional source of crude oil throughput in the Line 96 pipeline; however, physical change to the EOF would be limited to the installation of the power cable, the connecting pipe and tie-in to the 6-inch pipeline from Platform Holly, the multiphase flow meter, and the process monitoring equipment. This equipment would be used for operations through the life of production.

Sensitive Receptors and Populations in the Project Area

A variety of land uses exist in the immediate vicinity of the Project site that could be affected by upset conditions including areas of recreational, commercial, and residential development. As a result, a number of populations could be impacted by potential upset conditions, including patrons and employees at the Sandpiper Golf Course and the Bacara Resort and populations living in Ellwood and Santa Barbara Shores neighborhoods along Hollister Avenue east of the site. In addition, users of the local beaches, trails, and ocean could also be impacted. (Refer to the Line 96 Modification Project EIR for additional details on population densities and distances from the approved pipeline route.) Further, the shoreline in the Project vicinity includes sensitive resources and habitats that could be affected by Project activities, including biological, cultural, historic, and archaeological resources (see resource-specific sections for a discussion of impacts from upset conditions). Sensitive sites in the area are identified in the Area Contingency Plan (ACP) for the Los Angeles/Long Beach region (ACP 4). The ACP contains site-specific resources, response considerations (e.g., seasonal factors, access points, and hazards), as well as protective strategies and logistics (CDFW and U.S. Coast Guard [USCG] 2011; accessed January 10, 2014).

Historical Activity and Relation to Project

As discussed in Section 2.0, Project Description, the Project area has been used for oil and gas production since 1928. Currently, Federal, State, and local lands are used for onshore and offshore oil and gas production. There are 23 existing platforms offshore Southern California (one of which is used for processing only) on the Federal Outer Continental Shelf (OCS) and 20 fields in State tidelands (Bureau of Ocean Energy Management [BOEM)] 2011; CSLC 2010).

In addition, within the immediate Project vicinity, the Ellwood Marine Terminal (EMT) discontinued operation in 2012 when the Line 96 pipeline to the west of LFC became available. This facility is proposed to be decommissioned and removed prior to or within 180 days of January 1, 2016, as per the lease agreement with University of California, Santa Barbara (UCSB) (see Section 1, Introduction). Additional oil production and processing facilities in the Ellwood area include Platform Holly located approximately 1 mile south of the Project site and the EOF, located northwest of the PRC 421 facilities.

Operational and abandonment practices associated with early oil and gas development were less protective of the environment than modern practices and requirements; consequently, present conditions may have unknown or unquantified oil-related contamination as a result of this earlier development. Further, the adequacy of the abandonment of production wells in the area is also an issue of concern, with at least 21 of the 72 wells drilled into the reservoir from offshore piers having potential deficiencies in their abandonment procedures when compared to modern standards (CSLC 2006).

As described in Section 2.1.1, Project History, PRC 421 was shut-in in 1994 in response to a leak in the 6-inch line, which delivered oil to the old Line 96 that runs from the EOF to the EMT. Since the facilities were shut-in, additional problems have occurred, including methane and oil leaks at Piers 421-1 and 421-2, as well as the partial collapse of the Pier 421-1 caisson. These issues and activities at PRC 421 relevant to this safety analysis are described below:

- *1994 Pipeline Leak* – A release of 170 barrels was caused by a leak in the 6-inch line that connected Pier 421-1 to the old Line 96. The pipeline is presently out of service; Venoco proposes to use it as an outer "casing" for the internal liner and the new 3-inch flowline that would be inserted into the 6-inch line. The proposed repair of the damaged portions of this pipeline and removal of 90 degree bends, along with installation of a new leak detection and automated shut-off (on the well) on the existing pipeline would, in part, serve to resolve the conditions that led to the release.
- *Methane Leak in 2000 and Repairs* – As noted previously, detection of the leak during inspection triggered a series of repairs and upgrades to PRC 421 facilities, which included the wellhead, well casings, and installation of surface and subsurface safety valves. Prior to implementing these repairs, both piers were largely reconstructed, the seawall was strengthened by the addition of riprap, and the access road was resurfaced and upgraded. Historic production equipment was removed from the piers.
- *Pier 421-1 Damage, 2004* – The seaward-facing wall of the caisson at Pier 421-1 partially collapsed into the surf during severe winter storms in 2004. In response, Venoco instituted emergency repairs to the caisson wall.
- *Pier 421-2 Repairs, 2011* – The seaward-facing wall of the caisson at Pier 421-2 was also observed to be damaged during routine CSLC staff inspection in 2010. Based on this damage and the potential for leakage of oil from the pier, emergency permits were obtained and repairs similar to those performed on Pier 421-1 in 2004 were performed for Pier 421-2 in 2011. The structural integrity of, and any needed improvements to, the caisson at 421-2 is an important concern addressed in this EIR.

According to the South Ellwood Field EAP, none of the Ellwood area oil production facilities, including the PRC 421 facilities (which, other than depressurization activities in 2001 to relieve well-head pressure, have been idle since 1994), has had a reportable spill reaching marine waters in 19 years (Venoco 2013).

Vaqueros Reservoir Repressurization

A number of events and observations indicate that the Vaqueros Reservoir has been repressurizing and continues to repressurize. The repressurization of the Vaqueros Reservoir is a concern because at least 21 offshore wells in the area were not properly plugged and abandoned to current standards in the 1930s, 1940s, and 1950s. These abandonment deficiencies make these wells more likely to leak oil as pressure increases in the reservoir. This section discusses the evidence of repressurization, the potential cause of repressurization, and concerns created by old abandoned wells, in which creates the risk of potential offshore oil releases.

Evidence of Repressurization

The empirical evidence demonstrates that reservoir pressures have risen, as shown by the controlled release of nearly 17,000 barrels of pure oil from PRC 421-2 in 2001 while undertaking emergency repairs (see Section 2.1.1). More specifically, following the discovery of gas leaks, by the Santa Barbara County Air Pollution Control District (APCD), from PRC 421, Venoco sought to recap the shut-in wells, but could not do so safely without first relieving surface wellhead pressure observed by operating personnel. After receiving authorization from the proper authorities, Venoco installed a temporary pipeline at Well 421-2, which when opened flowed upwards or in excess of 17,000 barrels of nearly pure oil over the next 10 months. This free-flow of oil confirmed that repressurization in the Vaqueros Reservoir was substantial and raised concern and the realization that nearby poorly abandoned wells could leak under similar and prolonged elevated reservoir pressures. The gradual increase in bottomhole pressure (reflective of the reservoir pressure) has been displayed in the measurements of fluid rise in Well 421-2 between the years of 1987-2000 (Figure 4.2-2).[1] The original reservoir pressure was 1,525 pounds per square inch (psi) at the time development began in the 1930's, which is equivalent to a pressure gradient of 0.46 psi per foot. Years of oil, gas and water production from the field since that time caused significant reservoir pressure decline (CSLC 2006). In 1987, fluid level measurements in well PRC 421-2 estimated the reservoir pressure at that time to be approximately 690 psi. The Vaqueros Formation had for many years, prior to 1987, been subject to reservoir fluid withdrawals by a significant number of wells, both onshore and offshore, which, with the

[1] An estimate of formation pressure can be made by using the height of the fluid column in a static well and the density of that fluid, by multiplying the column height (in feet) by the pressure gradient derived from the density (in psi per foot).

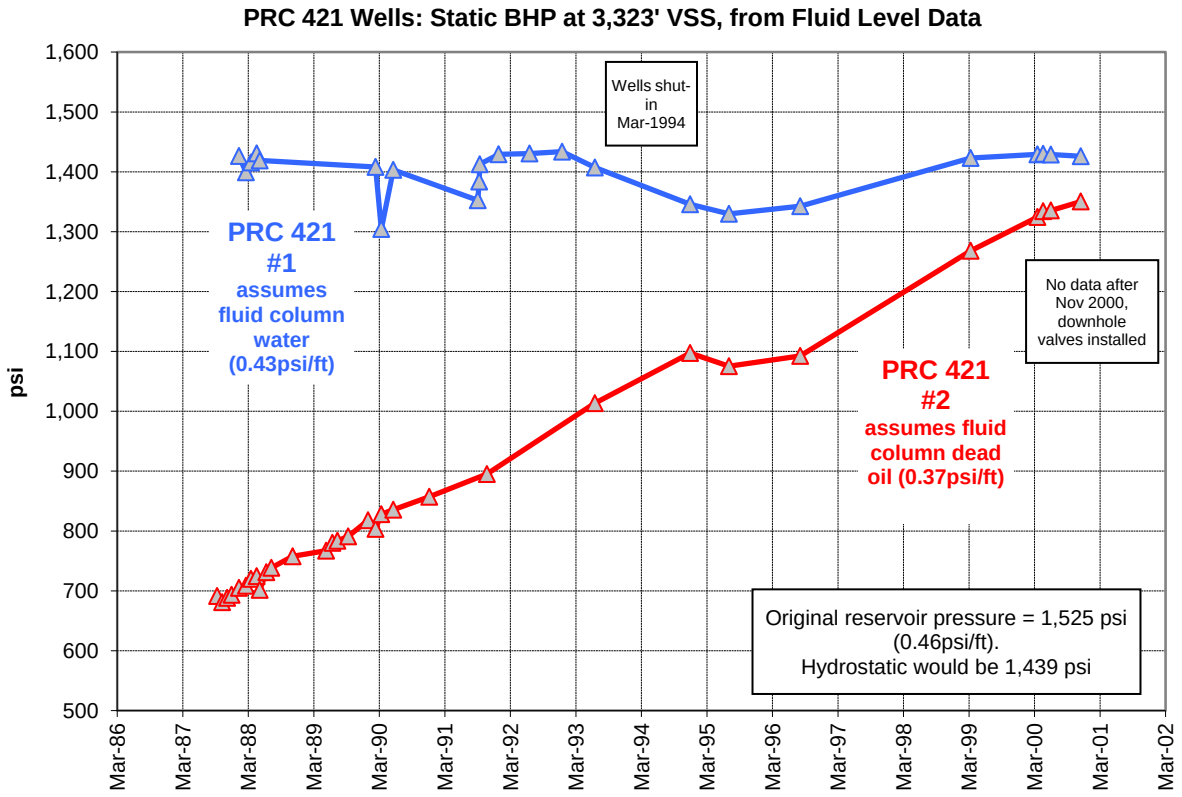


FIGURE 4.2-2. REPRESSURIZATION OF VAQUEROS RESERVOIR, 1987-2000*

* This graph represents bottom hole pressures measurements for Well 421-2 and 421-1 from August 1987 through November 2000. The bottomhole pressure readings were determined from measurement instruments that record fluid rise inside the wellbore. A higher fluid level in the wellbore indicates a greater pressure at the bottom of the well at reservoir depth. Since 1987 the graph shows that the bottomhole pressure increased approximately from 690 pounds per square inch (psi) to approximately 1100 psi by 1994, when the well was shut in because of a pipeline leak, to approximately 1350 psi in 2000.

exception of the PRC 421 wells, have since been plugged and abandoned (see Figure 4.2-3). The rate of reservoir fluid withdrawals from these wells over a great period of time exceeded the rate of aquifer influx, which has been and continues to be the source of reservoir pressure. The aquifer only began to replenish the void after production from the formation began to decline during the 1970's and eventually ceased in 1994. As production ceased, the natural influx into the aquifer slowly re-filled the reservoir thereby increasing the reservoir pressure. Continued and prolonged shut in of production from abandoned wells in the field allowed influx of aquifer water to gradually increase and restore reservoir pressure close to its original pressure. Fluid level measurements since 1987 have shown this to be the case, and by the year 2000, these measurements estimated a reservoir pressure of approximately 1,350 psi. The pressure near the well is a direct reflection of the increase in reservoir pressure in the surrounding formation. The rate of increase in pressure from the year 1987 to 1994 was

55 psi per year. During the time period Well 421-2 was shut in, the pressure continued to increase at a slightly higher rate of climb, approximately 62 psi per year, from 1996 to 2000 (see Figure 4.2-2). No fluid measurements were recorded after the 2000 year as the well was equipped with new surface equipment and mechanical shut off valves for safety, which prevented further fluid level measurements.

The Commission's Mineral Resources Management Division staff has evaluated fluid level measurement data from Well 421-2 during the period from August 1987 through October 2000 and believes that pressures have continued to climb above the 1350 psi measurement and will reach a pressure very close to original reservoir pressure. It is important to highlight that during the period that the wells were abandoned, reservoir pressures were low and the sealing effectiveness of the plugs were subject only to these low pressures. This means that the sealing adequacy of the plugs placed in the older abandoned wells, now subject to higher pressure conditions, will be increasingly tested. The risks of leakage cannot be quantified; however, the relative risk can be reduced if the reservoir pressure that has risen over time can be reduced by resuming withdrawals from Well 421-2.

If production from Well 421-2 is resumed, oil in the reservoir that has accumulated near this well will be withdrawn and prevented from leaking through nearby, poorly abandoned, wells. While the degree of repressurization of the formation may be speculative, the risk of significant offshore oil leaks, in the absence of the Project, reinforces the findings in the EIR that the Project is an environmentally superior option.

Engineers with Venoco and the CSLC identified two possible sources of repressurization: Aquifer influx (natural groundwater movement), or water influx from onshore water injection Well WD-1.

Aquifer Influx

Substantial evidence exists that supports the basis of aquifer influx (natural groundwater movement) being the source of the original Vaqueros reservoir pressure state, as well as the cause of its present repressurization. First, geologic data from exploratory and developmental drilling showed that oil accumulation lies on the surface of an extensive aquifer. Second, an active water drive was suspected early in the field's development, as most initial wells flowed and many experienced rapid water encroachment. Finally, evidence of pressure support from aquifer influx, as well as gravity segregation, can be seen in the production performance of Well 421-2 (CSLC 2006). Gravity segregation refers to the tendency of fluids (water and oil in this case) to stratify into different layers because of gravitational forces. In gravity segregation, the heaviest fluid (water) settles near the bottom of the reservoir and the lightest fluid (oil) rises to the top.

Well 421-2, after initially flowing at more than 1,000 BOPD, experienced a steep decline from 1930 to 1940. The water flow rate increased steadily during that time; however,

between the early 1940s to mid-1960s, its oil production rate held steady at 20 to 30 BOPD, with about 90 percent water cut. Then the oil rate increased, gradually but steadily, to nearly 60 BOPD in 2000. The increase in production began more than a decade prior to commencement of injection into Well WD-1. The production performance of Well 421-2 appears to be unaffected by the onset of injection in Well WD-1. Instead, the gradual increase in oil rate of Well 421-2 appears to be the result of the well's position at the crest of the Vaqueros Reservoir, the elimination of competing wells in the field, and the combined effect of both natural aquifer influx and produced water re-injection into the adjacent Well 421-1, which was used for disposing water that was produced with the oil from Well 421-2. By the mid-1960s and extending into the early 1970s, most producing wells in the eastern part of the field were plugged and abandoned due to production levels that were not economically viable. At the same time, injection into the reservoir was initiated for the first time. From the 1930s through the 1960s, most produced water from the Ellwood Oil Field was disposed of in the ocean. Well 421-1 was converted from a producer to an injector in the early 1970s, and the injection of water from this well appears to have increased the oil production rate in Well 421-2 by at least 10 BOPD. Thus, natural aquifer influx and gravity segregation appear to have caused both the repressurization in this portion of the Vaqueros Reservoir and the improvement of the oil production rate from Well 421-2 (CSLC 2006).

Injection Well WD-1

Injection Well WD-1 disposes of produced water from Platform Holly; it is drilled into a down-structure portion of the Vaqueros Reservoir. The well is located onshore, at the EOF, about 2,500 feet northwest of PRC 421. The well location was chosen because geologic data indicated that the Vaqueros Reservoir in that area selected for water injection is isolated from the oil-bearing part of the reservoir (the Ellwood Oil Field) by an east-west trending, high-angle reverse fault known as the La Vigia fault. Geologic data further suggest that Well WD-1 does not penetrate an area of the Vaqueros Reservoir that would affect the pressure at Well 421-2. Previous drilling showed that the La Vigia Fault acts as a barrier to oil migration. Oil is trapped in the sands on the south side of the fault, while no oil is found to the north of the fault (CSLC 2006).

In late 2004, Venoco submitted to the Commission a design for a pressure fall-off test of the onshore water disposal well (WD-1), and a simultaneous build up test in Well 421-2. These tests were designed to detect possible pressure connectivity between the producer and disposal wells. The test was not performed because: 1) the disposal well was needed for continuous service of produced water from Platform Holly; and 2) a pressure build up test in Well 421-2 would require temporary production of the well, for which Venoco had neither the permits nor the approvals to undertake the temporary production.

An examination of cumulative production and injection data for the Ellwood Oil Field also indicates that the volume of water injected into Well WD-1 has been insufficient to cause an increase in pressure throughout the Vaqueros Reservoir, even if the La Vigia did not exist. Cumulative liquid production from the Vaqueros Reservoir is approximately 252 million barrels, which includes 104 million barrels of oil and 148 million barrels of water. Cumulative water injection in the field, including injected water into Well WD-1, is only 97 million barrels. This leaves a net void of 155 million barrels of liquid for the Ellwood Oil Field, and if natural gas withdrawals from the reservoir were included in this calculation, the net voidage would be even greater. In a reservoir with no other sources of water or other liquid entering the formation, this can only result in a decrease in reservoir pressure. The presence of the isolating La Vigia fault, coupled with the imbalance of injection to withdrawal volumes, makes Well WD-1 an unlikely premise as the cause of Well 421-2 pressurization (CSLC 2006).

Repressurization Monitoring

Static reservoir measurements record the reservoir pressure condition of a nonoperational well at the moment the pressure instrument reaches reservoir depth. This is a single measurement and is a record of the reservoir pressure at that point in time. Static measurements are usually taken when it is believed the reservoir pressure at that location has reached a state of equilibrium. These measurements are useful for identifying the pressure state of a reservoir and to determine the level of depletion a reservoir has experienced at different times during its operating life. This single point pressure measurement method is not, however, a method for evaluating a dynamically changing reservoir, which is the condition of the Vaqueros reservoir in the Ellwood Field. The pressure in the Vaqueros Formation has been in a state of flux over the past 25 years (see Figure 4.2-2). To evaluate a dynamic and changing pressure environment within a reservoir, it is necessary to record the trend of pressure changes from within wells in the reservoir. It is also necessary that pressure changes are recorded at extreme well conditions. In order to utilize recorded data effectively from a producing well, such as Well 421-2, a pressure increase trend must be developed, beginning at its lowest possible recorded pressure. Reservoir pressure recordings in a dynamic environment are only effectively recorded after a well has produced for a period of time where the reservoir has been significantly depressurized at reservoir depth. Depressurization can only occur through continuous withdrawal of reservoir fluids, until the producing reservoir pressures have reached a constant state. It is not possible to record this information without first producing the well to achieve a constant producing pressure at the bottom of the well. Under the Project, the electric submersible pump (ESP) will allow for producing pressure data and rate data that will be made available to the Commission on a regular basis, allowing for a detailed reservoir analysis of the Vaqueros Formation.

The Vaqueros pressure cannot be monitored as long as production at PRC 421 is shut-in. PRC wells 421-1 and 421-2 are the only remaining wells where measurements can be made. Section 2.4.5 of the Project Description provides a reservoir pressure monitoring program through the life of the Project. Because Venoco has no obligation under its lease to perform pressure testing or pressure monitoring without approval of a Project to return PRC 421 to production, the CSLC does not have any current mechanism by which to collect pressure data in the absence of the Project.

Gas leaks at PRC 421 were detected in 2000 from monitoring by the Santa Barbara County APCD. APCD's testing and monitoring, however, does not provide any information regarding the pressure within the reservoir, only whether there is a presence of volatile organic compounds around the wells, which could signify the presence of a leak. CSLC staff acknowledges the concern about leakage at Well 421-2, but believes that the current absence of leakage at Well 421-2 is not a reliable indicator that the reservoir is not repressurizing for the following reasons:

- installation of a subsurface safety valve occurred when Well 421-2 was shut-in pursuant to the direction and oversight of Commission and Division of Oil and Gas, and Geothermal Resources (DOGGR) staffs; and
- the risk of a leak from this well has been mitigated by the modern method by which the well was closed and the addition of the subsurface safety valve.

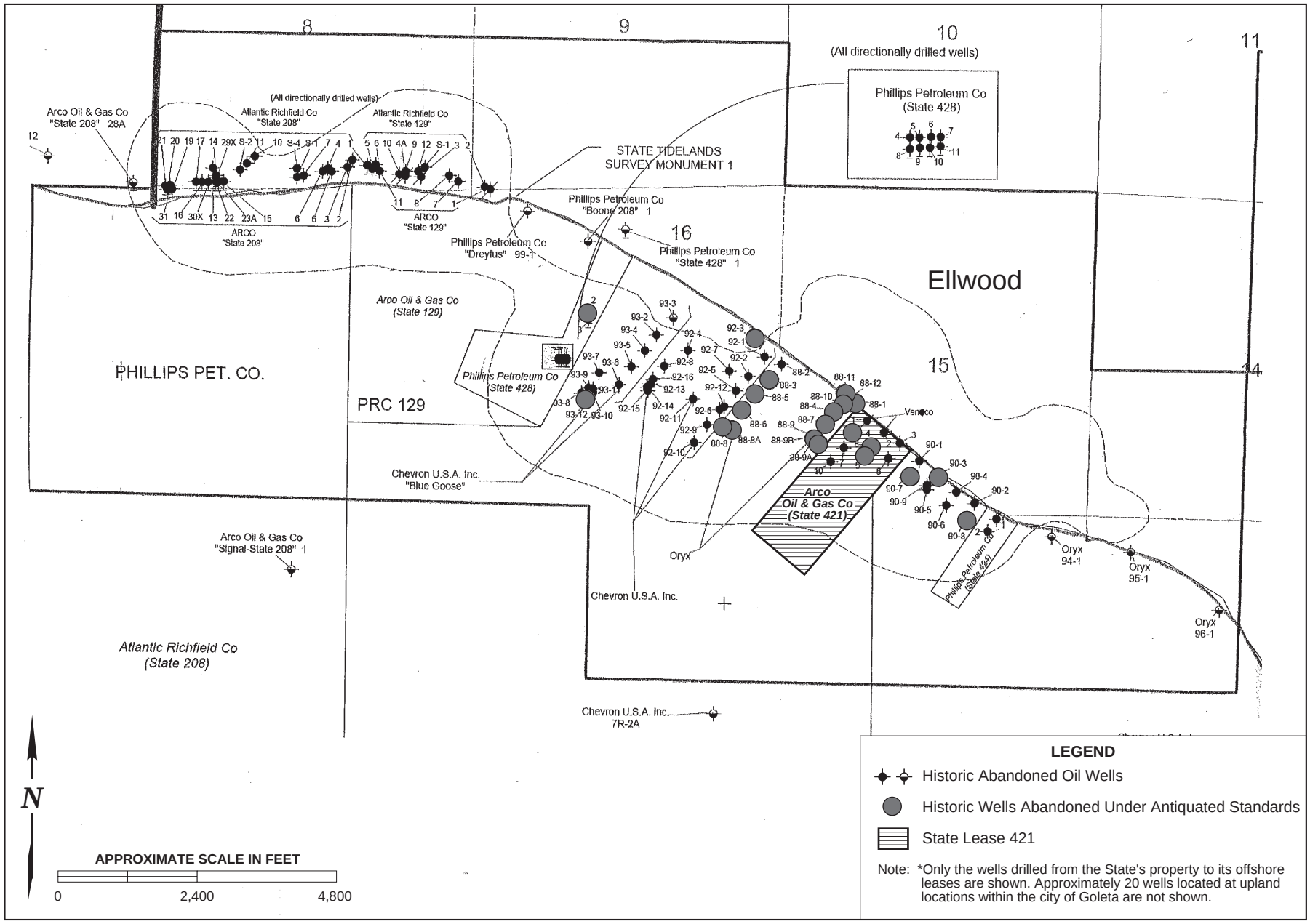
In the event that the APCD detects a leak through its testing at Well 421-2, CSLC staff would be notified. CSLC staff believes the greater environmental risk, as identified in the EIR, is that the older wells abandoned throughout the field, some of which were abandoned many decades ago (see Figures 4.2-3 and 4.2-4), will leak oil and gas as the reservoir repressurizes.

Repressurization and Abandoned Wells

According to a review conducted by the CSLC's Mineral Resources Management Division in 2001, at least 21 of the offshore wells drilled into the Vaqueros Reservoir from piers had potential deficiencies in their historic abandonment procedures, which could make them more likely to leak. Figures 4.2-3 and 4.2-4 provide maps of the locations of these wells, which only depict these offshore wells, and do not include approximately 20 wells located at upland locations now within the City of Goleta. All of these wells are currently abandoned, and PRC 421 is the only active lease remaining.

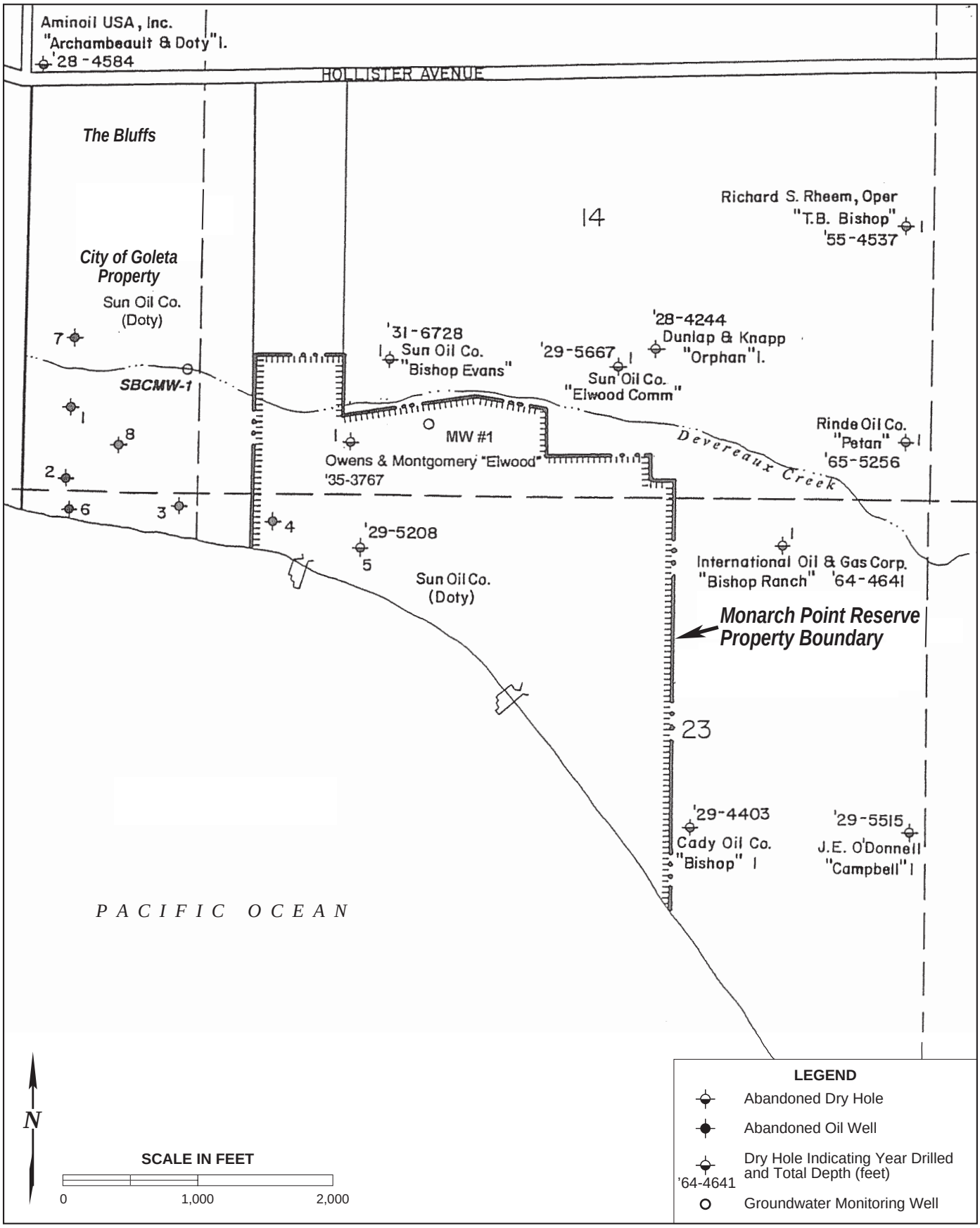
The potential concern for most of the wells is the inadequate volume of cement in the casing shoe plugs and/or surface plugs.[2] Most wells have shoe plugs less than 100 feet

[2] A shoe plug consists of a concrete plug at the bottom of a string of open casing. A surface plug is placed from the surface down to a variable depth in the well bore, typically 50 feet in modern operations.



Historic Well Locations in the Project Vicinity*

FIGURE 4.2-3



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Detailed Well Descriptions in the Project Vicinity

FIGURE 4.2-4

long, some wells have shoe plugs of only a few feet, and some have no shoe plug at all. Like the shoe plugs, the surface plugs do not meet current standards and practices. Some wells have no surface plugs; wells with surface plugs average only 30 feet in length. Re-abandoning these wells could present significant problems, since many of them had their inner/production strings cut and recovered, and the well casings were cut off at or below the mud line, making it very difficult to locate the wells and re-entry to an appropriate depth nearly impossible.

Summary

Pursuant to State CEQA Guidelines section 15144, while an agency cannot foresee the unforeseeable, it must use its best efforts to find out and disclose all that it reasonably can. As such, the CSLC staff is concerned that any build-up of pressure within the Vaqueros Reservoir could potentially cause unintentional oil releases into the coastal environment. The increased pressure in the reservoir could force a leak from historic abandoned wells in offshore areas of the reservoir or possibly lead to additional release of oil from a natural seep. Given current conditions – PRC 421 is shut-in and all other wells that once tapped the reservoir have been abandoned – there is no active well penetrating the reservoir into which pressure-testing equipment can be inserted. Consequently, there is no existing mechanism to conduct pressure testing of the reservoir to determine the extent of possible pressure build-up. The potential impacts of repressurization cannot be adequately determined until the Commission has sufficient data to evaluate. The pressure data that would be collected by the Project are integral to assessing the future risks of pressurization of the formation and the determination of any future risks and responses. Long-term risks and responses to repressurization will be dealt with when the lease is quitclaimed or terminated.

Existing Facility Conditions

Existing facilities at PRC 421 have undergone structural improvements, repairs, and removal of historic structures. The present conditions of these facilities, as they relate to Project safety, are summarized in Table 4.2-1.

Hazards, conditions, or features that have the potential to be the source of a release, fire, or explosion, are also noted. Figure 4.2-5 shows the piers in their existing condition, and Figure 4.2-6 shows the conditions of the existing caisson walls of each pier.

Existing Facility Hazards

Sands within and possibly beneath both caissons at Piers 421-1 and 421-2 may contain unknown quantities of residual oil and oil-containing materials, although no contamination was discovered during repair work and associated excavation at Pier 421-1 in 2004 or at Pier 421-2 in 2011. In their current condition, portions of either

Table 4.2-1. Summary of Area Facility Conditions

Facility	Condition
Used by Project	
Pier 421-1 (Pier and Caisson)	In 2000, the pier was reinforced, the well casing and wellheads were repaired, and subsurface safety valves were installed. In 2004, a new seaward-facing wall was installed on the caisson. Venoco has developed and is implementing a monitoring plan to identify and respond to leaks from the PRC 421 piers. The pier is fenced and patrolled twice daily by private security.
Pier 421-2 (Pier and Caisson)	In 2000, the pier was reinforced and upgraded and new subsurface safety valves were installed. In 2011, a new seaward-facing caisson wall was built. Venoco has developed and implemented a monitoring plan to identify and respond to leaks. This facility may have similar source and quantity of contaminated material as that found in Pier 421-1. The pier is fenced and patrolled twice daily by private security.
6-inch Pipeline	In 1994, 170 barrels of oil were released near the coastal bluffs. The line is currently out of service and is not suitable for modern "pigging" maintenance due to the presence of two 90 degree bends.
Access Road and Seawall	The access road was rebuilt and resurfaced during 2000 repair activity to permit use by heavy construction equipment. The seawall was expanded and reinforced by the addition of new riprap; however, there is a gap in the seawall between Piers 421-1 and 421-2 where a timber bulkhead provides the only protection for the access road. Security patrols along the access road are conducted by Venoco.
EOF	The EOF includes multiple redundant monitoring and safety systems with a control room that is staffed 24 hours per day, 7 days per week. Existing safety systems include onsite fire fighting capabilities, and personnel trained to respond to fires and other emergencies. Substantial upgrades to the EOF have been implemented to comply with the 1999 Santa Barbara County APCD Abatement Order and conclusions of the 2000 quantitative risk assessment and Safety audit (Santa Barbara County 2006).
Line 96 Pipeline from the EOF to the PAAPLP Coastal Pipeline	The Line 96 pipeline began operation in 2012. Standard regulatory conditions for pipelines and MMs in certified Line 96 Modification Project EIR (Santa Barbara County 2011) include pressure testing, pigging, and other methods to ensure safe operation consistent with industry and regulatory standards.
Other Area Ellwood Oil Facilities	
EMT	Not a part of Project. Operation was discontinued upon completion of the Line 96 pipeline in 2012; abandonment planning is underway.
Old Line 96 that runs from the EOF to the EMT	The old Line 96 that runs from the EOF to the EMT ceased operation in 2012 and will be removed or abandoned in place now that the Line 96 pipeline from the EOF to the PAAPLP Coastal Pipeline is in operation.
Historic Abandoned Oil Wells	There are many offshore oil wells that were drilled into the Vaqueros Reservoir from historic piers that are no long present in the area (see Figure 4.13-1 depicting the historic piers); however, the old wells remain in place and abandoned by historic abandonment practices.

caisson have the potential to deteriorate and release oil and oil-related contaminants, despite the repairs conducted in 2004 and 2011.

Hazards and hazardous conditions associated with Project implementation would potentially affect both the EOF and the Line 96 pipeline extension because the quantity of oil and gas processed at the EOF and the total crude oil throughput in the pipeline would increase. The Project would not modify the existing oil and gas processing

Figure 4.2-2a
Pier 421-1

Figure 4.2-2b
Pier 421-2 (shown under repair as of April 2011)
(Photo: Bruce Reitherman)

Figure 4.2-3a
Pier 421-1 Caisson Wall (facing ocean)

Figure 4.2-3b
Pier 421-2 Caisson Wall (facing ocean, shown under repair as of April 2011)
(Photo: John Storrer)

systems at the EOF or increase the quantity of oil processed beyond the processing limits for Platform Holly alone. Therefore, the Project would not generate significant changes in the operation of the EOF. The Line 96 pipeline was evaluated in a certified EIR, which contains proposed MMs that are required to be implemented as part of project construction and operation.

A 1999 Abatement Order by the Santa Barbara County Air Pollution Control District (APCD) required a series of audits, improvements, and other actions to address releases of gas containing hydrogen sulfide (H_2S) at Ellwood area facilities (Santa Barbara County APCD 1999). Although the Abatement Order notes PRC 421 as being included in the Ellwood facilities (i.e., EOF, EMT, and the old Line 96 pipeline from the EOF to the EMT), there were no specific references to PRC 421 in the Abatement Order; additionally, the oil produced at PRC 421 is light "sweet" crude oil, typically low in H_2S. The Abatement Order led to the preparation of a quantitative risk assessment (QRA) of these facilities (Arthur D. Little [ADL] 2000). The conclusions of the QRA are incorporated in this EIR both as background for issues affecting the Project and for use in assessing the risk associated with certain Project alternatives (see Section 5.0 for the alternatives analysis).

The Ellwood area oil production facilities have hazards and risks associated with them related to the crude oil produced from Platform Holly, for which crude oil production includes H_2S or "sour gas." Crude oil with little or no sulfur content is referred to as "sweet" crude. Figure 4.2-7 is a simplified diagram presenting existing hazards and risks associated with the Ellwood area oil production facilities that would be affected by the Project. These are the baseline conditions against which Project effects are compared.

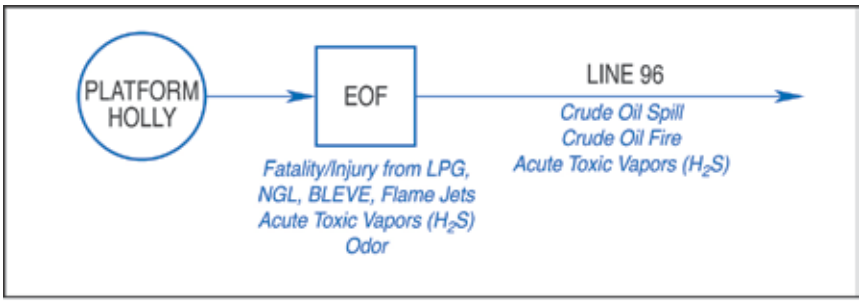


FIGURE 4.2-7. BASELINE HAZARDS/RISKS FROM ELLWOOD OIL PRODUCTION FACILITIES

Information about hazards and risks was obtained from CSLC (2009), ADL (2000), and Santa Barbara County (2011). Project-related hazards and risks associated with Ellwood facility components are summarized below (see the Line 96 Modification Project EIR for a full discussion of hazards associated with Line 96). Existing hazards associated with operation of Platform Holly are not addressed here as the Project would not require use of those facilities.

- **EOF** – The Project would require use of the EOF for separation and processing of oil, gas, and water, reinjection of water, control-room and security support, and electrical power (from the substation).
- **Line 96 Pipeline from the EOF to the PAAPLP Coastal Pipeline** – The Line 96 Modification Project EIR projected a failure rate for the approved pipeline of a large spill once every 140 years, and a small spill once every 31 years. These rates would not be expected to change substantially with the addition of Project oil, and the Project's use of the pipeline would occur during its first decades of operation, when risks of pipeline spills and accidents are at their lowest levels.

Crude Oil Characteristics

Crude oil characteristics can vary significantly by origin and (after exposure to the surface) weathering. At the wellhead, crude oil is typically a mixture of water, hydrocarbons (liquid and gases), and solids. The crude oil produced from PRC 421 is "sweet" crude, referring to its low sulfur content. Table 4.2-2 provides the crude oil properties of oil produced from PRC 421 (Ellwood Field), compared to other crude oils produced from the South Ellwood Field (Platform Holly).

Table 4.2-2. Crude Oil Characteristics, PRC 421 and the South Ellwood Field

	PRC 421	Holly[a]	EOF[a]
API Gravity	35	22.4	22.4
Sulfur Content, percent by weight	<0.6%	4.1%	4.1%
H_2S Concentration, (parts per million by weight (ppmw)	$\leq$10[a]	200	65

[a] Venoco 2013.

The natural gas content of oil produced at PRC 421 is known to be low, and the gas that is produced would have an H_2S content of approximately 10 parts per million (ppm). The low gas content of this oil was confirmed during previous production under emergency permit by Venoco in 2001 when approximately 17,000 barrels of oil produced from 421-2 contained no detectable amounts of gas (Venoco 2007). The Emergency Response Planning Guidelines (ERPG), which are used to develop thresholds for injuries and fatalities, identify 30 ppm of H_2S as the level at which nearly all individuals could be exposed for up to one hour without experiencing irreversible or serious health effects (American Industrial Hygiene Association 2006). Therefore, the crude oil produced by the Project would not be a source of acute toxic impacts to human receptors, if released. This distinguishes the characteristics of oil produced from PRC 421 from that currently produced at Platform Holly.

Crude oil released into the environment can pose a range of hazards, depending on the specific properties of the crude oil, location, and condition under which it is released, and the sensitivity and physical characteristics of the receiving environment and local

receptors. Crude oil can be toxic to biota, as well as cause physical harm or death to animals following contact with oil. See Section 4.5, Hydrology, Water Quality, and Water Resources, for discussion of effects of oil on water quality, and Section 4.6, Marine Biological Resources, for more discussion about the effects of oil on biota.

Rapid response to a crude oil release is critical. Because crude oil contains a mixture of constituents, as the lighter or more volatile fractions dissipate, the remaining material is thicker and tends to be more persistent in the environment if it is not contained and removed at the early stages of a response. Crude oil spilled in the marine environment typically forms an emulsion that incorporates sand and debris as it weathers, which causes it to sink after a period of time and is difficult to recover. This is especially true of oil in the surf zone, which is a high-energy area.

Crude oil can ignite, which could result in a crude oil fire. As noted in the EMT Lease Renewal EIR, the likelihood of an explosion related to a crude oil spill and fire related to crude oil produced from Platform Holly is “virtually non-existent;” therefore, the EMT analysis did not conduct further analysis on explosions (CSLC 2009; ADL 2000). However, the Platform Holly crude oil is heavier than PRC 421 crude oil. The PRC 421 crude oil (35 API) has higher potential of explosion than Platform Holly crude oil due to the presence of higher light ends. A more recent risk assessment was conducted for the Keystone XL pipeline, which included a wide range of historical analyses of pipeline accidents (U.S. Department of State 2013). That assessment concluded that explosions from newer pipelines carrying single-phase crude oil (as Line 96 does) present an extremely low risk of explosion or fire.

Environmental Hazards

The Project site is situated in a dynamic environment, with naturally occurring conditions that may affect safety conditions. These are ocean/wind conditions, coastal processes, seismicity, and subsurface pressure in the Ellwood Oil Field. See Section 4.1, Geologic Resources, for a complete discussion of geologic processes that may impact Project safety conditions; specifically erosion, seismicity, tsunamis, and subsurface pressure.

Prevailing winds in the coastal region are from the west/northwest during the day, with an average speed of 7 to 12 miles per hour. Evening winds blow from the east, as the air over the Pacific Ocean cools and creates a low pressure zone. Ocean conditions are summarized below, and are described in more detail in the EMT Lease Renewal EIR (CSLC 2009). These data are based on historic conditions in the Project area, and it is uncertain to what degree, if any, these would evolve or change due to the effects of global warming over the Project production horizon.

Although located in the relatively sheltered surf zone of the Santa Barbara Channel, the Project site is subject to periodic high winter surf conditions (Table 4.2-3). Heavy winter

Table 4.2-3. Ocean and Wind Conditions

Weather Elements	Annual Average	Monthly Maximum
Wind > 33 Knots – Percent Frequency	1.3	2.2
Wave Height > 9 feet – Percent Frequency	6.4	10.6
Visibility < 2 nautical miles – Percent Frequency	6.3	8.7
Precipitation (inches)	16.8	5.8
Temperature > 69°F – Percent Frequency	1.7	4.2
Mean Temperature (°F)	58.8	62.8
Temperature < 33 °F – Percent Frequency	0	0.1
Mean Relative Humidity (percent)	82.0	86.0
Overcast or Obscured – Percent Frequency	31.4	50.6
Mean Cloud Cover (8ths)	4.5	5.4
Prevailing Wind Direction	NW	N/A

Sources: USCG 2002; CSLC 2009.

storms can generate wave heights in excess of 10 feet leading to scouring of all or most of the sand from beaches at the Project site and exposing primary Project facilities, such as the caissons, piers, and seawall to battering from heavy surf. When combined with winter high tides, which can reach the toe of the seawall, such high surf conditions may pose a hazard to Project facilities.

Security, Prevention, and Response Capabilities for the Ellwood Facilities

Venoco has existing security, accident prevention, and response capabilities that address the PRC 421 facilities. Preventive measures, plans, response equipment, and the programs required to implement a response (e.g., health and safety training, drills and exercises, and equipment inspection) contribute to Venoco's ability to prevent or respond to upset conditions. Most of these measures and programs are governed by agency and industry requirements and standards (see Section 4.2.2, Regulatory Setting), as well as corporate policies, to avoid or reduce harm to the public and the environment. Although these safeguards provide a level of confidence in the safety of operations, and an ability to respond to emergencies, they cannot reduce the potential for accidents or harm to zero. Existing security, prevention, and response capabilities in place that encompass PRC 421 facilities are listed in Table 4.2-4.

For releases of oil at the Ellwood facilities, Venoco has response equipment, vessels, personnel, and/or supplies located at the EOF and onboard Platform Holly. As required by various regulations, contingency plan implementation requires personnel training, equipment testing and inspections, and scheduled and unscheduled drills and exercises to maintain readiness. According to records provided of response drills and exercises held for the Ellwood facilities since 1999, 10 drills were held, of which nine were for H_2S

Table 4.2-4. Security, Prevention and Response Plans and Capabilities In Place for PRC 421 Facilities

Measure	Purpose
Controlled Access	Each caisson has an 8-foot-high chain link fence that remains locked to prohibit entry to the equipment on the piers. EOF staff provides security.
Security Patrol	A private security firm patrols the PRC 421 facility area twice daily.
Emergency Action Plan (EAP)	Emergency plan for the South Ellwood facilities provides information and procedures for emergency shutdown, evaluation, and response to emergency conditions at the South Ellwood Field. The plan includes procedures for responding to and managing an oil spill emergency, and contains response checklists, roles and responsibilities of response personnel, inventories and locations of response equipment, supplies, and personnel (Venoco and contracted).
Spill Prevention Countermeasures and Control (SPCC) Plan	Description of systems (equipment, containment, related components) at PRC 421 used to prevent and manage releases of oil.
Fire Prevention and Preparedness Plan, South Ellwood Facilities	Fire prevention and response. This plan specifically addresses the EOF and EMT. PRC 421 facilities are not specifically addressed in this plan.
Mitigations from City of Goleta (2006) MND	Site-specific plans resulting from Pier 421-1 repair and subsequent monitoring for leakage which were completed in early 2007: · Emergency Response Plan · Prevention and Control Plan · Removal Action Plan

releases or H_2S-related drills at the EOF, and one was an unannounced oil spill drill at the EMT, initiated by OSPR. None of the drills specifically addressed PRC 421; however, a response to an event at the PRC 421 facilities would be similar to the response to an event at the EOF facilities or formerly conducted at the EMT (with the exception being the low likelihood for H_2S drills due to the low H_2S content of PRC 421 oil). According to the records provided, some included written evaluations by Santa Barbara County, providing specific recommendations (Venoco 1999-2004).

The EAP includes descriptive information of and response procedures for PRC 421 (referred to as the "Beachfront Lease"), lists the historical components, and notes that they will be replaced. Similarly, the Spill Prevention Countermeasures and Control (SPCC) Plan would need to be updated as it lists a potential release volume of 900 barrels; however, the source of the volume noted was the crude oil storage tank on Pier 421-1, which has been removed. On-water containment procedures in the EAP include booming strategies for a release from the piers.

The EOF has engineered fire protection systems and procedures (contained in the Fire Prevention and Preparedness Plan) to prevent, detect, and manage a fire. According to the Fire Prevention and Preparedness Plan, Venoco personnel are trained and

equipped to initiate a response to a fire at the incipient stage[3] and to control the site in preparation for the arrival of the SBCFD. In its existing form, the Fire Prevention and Preparedness Plan does not specifically provide procedures or other information for the PRC 421 facilities (Venoco 2003).

The Line 96 pipeline includes a number of measures related to response planning and capabilities to address an oil spill. These measures are intended primarily to ensure timely shut down of oil flows through the pipeline should a rupture occur and require capabilities for active response to potential oil spills, particularly those that threaten environmentally sensitive areas (e.g., creeks, shoreline). The specific measures have been set forth in a revised Safety Inspection, Maintenance and Quality Assurance Plan (SIMQAP), Oil Spill Contingency Plan (OSCP), and EAP which were completed and approved prior to commencing operation of the new pipeline in 2012.

4.2.2 Regulatory Setting

The primary Federal and State laws, regulations, and policies that address security of oil and gas production and transport facilities, emergency response/contingency planning, design and construction standards, operational standards, and spill prevention and cleanup that pertain to the Project, are summarized in Table 4.0-1, while local laws, regulations, and policies are summarized below.

Local

System Safety and Reliability Review Committee (SSRRC) and Safety Inspection, Maintenance and Quality Assurance Plan (SIMQAP)

The Santa Barbara County Board of Supervisors originally established the SSRRC—a committee of County departments plus the Santa Barbara County APCD—in 1985 to identify and require correction of possible design and operational hazards for oil and gas projects prior to construction and startup of the project and for project modifications. The SSRRC has authority to review the technical design of facilities, as well as to review and approve the SIMQAP. The purpose and scope of the SIMQAP is to identify procedures that will be used during the operation of a facility and to insure that all equipment will function as designed. The SIMQAP identifies items to be inspected, maintained or tested, defines the procedure for such inspection, maintenance, or testing, and establishes the frequency of inspection, maintenance or testing. SIMQAP audits are conducted annually at the EOF. The City of Goleta contracts with the County Energy Division for energy related planning services, which includes SSRRC project

[3] As defined by the Occupational Safety and Health Administration (OSHA) (29 Code of Federal Regulations [CFR] 1910.155[c][26]), an incipient stage fire is in its initial or beginning stage, and can be controlled or extinguished by portable fire extinguishers, class II standpipe or small hose systems without the need for protective clothing or breathing apparatus.

review; however, the County Energy Division is not currently providing energy planning services for the PRC 421 Project.

City of Goleta Safety Element

The objective of the City's Safety Element is to minimize risk associated with the operation of Venoco's Ellwood area facilities and other oil and gas operations. As part of this objective and its adopted policies, the city has defined unacceptable risk as involving new development as well as modifications to existing development if those modifications increase risk. Several city policies address how to minimize or avoid risk from H_2S and pipeline operations and set forth the requirements for preparation of QRA. Pipeline policies address construction, location, operation, and safety, as well as the location of sensitive receptors near pipelines.

Santa Barbara County Public Safety Thresholds and Safety Element

The county has established thresholds for classifying the significance of public safety impacts, particularly public exposure to acute risks from activities with significant amounts of hazardous materials. The county defines acute risk as being the "chance of fatality or serious injury due to a single, short-term, involuntary exposure to the release of hazardous gas, liquid, or solid, or to a fire or explosion." The thresholds are designed for use in EIRs as significance criteria. The county's Safety Element automatically requires some types of facilities, such as sour gas pipelines and processing facilities, to perform a QRA to calculate risk and apply the criteria. These criteria were applied for analyses related to the EOF which handles sour natural gas oil that contains higher concentrations of H_2S, which is an acutely hazardous material. Findings from the QRA that was performed for the EOF are discussed where appropriate below (see also Section 4.4, Air Quality and Greenhouse Gases).

4.2.3 Significance Criteria

A safety impact is considered significant if any of the following apply:

- There is a potential for fire, explosion, releases of flammable/toxic materials and/or oil, or other accidents resulting from Project operations that could cause injury or death to members of the public;
- Operations would increase the probability or volume of oil spills into the environment, and existing or proposed emergency response capabilities are not adequate to effectively mitigate Project spills and other accidents; or
- Project operations are not consistent with Federal, State or local regulations. Conformance with regulations does not necessarily mean that there are no significant impacts.

4.2.4 Impact Analysis and Mitigation

This section evaluates Project construction and operational activities to identify potential impacts and their severity with respect to the stated significance criteria. Activities and conditions that, under upset conditions, could lead to a release of oil or hazardous materials, fire, or explosion were identified based on a review of available materials, site visits, independent engineering and structural analyses, and professional judgment. Impacts were compared against baseline conditions and the significance criteria established in the State CEQA Guidelines and the EMT Lease Renewal EIR (CSLC 2009) to determine the severity of the impact. Where relevant, a quantitative estimate of frequency or probability is used. Where applicable, MMs have been developed to avoid or reduce impacts. Baseline conditions for Ellwood area oil facilities were derived from the EMT Lease Renewal EIR and other available reports, which were defined earlier in this section.

Construction and operational impacts related to a release of hazardous materials are also discussed in Section 4.3, Hazardous Materials. Best management practices (BMPs) include monitors to direct public access during construction, installation of temporary fencing as needed, removal of equipment or other hazards from the beach and other publicly accessible areas at the end of each day of construction, posting of warning signs, measures to prevent release of fuel during refueling, etc. (see Appendix F). The Line 96 Modification Project EIR proposed mitigations that are incorporated by reference into this document (Appendix H) that reduce the potential for crude oil releases, and therefore the opportunity for crude oil fires.

Table 4.2-5, located at the end of Section 4.2.4, provides a summary of safety-related impacts and recommended MMs to address these impacts.

Impact S-1: Release of Oil During Cleanup of 6-inch Pipeline

Residual oil could be encountered and released during clean-up of the 6-inch pipeline (Less than Significant).

Impact Discussion

Prior to installation of the internal liner and 3-inch flowline within the 6-inch line that connects Pier 421-2 to the tie-in at the EOF, a release of oil could occur. The 6-inch line was the source of the 1994 leak; therefore, residual oil could be encountered within or surrounding the pipeline during construction. If residual oil is encountered, it could be controlled and removed to prevent further contamination or migration. BMPs would include safety procedures for use of equipment in the presence of hydrocarbons, which would reduce the potential for ignition if vapors are present (see Appendix F). As noted previously, access to the construction area would be controlled to maintain safety and

prevent public contact with construction-generated materials or equipment. Therefore, this impact would be adverse but less than significant.

Mitigation Measures

None required.

Rationale for Mitigation

Although no mitigation is required, BMPs, as discussed above, which establish Project construction equipment operation and maintenance procedures, are designed to prevent releases, and would also be protective of the public during the construction process to avoid potential contact with hazardous materials and the introduction of ignition sources. Such measures would include removal of equipment and construction materials from the beach at night, use of tape or orange plastic construction fencing around construction areas and the presence of monitors to direct the public around construction activity (see Appendix F).

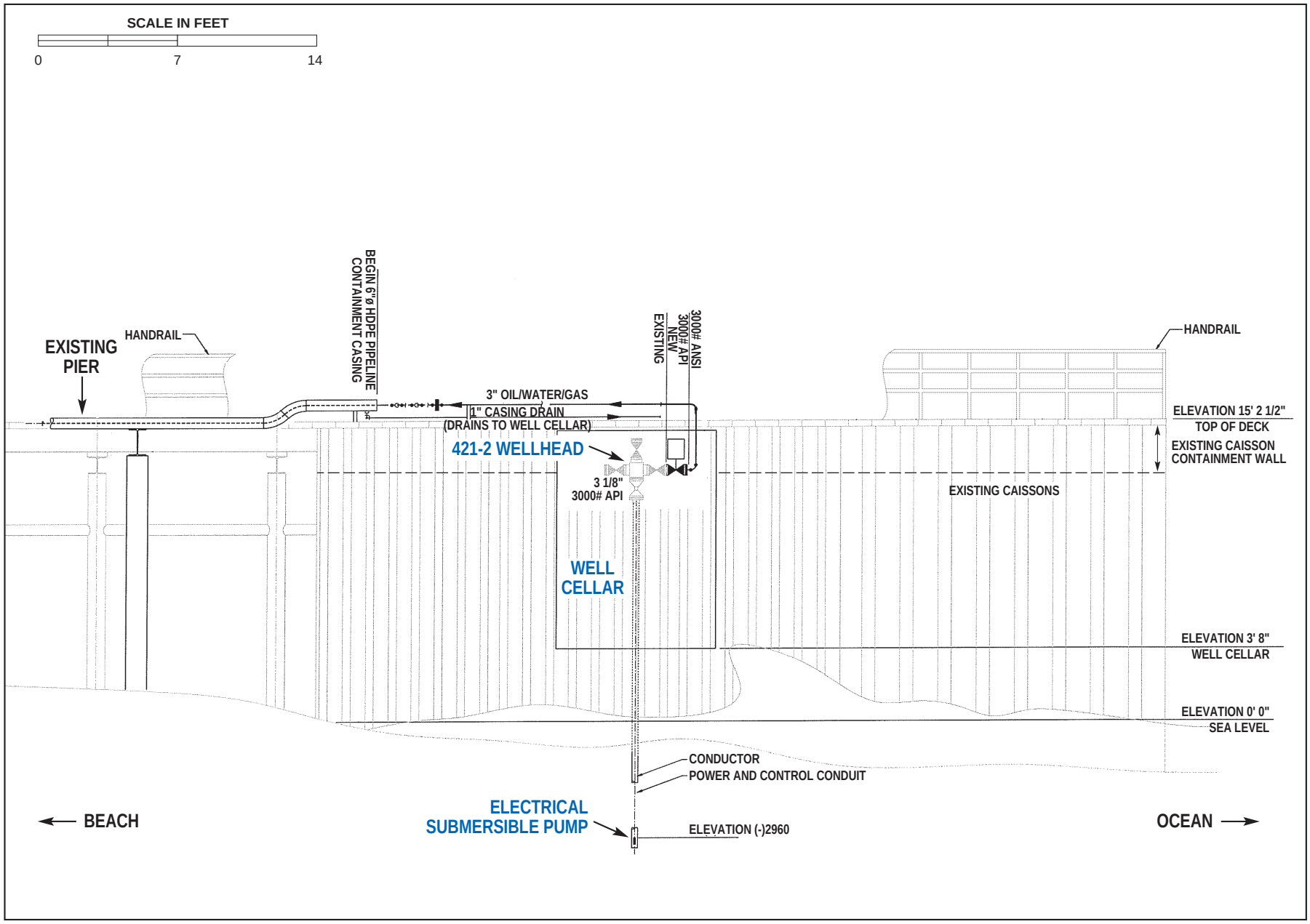
Impact S-2: Exposure of the Public and Environment to Safety Hazards Due to Collapse of the Pier 421-1 or 421-2 Caisson

The Project would prolong the use of the aging caisson on Pier 421-2, which could collapse and lead to the release of hazardous materials and oil from within the caisson or from Project-related pipelines (Less than Significant with Mitigation).

Impact Discussion

The caisson at Pier 421-1 would remain in place for an estimated 1 year after resumption of production at Pier 421-2. Although the seaward-facing wall of the caisson at Pier 421-1 was repaired in 2004, some potential exists for collapse of this structure during its limited remaining life. Although no active oil production facilities would be located on Pier 421-1, a collapse could release contaminated materials (e.g., sand, concrete) into the surf zone as discussed below for Pier 421-2. Abandonment and decommissioning of Pier 421-1 would eliminate this potential hazard.

The proposed well design and layout at Pier 421-2 is shown in Figure 4.2-8. Critical features include the ESP, which would be at a depth of about 2,960 feet below sea level, the subsurface safety valve (SSSV) located above the ESP, the well cellar within the caisson, the wellhead and casing, the surface safety valve (SSV), and the oil discharge line with High and Low pressure sensing switches. This system would pump crude oil emulsion to the surface and deliver it directly to the EOF for processing. Safety features included in this system are the pressure sensing switches for the oil discharge line and the safety valves (SSSV and SSV), which require power to remain open. In the



Cross-Section of Proposed Layout for Pier 421-2

FIGURE 4.2-8

event that the pressure sensing switches report high or low pressure, or any alarm forces a shutdown of the well, the safety valves will automatically close, which prevents oil from being conveyed to the surface; the safety valves would also shut if there were a loss of power. The well cellar within the caisson has a volume of approximately 213 barrels (8,946 gallons). It is believed to have sand and other materials packed around it, but its actual condition and construction are unknown. The well cellar houses the wellhead and casing and, in the event of leakage, would serve as containment within the caisson, with some improvements likely required to permit these facilities to provide complete containment (see MM S-4b below). The wall surrounding the caisson deck is higher than the deck itself and would in its present state impede oil movement, but is not specifically designed as secondary containment.

The wellhead was repaired in 2000-2001. Venoco proposes to equip the wellhead with current safety equipment to adhere to design criteria specified in American Petroleum Institute (API) Recommended Practice (RP) 14C, *Safety Analysis Function Evaluation (SAFE) of Offshore Petroleum Production Systems*, and incorporated in 30 CFR 250.168.

AMEC engineers conducted an engineering review of the facilities to evaluate the appropriateness and adequacy of the Project with respect to safe operations for the Project duration. The conclusions of that review are:

- The Project design uses proven technologies and is consistent with industry standards.
- Installation of an ESP is advantageous because it protects the equipment from external forces (wave action) and avoids creating a noise source on the surface.
- The 3-inch flowline would be equipped with high- and low-pressure switches for leak detection which would be important if the 6-inch line casing were compromised.

As discussed above, a preliminary review of the structural integrity of Project caissons and the seawall was conducted by a licensed structural engineer to determine the current structural stability of key Project facilities and to analyze the potential for the facilities to endure two decades of operation (Thomas and Beers 2000). This review was conducted prior to the emergency repairs on Pier 421-2, so improvements to the seaward-facing caisson in 2011 were not taken into account. The review of the structural integrity of Project facilities consisted of:

- A visual inspection of all facilities by a licensed structural engineer;
- A review and analysis of structural diagrams of Project facilities from the 2006 Negative Declaration (ND) and other engineering diagrams and relevant documents which address design standards and construction issues for marine structures such as seawalls;

- Communication and information exchanges with CSLC engineering staff regarding improvements at the Pier 421-1 and 421-2 caissons; and
- A review of a previous structural engineering report on the Project piers and caissons (Thomas and Beers 2000).

No as-built plans were provided by Venoco for the seawall and older portions of the caissons and no load calculations are available for the new walls; therefore, the stability of the piers, caissons, and seawall at that time is impossible to fully ascertain. The lack of as-built plans was also referenced in the Thomas and Beers (2000) structural engineering report.

Installation of new caisson walls in 2011 substantially improved the structural integrity of the seaward-facing side of Pier 421-2.

Although the structural stability of the caissons was a concern at the time of the engineering report, improvements have since been made and additional improvements will be made as part of the Project. The seaward facing walls, as well as portions of the east and west facing walls, of both caissons have undergone major repairs in 2004 and 2011, and the integrity of these structures has been substantially improved. Additionally, the Project includes repairs to the north wall of the Pier 421-2 caisson, as well as the remaining un-repaired portions of the east and west walls.

The aging caisson on Pier 421-2 has been subject to more than 75 years of weathering and corrosion associated with exposure to the surf zone of a marine environment. Visual inspections of these facilities have revealed no major stress lines or cracks, but the sides and rear of the caisson showed signs of wear and stress that would be anticipated under such circumstances. This includes a number of smaller cracks and irregularities, one of which appeared to very slowly seep oily or sulfurous fluid. In addition, no as-built plans for this aging facility are available to assist in determining probable structural stability for the life of Project operation. Further, review of the design previously proposed for Pier 421-2 indicates that earthquake loading appears to not have been considered in the design of this structure. Finally, as noted in the structural engineering report, the seaward-facing walls of the two caissons at PRC 421 have suffered a total of three substantial collapses in the last 25 years (Thomas and Beers 2000; CSLC 2010).

Although the caisson on Pier 421-2 has degraded, the seaward-facing wall of the structure, as well of portions of the east- and west-facing walls, have been substantially reinforced through repairs conducted in 2011. The Project includes repair of the walls

that were not repaired in 2011. However, the Project description provided by Venoco (Appendix G) does not currently include information about how the design of these repairs accounts for design wave loading conditions including hydrodynamic loading, overturning, and base shear, as well as the maximum credible earthquake according to the current CBC. An engineering analysis of the Project design has not been conducted; however, the analysis conducted for the previous Draft EIR (CSLC 2005) remains generally applicable to the Project and would be supplemented through the implementation of MM S-2a.

The extent and quality of repairs made following the caisson's collapse in the 1980s are not clearly documented as no engineering plans for these repairs are available. Under these circumstances, based on the lack of definitive engineering information, the partial collapse of the aging caisson on Pier 421-1 could occur during its remaining 1 year of existence. Further, Pier 421-2 could also collapse during the life of Project operation, particularly associated with sustained high winter surf, seismic activity, or in a low-probability large wave event. The risk of collapse would also be increased incrementally over the project life by sea level rise associated with global climate change. Such a collapse could result in release of unknown quantities of sand contaminated with hydrocarbons into the marine environment from either Pier 421-1 or 421-2, as well as small quantities of oil associated with production at Pier 421-2. This impact would be considered less than significant with mitigation.

Mitigation Measures

MM S-2a. Design Review/Wave Loading Evaluation. Prior to implementing caisson repairs at Pier 421-2, Venoco shall develop design improvement plans that account for design wave loading conditions including hydrodynamic loading, overturning, and base shear, as well as the maximum credible earthquake according to the current California Building Code; these improvements shall be sufficient to support Project facilities through the production life. The revised design plans shall be reviewed and certified by a professional civil/structural engineer and shall be submitted to the California State Lands Commission staff for approval. Caisson repair shall be performed in accordance with approved design plans prior to recommencement of production at Pier 421-2.

MM S-2b. Post Storm Inspection, Monitoring and Cleanup. Venoco shall amend the existing monitoring program to include regular monitoring and inspection of both caissons during the winter storm season. Damage to caissons shall be reported to California State Lands Commission staff and cleanup and removal of any debris immediately initiated (see also MM S-4e).

Rationale for Mitigation

The existing repaired seaward-facing walls on the caissons of Piers 421-1 and 421-2 have improved the integrity of these structures and appear adequate to protect the

seaward-facing side of these structures from severe winter storm damage; however, data are unavailable to demonstrate the ability of the structures to withstand damage from low-probability, high-magnitude events, such as the maximum probable design waves and earthquakes. For Pier 421-2, MM S-2a would require provision of such data as well as review and approval of the planned reinforcement of the non-seaward-facing walls of this caisson, which have not been subject to any recent improvement. These improvements include construction of walls similar to those built for the seaward-facing walls of the caissons for all non-seaward-facing walls of the caissons to address the potential for failure of these non-seaward-facing walls from both high-magnitude, low-frequency events (i.e., design wave events and earthquakes) and from more typical severe winter storms. MM S-2b would improve existing monitoring protocols to ensure regular winter storm season monitoring and response. Full implementation of these measures would reduce Impact S-2 to less than significant.

Impact S-3: Exposure of the Public and Environment to Safety Hazards Due to Collapse of or Damage to the Existing Timber Bulkhead or Rip-Rap Seawall

The Project would prolong the use of the existing causeway and supporting, aging timber bulkhead and rip-rap seawall, which would be exposed to high winter surf and large wave events over the Project's life, leading to possible erosion or collapse and the potential for release of hazardous materials and oil from within the causeway or Project-related pipelines (Less than Significant with Mitigation).

Impact Discussion

The stability of the existing seawall is difficult to assess because as-built plans are also not available for this structure. In addition, based on previous environmental review of past seawall improvements, it is unknown if seawall construction followed standard Santa Barbara County construction practices for such structures (e.g., if the seawall was keyed into bedrock underlying the beach sand to prevent undercutting) (Santa Barbara County 2001).

This seawall is faced with generally large 1- to 3-ton boulders consistent with standard seawall construction practices in Santa Barbara County. The use of large 1- to 3-ton boulders should provide adequate protection and prevent remobilization of these rocks during larger storm events; however, several gaps exist in the rip-rap portions of this seawall, and minor areas have been repaired with smaller sized rock that could become remobilized during high surf events.

This segment of the wall is partially shielded from some wave action by the caissons and pilings at Piers 421-1 and 421-2; however, some level of existing protection would be lost through the removal of Pier 421-1. For example, an unquantifiable large storm event and associated major wave action could result in total failure of the wall. This is

The Project's existing timber and rock seawall appears generally intact along most of its reach, although the eastern end (outside of critical pipeline areas) has suffered some wave damage.

The existing aging timber bulkhead seawall has been reinforced through much of its length with a rip-rap boulder revetment, although some gaps in this protection exist.

evidenced by the fact that major unmaintained portions of this historic seawall have suffered collapse and substantial damage over the last decade along other portions of the Ellwood Coast (AMEC 2006). Frequency and intensity of strong wave impact on this bulkhead and seawall could be increased by sea level rise related to climate change; however, the Project's production life would minimize such effects. Collapse of this segment of the seawall in a high-surf or low-probability, large-wave event could undermine the Project access road and expose the proposed oil, produced water and gas pipeline and power cables to wave action, creating impacts related to the accidental release of oil into the marine and terrestrial environment that would be less than significant with mitigation.

Further, visual observations of the seawall at the east end of the Project site, between Piers 421-1 and 421-2, reveal that in this area, the seawall consists of the original timber bulkhead, which has not been reinforced with rip-rap and thus should be considered as marginally stable.

Mitigation Measures

MM S-3. Design Review by Civil/Structural Engineer. Prior to construction on the Project and subject to receipt of all necessary approvals and permits to undertake the work, Venoco shall complete the following:

- Venoco shall retain a licensed civil/structural engineer to review seawall design and recommend improvements to the Project seawall to permit it to support Project access road, pipelines, and power cables through the production life.
- These potential design improvements, including a maintenance and repair plan to ensure fitness for purpose, shall account for anticipated winter surf conditions and for a design wave event.

- West of Pier 421-1, improvements to the seawall may include use of additional appropriately sized (i.e., 1- to 3-ton boulders) rip-rap if needed to fill in small gaps in the wall.

Between Piers 421-1 and 421-2 and east of 421-2, to the maximum extent feasible, any needed seawall improvements shall consist of minor repairs to and strengthening of the existing timber bulkhead, unless seawall design review indicates that such improvements would be insufficient to protect the pipeline and power cables over the life of the Project.

Rationale for Mitigation

The existing seawall appears adequate to protect Project facilities over most of its length. However, portions of the seawall may require repair and upgrade to ensure that damage to pipelines and other facilities does not occur during winter surf or a design wave event. However, consistent with the intent of City of Goleta policies to minimize new coastal protection structures, MM S-3 would permit only focused repair of minor gaps in the Project seawall, but not the extension of rip-rap into new areas solely protected by the aging timber bulkhead. These areas would be subject to limited repair and strengthening of the aging bulkhead as needed, through repairs to the existing timber bulkhead. The relatively intact condition of this portion of the timber bulkhead and the fact that it is partially shielded from direct wave action by Pier 421-2, seem to support lesser improvements to this segment. This would be confirmed as part of design review. Repair of the timber seawall would also provide protection for the proposed extension of the 6-inch line from Pier 421-2 to the EOF in the event of partial collapse of this timber bulkhead. If design review determines that additional rip-rap is necessary to protect aging timber bulkhead between Piers 421-1 and 421-2, such improvements would be subject to appropriate permits from the City of Goleta.

Full implementation of these measures would reduce Impact S-3 to less than significant.

Impact S-4: Potential for Release of Oil or Hazardous Materials from Pier 421-2

Project operations could result in the release of oil or hazardous materials from Project facilities, including the 421-2 well and caisson, drilling and separation equipment (Significant and Unavoidable).

Impact Discussion

Because of Well 421-2's shoreline location, a release of oil during production into the marine environment or nearby sensitive habitats is a significant concern. The potential for oil to be released and enter the marine environment is a function of the potential frequency of a release over the life of the Project, and the ability of the released volume to exceed or otherwise breach the containment within the pier and caisson.

Spill frequency can be estimated for operations for which there are data to support calculations. Oil spill occurrence rates for offshore oil spills from production platforms are based on years of data collected for activities on the OCS (Anderson and LaBelle 2000). However, unlike the well-established statistics for OCS platform and pipeline operations and tank vessel transit operations, past and proposed PRC 421 operations are somewhat anomalous. A spill frequency estimate was not calculated due to: (1) low PRC 421 throughput relative to spill volume data collected for OCS spill occurrence rates,[4] and (2) applicability of the OCS data to PRC 421 operations. For this analysis, the release of a worst-case discharge was assumed, regardless of likelihood. A reasonable worst-case discharge of oil from Pier 421-2 would involve an uncontrolled release of oil as follows:

- Shutdown of the ESP delayed 5 minutes, assuming a maximum flow rate of approximately 0.35 barrel per minute between the wellhead and the separation vessel (1.7 barrels);[5] or
- Wellhead drilling and production and well workovers could lead to a failure along the casing leading to a blowout, which, if it occurred below the caisson on Pier 421-2, could release oil into sub-surface areas and eventually the ocean. As discussed below, the amount of oil released from such a spill would be roughly equivalent to that from a delayed shut down of the ESP (1.7 barrels).

Based on these assumptions, the maximum spill volume, which is the maximum amount that could spill during peak instantaneous production of 500 barrels of oil per day (BOPD), is estimated to be 1.7 barrels; the potential spill volume based on average production of 150 BOPD would be 0.5 barrels. See Impact S-5 below for the maximum spill volume for the 3-inch flowline. The containment capacity of the well cellar within the caisson is 213 barrels. Because the caisson deck wall is not specifically designed to act as containment, no containment capacity is assumed for the caisson deck. However, the well casing has adequate capacity to contain the entire volume of oil that could be released; no oil is expected to be released to the shore or marine waters.

Production at PRC 421 would use a submersible pump. The risk of a blowout would be minimized due to the relatively low pressures of this system (978 pounds per square inch gauge [psig]) when compared to the ability of the safety systems at PRC 421 to control the pressure and the rating of 3,000 psig for the well casing. However, the wells could produce releases at the wellhead due to failures associated with the piping, fittings, or safety valves. A release could also be produced during a workover in the event that operations encounter a gas pocket or pressurized zone during drilling. In addition, sub-surface damage to the well casing and liner could result in accidental

[4] Spill occurrence rates are a function of historic volumes of oil handled (the "exposure variable"), and address only spills of 1,000 barrels or more.

[5] Derived from flow curves provided by Venoco of estimated maximum instantaneous production of 500 BOPD (2013).

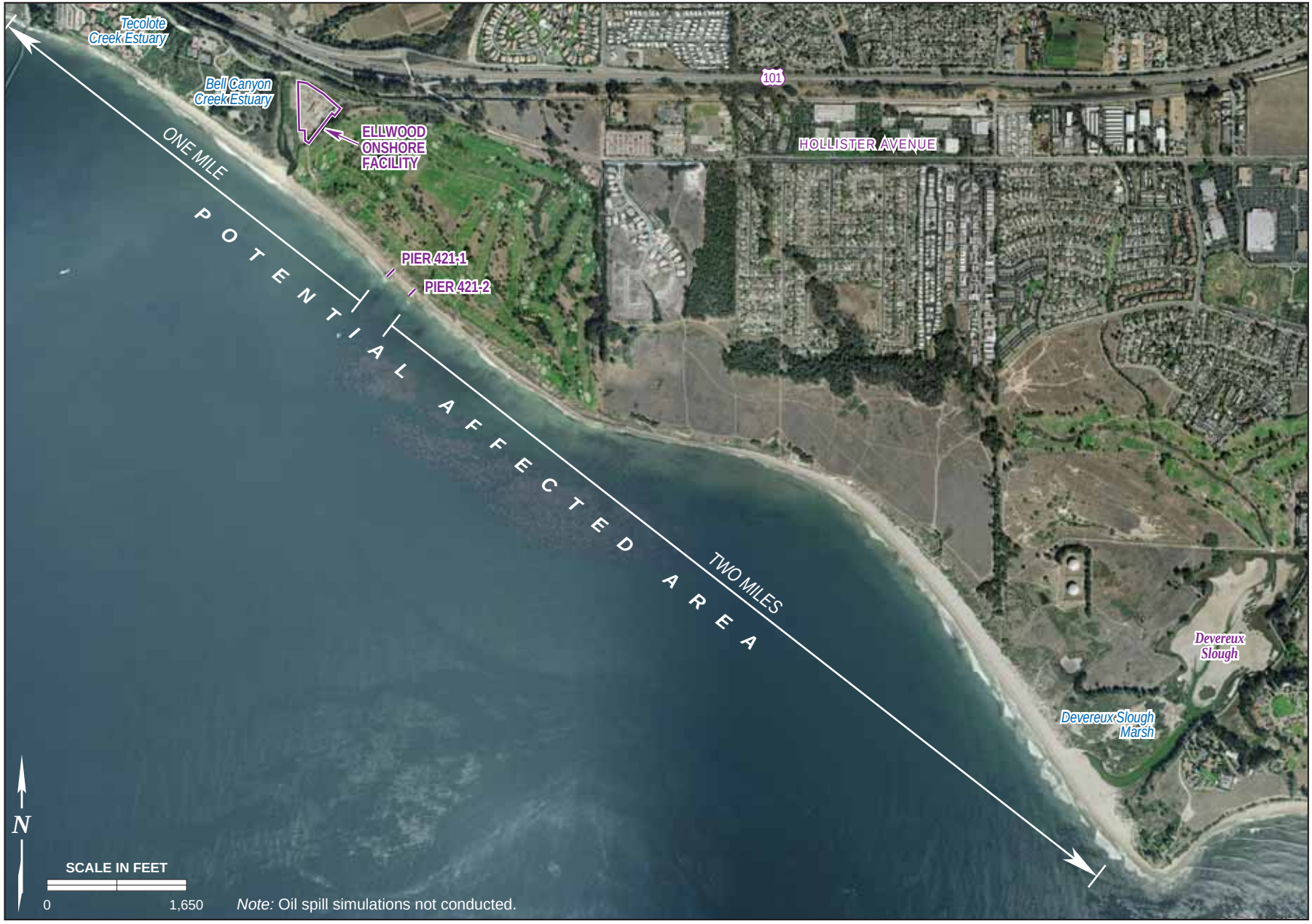
release of oil. Such damage, while very unlikely, could occur from several sources such as corrosion, aging of the casing, and seismic damage. If such a failure occurred near the surface, and the pump continued to run for five minutes prior to shutdown, a relatively small quantity of oil contained in the casing (estimated 1.7 barrels) could reach the surface. In addition, the slight potential exists under these circumstances that artesian pressure present in Well 421-2 could force the rotors in the ESP to spin, slowly releasing oil into the casing and environment, until repairs were affected. However, only a small proportion of blowouts release significant volumes of oil, and as discussed above, minimal gas production is anticipated to be associated with this Project.

Well workovers are also a possible source of blowouts. The Hydrocarbon Leak and Ignition Database (1992) estimates well workovers are performed every 7 years. As such, the potential exists for the Project to require two or more workovers during its productive life. Blowouts have the potential to occur in sub-surface areas hundreds to thousands of feet below the caisson deck. These blowouts would not be contained by the well cellar or caisson deck and would therefore be released directly to the sub-surface areas and potentially into the ocean. Blowouts that occur at the wellhead or the caisson deck could be contained by the well cellar and caisson deck; however, larger blowouts could directly affect the ocean. There have been four blowouts from Pacific OCS oil/gas projects since 1992; two of which occurred in the years 2000 and 2004 from Platform Gail, which is currently operated by Venoco. Neither resulted in release of significant volumes of oil into the ocean; however, both were due, at least in part, to human error (D. Dusette, Santa Barbara County, pers. comm. 2007).

Over the Project life, oil produced from extracted products would range from 85 to 11 percent by volume, as the fraction of produced water increases over time. Therefore, the oil portion of the product available for release from Pier 421-2 would decline over the Project life. This analysis uses the maximum volume of oil.

The location of the well at the water line and surf zone affects the possible movement and dispersion of any released oil; under most conditions a release would reach shore. Because of the location of the facility at the water line, and the low estimated release volumes, spill simulations were not conducted. Instead, for the purposes of evaluating the potential impacts of released oil from the Project and considering the site's exposure to winter storm conditions, based on predominant ocean currents (see Sections 4.5, Hydrology, Water Resources, and Water Quality and 4.6, Marine Biological Resources), oil released to marine waters is assumed to be transported approximately 1 mile northwest of the site and 2 miles to the southeast, as shown in Figure 4.2-9.

Although there are sensitive locations throughout the Project area, two down–coast sensitive sites identified in the ACP would be immediately vulnerable if an oil spill occurred at PRC 421: Bell Canyon Creek (Site 4-640-A) and Devereux Slough estuaries



Estimated Oil Spill Coverage in Project Area

FIGURE 4.2-9

(Site 4-645-A). Excerpts of the ACP entries for these sites are included in Figures 4.2-10 and 4.2-11. In addition, rocky intertidal habitat and kelp beds exist within 0.5 mile east of the site and an additional estuary associated with Tecolote Creek exists 0.25 mile west of the site.

Although predominant currents would generally prevent oil from drifting westward from PRC 421 more than 1 mile, in the event an oil slick drifted farther westward three other sensitive sites identified in the ACP: Naples, Eagle Canyon Creek, and Tecolote Creek, could also experience adverse impacts. Although they are not included in the 2011 ACP as they were designated in 2012, Naples MPA and Campus Point MPA would also be vulnerable to adverse impacts in the event oil reached these sensitive habitats.

Venoco maintains a response capability at Ellwood based on discharges estimated for the South Ellwood Field. The worst-case discharge planning volume for this field is ~~3,000~~ 30,811 barrels, and Venoco has response resources capable of handling a ~~3,000~~ 30,811 barrel shoreline clean-up (Venoco ~~2005~~2014). On-water containment and recovery would be conducted by Clean Seas, an oil spill response organization~~, and o~~. Clean Seas has demonstrated its ability to meet the OSPR daily recovery capability standards for the Santa Barbara Channel of 19,531 barrels per day within 12 hours, 35,156 barrels per day within 36 hours, and 66,406 barrels per day within 60 hours. Onshore oil spill response and clean-up would be conducted by ~~Advanced Cleanup Technologies Inc. (ACTI)~~ NRC Environmental Services, a contractor. Both Clean Seas and ~~ACTI~~ NRC Environmental Services maintain equipment lists and certifications as required by State and Federal regulations (Venoco ~~2005~~2014). The oil spill contingency plan is implemented, in part, by conducting drills to test and improve the response capabilities over time.

Oil dispersants are one potential method to respond to in-water oil spills. Depending on the size, location, weather conditions, and type of oil spilled, differing combinations of droplet size, concentration, and rate of application are administered. Once dispersants are applied, dispersed oil laterally spreads while dropping down the water column between 3 and 30 feet. As a result, dispersant use is limited to waters deeper than 30 feet to avoid possible sea floor contamination, which would likely limit its utility to respond to spills from Pier 421-2 (see Appendix E for more details on dispersant use).

Aside from booming strategies for an on-water release, most procedures contained in the Ellwood emergency plans are not specific to PRC 421. Recent emergency drills have focused on H_2S and similar emergencies at the EOF and EMT (Venoco 1999-2004). Because Venoco has not been producing from the PRC 421 lease area since 1994, the current EAP for South Elwood does not contain any response procedures for response to a release at PRC 421 and thus would need to be updated to address a release associated with recommissioned production.

SITE DESCRIPTION

Bell Canyon Creek is a moderate sized creek with a well developed lagoon just west of Sandpiper Golf Course; the sand berm which develops during summer is usually relatively low and the lagoon is subject to wash over especially during high tides. The creek flow during winter is usually enough to breach the berm. The beaches to the east and west are of fine- to medium-grained sand, and often have very high volumes of debris (mostly wood and kelp) especially after rains. The Venoco oil facility lies less than 1/4 mile inland.

SEASONAL AND SPECIAL RESOURCE CONCERNS

Whenever the lagoon mouth is open or subject to high tide wash over, wetland biota are at risk.

RESOURCES OF PRIMARY CONCERN

Wetland biota including Tidewater goby and possibly Steelhead trout; plus waterfowl and marsh vegetation.

Waterfowl, seabirds (including Brown pelicans) and various shorebirds.

Sea otters have been known to pass through the area.

CULTURAL, HISTORIC, AND ARCHEOLOGICAL SENSITIVITIES

Cultural, historical, and archeological sites are known to exist in the area; however, the exact locations of these sites must be ascertained by contacting the Native American Heritage Commission at (916) 653-4082, the State Office of Historical Preservation at (916) 653-6624, and/or the Central Coast Archeological Information Center at (805) 893-2474.

Source: Area Contingency Plan October 2005.

amec

Area Contingency Plan Summary:
Bell Canyon Creek

FIGURE
4.2-10

SITE DESCRIPTION

Devereaux Slough lies just north of Coal Oil Point. This 45-acre slough contains freshwater emergent vegetation, salt marsh, tidal flats and sand dune habitats. The mouth is generally cut off from the ocean by a well developed sand berm except during heavy rainfall. East and west of the slough are extensive medium-grained sand beaches backed by vegetated dunes. Large surf and strong winds are common, especially in winter. The slough is part of the larger Coal Oil Point natural reserve, managed by the University of California at Santa Barbara.

SEASONAL AND SPECIAL RESOURCE CONCERNS

Whenever the slough is open to the ocean, typically only during heavy rainfall, wetlands biota are at risk.

RESOURCES OF PRIMARY CONCERN

Western snowy plovers (all year), California lest terns (April through September), American coot, American wigeon, Black-crowned night heron, Canvasback, Green winged teal (March through July), Mallard, Pintail, and Red-breasted merganser.

Sea otters have been known to pass through the area.
California spiny lobster

Tidewater goby (August through November).

Eelgrass, Surfgrass.

CULTURAL, HISTORIC, AND ARCHEOLOGICAL SENSITIVITIES

Cultural, historical, and archeological sites are known to exist in the area; however, the exact locations of these sites must be ascertained by contacting the Native American Heritage Commission at (916) 653-4082, the State Office of Historical Preservation at (916) 653-6624, and/or the Central Coast Archeological Information Center at (805) 893-2474.

Source: Area Contingency Plan October 2005.

amec

**Area Contingency Plan Summary:
Devereux Slough**

**FIGURE
4.2-11**

Crude oil is ignitable and can cause a fire. Design features incorporated into the Project include regulatory and industry standards for safety and fire prevention, which reduce the probability of a fire significantly. Coupled with the absence of ignition sources available to ignite released oil, the likelihood of a fire is remote.

Impact Summary

Because of safeguards designed into the system, there is a low probability for a release of oil from the production process at Pier 421-2 (i.e., loss of power would shut in the valves and would prevent oil from reaching the surface under non-routine conditions). Containment capacity in the well cellar, in the event oil is released, is adequate to contain expected volumes of oil given design capacity and pumping rates. However, the well cellar is an old structure of unknown condition, and its ability to fully contain spills is unknown. Sands and materials enclosed in the caisson could be contaminated by leakage produced by the Project if the cellar is not adequately sealed. As discussed below, the cellar would require improvements to ensure its condition and suitability to prevent additional migration of oil from Pier 421-2. Because the caisson deck wall is not specifically designed as containment, it would also require improvements and no containment capacity is assumed as part of the impact analysis for the caisson deck. Although remote, the potential also exists for a well blowout to occur below the well cellar and caisson, with an associated potential for release into the marine environment. Such a blowout could occur during routine operations due to human error or during the estimated one to two well workovers that may occur over the life of the Project.

Venoco currently maintains response capability adequate to respond to the likely spill volumes at PRC 421, although site-specific procedures would need immediate revision and drills to test new procedures and equipment.

A release of oil to marine waters would be a significant impact. However, the Project design incorporates safety features that would substantially reduce the potential for a release. The short operating period also contributes to a low potential for release. Further, containment provided by the caisson is adequate to capture maximum spill volumes, should the spill occur on the caisson deck.

The public could also face potentially hazardous conditions if leaks of hydrocarbons and sulfur compounds occurred from the sides of the caisson structures, as happened recently from the side of Pier 421-1 and the seaward side of Pier 421-2. MM S-2a requires that the repairs and improvements being made to the caisson walls as part of the Project would meet design standards that would ensure the integrity of this structure during the Project life. These repairs would minimize the risk of direct public exposure to potential leaks, and restricted access to the pier and equipment would limit public exposure to hazardous conditions. However, because of the remote potential for blowouts or other failures to occur, with subsequent release of oil into the marine

environment; no matter how low the probability, this impact would be significant and unavoidable.

Mitigation Measures

MM S-4a. **Containment.** As the primary containment at Pier 421-2, the well cellar shall be tested by Venoco to determine whether it is leaking, and coated with a rubber type liner or other sealant to prevent migration from the cellar walls or bottom to surrounding areas. If the well cellar is leaking, an engineering evaluation shall be performed to determine the best method to achieve containment; which may include replacement with a double wall cellar or retrofit with a membrane coating capable of containing oil and preventing migration. The revised design, which includes these improvements, shall be reviewed and certified by a registered engineer and submitted to the California State Lands Commission staff for approval, and Venoco shall construct all approved improvements prior to recommencing production.

MM S-4b. **Response Drills and Planning.** Venoco shall revise its existing Oil Spill Contingency Plan (OSCP) to include site-specific procedures for response to a release from Pier 421-2, in accordance with applicable State and Federal regulations. The revised OSCP shall be submitted to the City of Goleta, county of Santa Barbara, California Department of Fish and Wildlife Office of Spill Prevention and Response, California Coastal Commission, and California State Lands Commission (CSLC) staffs for review and approval prior to issuance of the Land Use Permit. Venoco shall demonstrate spill response capability by responding to at least two surprise drills each year – one at Pier 421-2 and one along the pipeline route. A tabletop exercise shall be conducted within six months of operation to test and improve upon the revised procedures. The Venoco shall prepare and submit a critique and recommendations of Venoco's OSCP, regarding Pier 421-2, to CSLC staff and shall demonstrate the effectiveness of Venoco's oil spill response plan. Any recommended adjustments to the frequency of drills required to improve the effectiveness of the measure, in consideration of all other Ellwood oil spill response drill operations by Venoco, and a timetable for implementation of drill schedules may be considered by CSLC staff. In addition, Venoco shall participate in the Santa Barbara County Area Oil and Gas Industry Emergency Response Plan (P-4 Plan).

MM S-4c. **Casing Pressure Testing.** Prior to initiating active pumping, Venoco shall perform pressure testing on the well casing to ensure that the casing meets required operating specifications. The exact pressure shall be determined by the reviewing agencies. If the casing does not meet required test pressure as reviewed and approved by the California Department of Conservation's Division of Oil, Gas, and Geothermal Resources (DOGGR), Venoco shall implement casing repairs and improvements subject to review and approval by the DOGGR and California State Lands Commission staffs.

MM S-4d. **Regular Facility Inspections.** As part of its daily facility inspections, Venoco shall check the caisson at Pier 421-2 for signs of oily or sulfurous

leaks. If leaks are detected, Venoco shall report this occurrence to the City of Goleta, Santa Barbara County Office of Emergency Management, California Coastal Commission, and California Department of Fish and Wildlife Office of Spill Prevention and Response, and California State Lands Commission staffs, and in coordination with these agencies, take immediate steps to clean up or repair such leaks and prevent public exposure to any hazards.

MM S-4e. Quantitative Risk Assessment (QRA) and Implementation of QRA-Recommended Measures. Prior to issuance of land use permits, Venoco shall prepare a QRA to determine long-term risk of upset potential for the PRC 421 facilities. The QRA should assume the best estimate for the duration of the project. The QRA shall identify any deficient facilities with potential for creation of hazards associated with production from PRC 421 and processing of oil/gas/water at the Ellwood Onshore Facility and identify any improvements needed to reduce such hazards to acceptable levels. The QRA shall be submitted to the California State Lands Commission, City of Goleta, Santa Barbara County Fire Department Fire Protection Division staffs for review and comment prior to approval. Subsequent to approval, Venoco shall implement any modifications to facilities or processes recommended in the QRA.

Rationale for Mitigation

The MMs are intended to improve prevention of releases by providing for additional containment and response planning to reduce the potential for spilled oil to be uncontrolled. Facility-specific response drills are intended to refine existing plans and procedures to address operation of PRC 421. The purpose of the QRA is to ensure that all facilities associated with PRC 421 can effectively and safely produce process and transport this resumed production and to assure that any deficiencies are rectified.

Residual Impacts

Although there is a low probability of an oil release to marine waters, and the application of MMs would further reduce the potential for and effects of released oil on the environment, under the thresholds of significance *any* release of oil to the marine environment would be considered significant.

Impact S-5: Potential for Release of Oil or Hazardous Materials from the Crude Oil Flowline

Project operations could result in the release of oil or hazardous materials from the crude oil flowline as oil is transported from Well 421-2 to the tie-in at the EOF (Less than Significant with Mitigation).

Impact Discussion

Produced oil/gas/water emulsion would be transferred from Pier 421-2 to the tie-in at the EOF via a 3-inch diameter flowline. The 3-inch flow-line would be contained within

the existing 6-inch line that would be repaired, cleaned, extended, lined, and fitted with cathodic protection (external) and a leak detection system. Figure 4.2-12 illustrates a cross-section of the flowline within the pipeline.

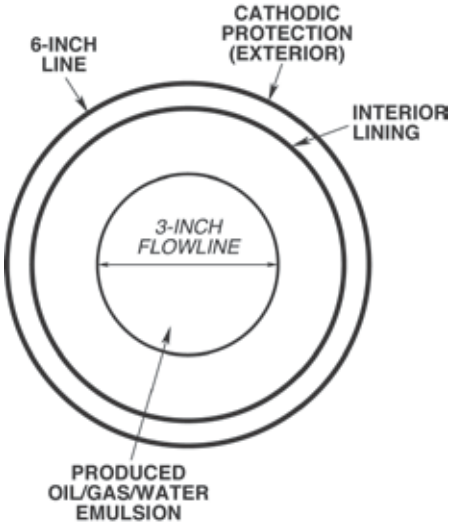


FIGURE 4.2-12. FLOWLINE CROSS-SECTION DIAGRAM

The leak detection system would consist of high- and low-pressure sensing switches that would be installed in the new 3-inch flowline. Within 15 seconds of a change in pressure (high or low), the subsurface and safety valves would be shut, which would stop flow of oil into the flowline. The 6-inch line would serve as a protective conduit and would not have pressure switches.

A flow safety valve at the tie-in at the EOF would prevent backflow into the flowline, which limits the emulsion available for release. The 6-inch line would act as secondary containment if there were a leak or break in the flowline.

The volume of oil/gas/water emulsion that would be contained in the 3-inch flowline, between the valve at Pier 421-2 and the tie-in at the EOF, is approximately 756 gallons. An additional volume resulting from the time to shut off the flow (conservatively using 5 minutes instead of 15 seconds) is approximately 75 gallons, assuming a flow rate of 15 gallons per minute based on projected pumping rates. Therefore, the total volume of emulsion available for release from the flowline is 831 gallons (20 barrels). Based upon a 2,150 foot length from Pier 421-2 to the EOF where the tie-in to the EOF occurs (1,800 feet of existing pipeline and 350 feet of new pipeline), it is estimated that the 6-inch line could contain approximately 2,082 gallons (50 barrels) of emulsion in the event of a spill. Therefore, the containment capacity of the 6-inch line would be more than sufficient to contain the maximum projected spill from the 3-inch flowline.

As described above, the design of the 3-inch flowline provides a system of detecting leaks, shutting down flow, and containing released emulsion within the 6-inch line, which would be tested and lined prior to operation. Therefore the likelihood of an uncontained release is low.

Although the 6-inch line is located within a road and area known to contain sub-surface oil facilities such as pipelines, there is some potential for accidental damage to occur to this oil line during trenching or other unanticipated future construction activities. A catastrophic break (e.g., from construction equipment) could potentially cause a release of the entire contents of the line, although such damage would be detected by the leak detection system, the well would be automatically shut in, and an alarm would sound at the EOF. Because of the proximity of the pipeline to the surf zone, Bell Canyon Creek, and other nearby sensitive resources, however, a release from the flowline is of particular concern, even though the volume is relatively low and spills to land are typically contained more readily than spills to water. This impact would be less than significant with mitigation.

Mitigation Measures

MM S-5a. Install Pipeline Warning Markers. Venoco shall modify Project design to include installation of several pipeline markers with reflective warning tape along the 6-inch line to identify the pipeline route and associated excavation hazards. Venoco shall submit the modified Project design to the City of Goleta for review and approval prior to issuance of the Land Use Permit.

MM S-5b. Develop Emergency Action Plan (EAP)/Update South Ellwood Field EAP. Venoco shall develop and incorporate into the EAP updated descriptions of the pipeline and flowline, detection systems, emergency shutdown, and response procedures specific to the new system prior to the initiation of operation. Venoco shall update the existing South Ellwood Field EAP to include descriptions of the new flowline interconnection with Platform Holly production within the EOF and other EOF modifications such as the programmable logic controller cabinet, variable speed drive facility, and transformer. Venoco shall submit the EAPs to the City of Goleta and Santa Barbara County Office of Emergency Management for review and approval prior to recommissioning start-up. The City of Goleta and Santa Barbara County Office of Emergency Management shall coordinate updates ~~notice for these revisions shall be provided to the current plan holders within two months of initiating operations~~ of the EAPs with the operator on a regular basis or as conditions change that warrant review of emergency response protocols.

MM S-5c. Safety, Inspection, and Maintenance of Oil and Gas Pipelines. Venoco shall prepare a Safety Inspection, Maintenance, and Quality Assurance Program (SIMQAP) or similar mechanism for Project-related pipelines to ensure adequate ongoing inspection, maintenance, and other operating procedures. Any such mechanism shall be subject to approval by the City of Goleta prior to commencement of pipeline operations and provide for

systematic updates as appropriate. Requirements shall be commensurate with the level and anticipated duration of the risk. The City of Goleta and Venoco would update the SIMQAP or similar mechanism biennially or sooner if conditions change that warrant review of the program.

Rationale for Mitigation

MMs S-5a would reduce the potential for release by alerting future workers in the area to the pipeline location, while updates to emergency plans and procedures, as required under MM S-5b, would provide responders with better information to manage emergency conditions. Implementation of MM S-5c would ensure pipelines are regularly inspected and maintained, and that such measures are consistent with City requirements.

With the implementation of the above measures, Impact S-5 would be reduced to less than significant.

Impact S-6: Increased Amount of Oil or Hazardous Materials Potentially Released from Oil Transfer in Line 96

Project implementation would increase throughput in the Line 96 pipeline, and therefore increase the amount of oil or hazardous materials potentially released (Significant and Unavoidable).

Impact Discussion

The Project includes transporting processed oil from the EOF to the PAAPLP Coastal Pipeline via the Line 96 pipeline. This pipeline was analyzed in the Line 96 Modification Project EIR (Santa Barbara County 2011), which is also incorporated by reference. The Project would not require physical modification to Line 96 or changes in its operations. Although risks from oil transportation by pipeline are the lowest of any form of crude oil transportation, pipeline transportation of oil still has the potential to result in impacts through an accidental spill. As the Line 96 pipeline from the EOF along the Gaviota Coast to is equipped with the most modern cathodic protection and internal inspection ("smart pigging") capabilities, it has a lower failure rate than older pipelines. In addition, eight mainline block valves and check valves were installed along this pipeline to limit the volume of oil spilled in the event of a rupture (refer to Figure 4.2-7). However, a risk of a crude oil release to the environment would exist, including a release from the pipeline into Gaviota Coast drainages and perennial streams, which could also subsequently reach the marine environment. Figure 4.2-13 shows the elevation profile of the Line 96 pipeline, including automatic and manual check valves.

The largest drain-down locations (i.e., where the potential exists for largest oil spill) along the pipeline would be located at Llagas Canyon and near the entrance to the ExxonMobil LFC facility at Corral Canyon. Estimated worst-case drain-down volumes in

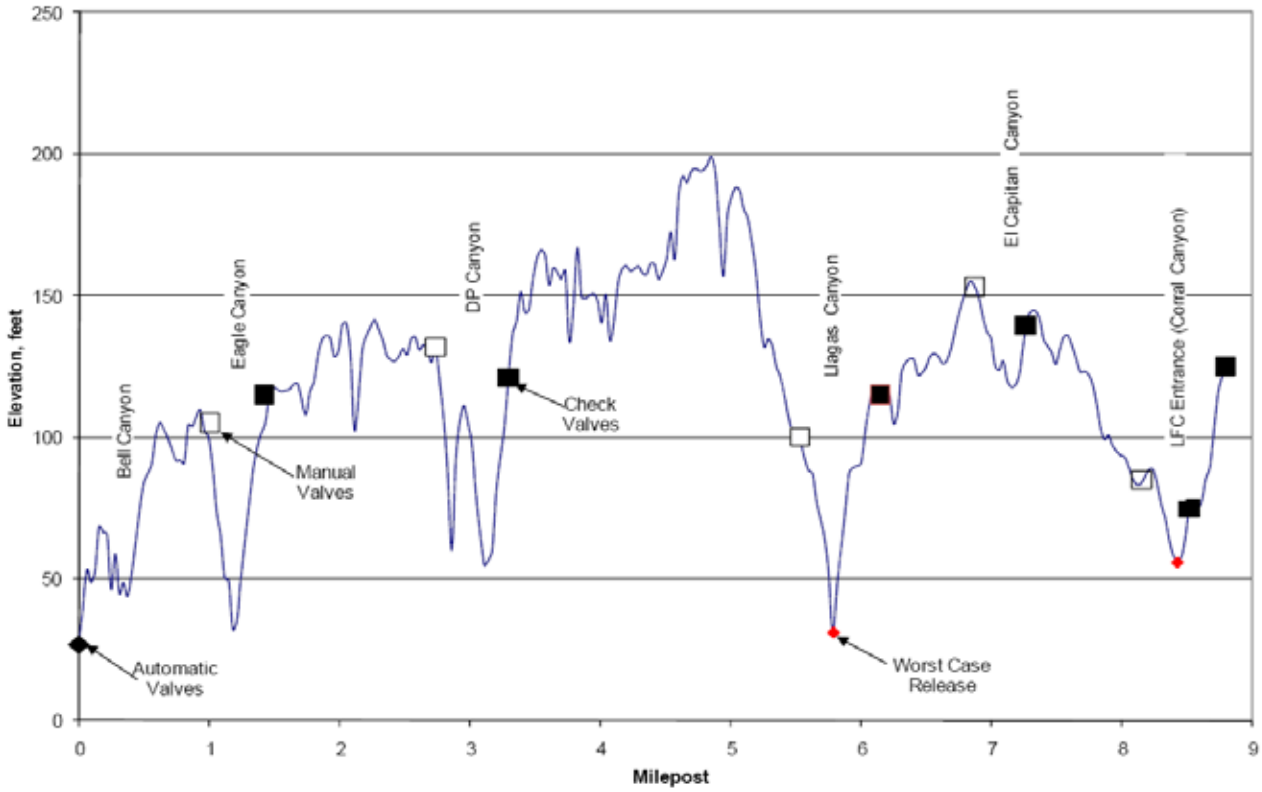


FIGURE 4.2-13. ELEVATION PROFILE OF LINE 96 PIPELINE

Source: Santa Barbara County 2011

the event of a large pipeline rupture range from about 40 barrels at Dos Pueblos Canyon east, to 60 barrels at Bell Canyon, Eagle Canyon, and Dos Pueblos Canyon west, to 194 barrels at Corral Canyon and 237 barrels at Llagas Canyon. However, potential spill volumes would be reduced further as result of additional automatic valves installed around low points are in the onshore Line 96 pipeline located both upstream and downstream. With the automatic valves, spill volumes for Llagas Creek would be reduced to 60 barrels and Corral Canyon would be reduced to 52 barrels (Ellwood Pipeline Company 2011).[6] Pipeline safety is affected by several factors, including both the length and the duration of service of the pipeline. Information on historical risks from pipeline operations, including the size and number of spills and the causes of such spills, are available from a number of sources, two of which are noted below.

Information on the number and causes of pipeline spills greater than 50 barrels in size is available from the U.S. Department of Transportation/Office of Pipeline Safety (DOT/OPS). These data were obtained for spills from 1968 to 2000 (information from

[6] The Line 96 Modification Project EIR required MM HM-3 to reduce spill capacity of pipeline. A portion of this potential spill material (approximately 3.61 percent) would be associated with PRC 421, as the pipeline would convey product from both Platform Holly (4,000 barrels per day [bpd]) and PRC 421 (150 bpd).

pre-1985 is less reliable in the DOT/OPS data). Information is available from the OPS for crude-oil pipelines, as well as for all liquid pipelines (DOT/OPS 1990). Since 1985, crude oil has comprised 42 to 51 percent of the liquid spilled from pipelines, and petroleum products have made up 47 to 55 percent of the total volume spilled. Pipeline corrosion ranks as the most frequent cause of spills, an estimated 39 percent of all failures since 1985. The number of spills caused by corrosion has remained in the same range since 1985, and there has been no downward trend in the number of spills caused by corrosion since that time. Third-party impacts rank as the second highest cause of pipeline spills, accounting for 30 percent of all failures.

The California State Fire Marshal (CSFM) publication, *Hazardous Liquid Pipeline Risk Assessment* (CSFM 1993), analyzed leak information for the 7,800 miles of liquid pipelines within California for the years 1981 through 1990. The CSFM report presented a set of hazardous liquid pipeline incident rates for all pipelines and uses. A review of the CSFM report shows that the following pipeline design and operation parameters can have a significant effect on pipeline spill rates:

- Pipeline age;
- Pipeline diameter;
- Pipe specification;
- Pipe type;
- Normal operating temperature;
- Supervisory Control and Data Acquisition (SCADA) leak detection system;
- Cathodic protection system;
- Coating type; and
- Internal inspection.

The study found that external corrosion was the major cause of pipeline leaks, causing approximately 59 percent of spills, followed by internal corrosion and third-party damage at 20 percent. Operator error and weld failure were also mentioned as minor causes of pipeline failure. Older pipelines and those that operate at higher temperatures had significantly higher spill rates. Crude oil had the highest spill rate primarily due to the transportation of crude oil at elevated temperatures, which increases the rate of external corrosion. This is because faster corrosion rates occur at elevated temperatures when metal comes in contact with soil moisture.

To prevent these potential problems, the design of the Line 96 pipeline addresses the issues which most commonly affect the rate of accidental pipeline releases. Venoco subscribes to the Underground Service Alert "one call" system that provides a single toll-free number for contractors and individuals to call prior to digging near the pipeline. Upon notification that a contractor or property owner is intending to dig near the pipeline, the horizontal location of the pipeline would be marked. Marking will be provided within 48 hours of the request. Additionally a warning tape with the pipeline

name is buried approximately 18 inches above the pipeline. The pipeline is new and incorporates all modern safety standards including advanced pipeline coatings, cathodic corrosion protection, emergency flow control and shut-off valves, a new SCADA monitoring system with continuous monitoring provided from the EOF (see Appendix H, HM-3 for detailed description of pipeline safety features). These measures directly address many of the historic causes of pipeline failure raised in past studies, particularly the CSFM study of California pipeline safety.

Further, internal inspection, required hydrostatic testing, and frequent pipeline corridor visual inspection by a line rider further reduces the potential for undetected corrosion and third-party damage to the pipeline. Operator training and redundant safety systems decrease the frequency of this already minor source of pipeline leaks. Finally, the pipeline would only transport oil produced at PRC 421 for its productive life (see Section 4.2.5 for analysis of cumulative pipeline safety issues).

There is a low probability for a release of oil from the production process at Pier 421-2 because safeguards designed into the system (i.e., loss of power would shut in the valves) would prevent oil from reaching the surface under non-routine conditions. However, because of the remote potential for blowouts or other failures to occur at Pier 421-2 or pipeline failure along the Line 96 pipeline, with subsequent release of oil into the marine environment; no matter how low the probability, this impact would be significant and unavoidable.

Mitigation Measures

MM HM-3 (Automated Block Valves and an Additional Check Valve on the Proposed Pipeline) from the certified Line 96 Modification Project EIR (Santa Barbara County 2011) is incorporated by reference (see Appendix H for details).

Rationale for Mitigation

Spill volumes for Llagas Creek would be reduced to 60 barrels with an automatic valve and check valve located upstream and downstream, respectively. Spill volumes around Corral Canyon would be reduced to 52 barrels with an automatic valve and check valve located upstream and downstream, respectively. The proposed mainline valve at the EOF would also effectively reduce potential spill volumes into Bell Creek.

Residual Impacts

After mitigation, this impact would remain significant and unavoidable because there would still be a risk of oil release to the environment.

Impact S-7: Increased Processing of Oil and Gas at the EOF

Project implementation would increase processing of oil and gas at the EOF, and therefore increase potential risks related to safety and potential release of hazardous materials (Significant and Unavoidable).

Impact Discussion

The Project includes transporting the oil/gas/water emulsion produced at Pier 421-2 to the EOF for processing. The EOF is already equipped with the oil-water separation, treatment, and discharge of produced water systems necessary to treat oil produced from Pier 421-2. Although existing EOF throughput levels would increase, no modifications of existing systems at the EOF would be necessary, beyond ~~the~~ those discussed in Section 2.3.4, including control system improvements ~~that would be implemented as part of the Project~~, a new interconnection with Platform Holly, a programmable logic controller cabinet, variable speed drive package, transformer, and various pressure sensors and gauges. The throughput would increase under the Project by up to 150 BOPD but would remain well below the EOF's current permitted level of 13,000 BOPD.

Figure 4.2-14 shows the changes to baseline hazards and risks posed by the Project. The impacts of these changes as they relate to Pier 421-2 structures and other Project-related infrastructure are discussed below.

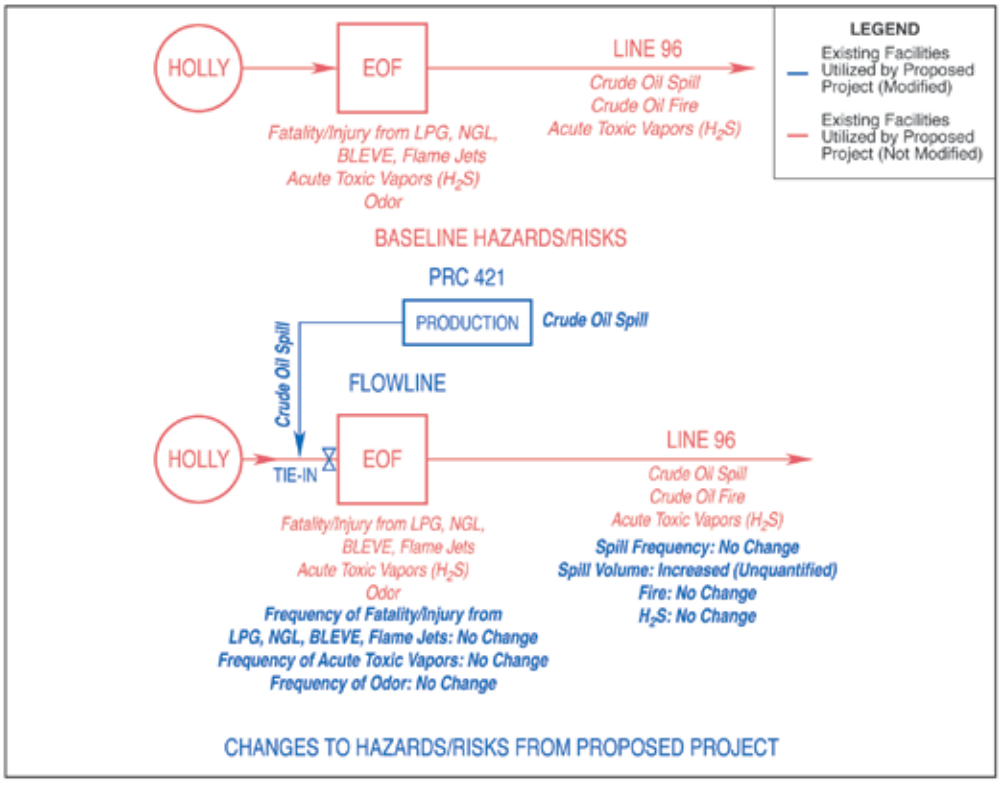


FIGURE 4.2-14.
BASELINE AND CHANGES TO HAZARDS/RISKS

The addition of new equipment on the EOF site, including the programmable logic controller cabinet, variable speed drive facility, and transformer, would introduce potential new safety risks at the EOF (e.g., the transformer may create a fire hazard at a new location in the EOF). These risks would be reduced by updating the South Ellwood Field EAP to address these changes, as required in MM S-5b.

As noted previously, a QRA was conducted for the EOF in 2000, resulting in a set of MMs designed to bring EOF operations in compliance with Santa Barbara County Environmental Thresholds for Public Safety (ADL 2000). The analysis evaluated the facility's operations at permitted (maximum) levels.

Prior to mitigation, the study found the main risk to the population was the separation and storage of liquefied petroleum gas (LPG) and natural gas liquids (NGLs). The QRA further concluded that the toxic risk (i.e., from H2S) from the facility would be considered acceptable based on the County's Environmental Risk Threshold for Public Safety (ADL 2000). Platform Holly was found to produce an acceptable level of risk, in part because no large quantities of flammable gas liquids are stored at the facility. At present capacity (below permitted capacity), the facility's risk profile is within the County's and City's risk thresholds for public safety.

The largest vessels at the EOF that contain crude oil are the two crude oil storage tanks, which have a capacity of 2,000 barrels each and the 1,500 barrel heater treaters. Additional vessels with liquid inventory include the 3,000 barrel produced water tank, and the 2,000 barrel reaction and oxidation tanks in the H_2S removal unit. A failure of the tank/vessel or a rupture of piping or one of the smaller, connected vessels/systems could cause a release of the contents to the containment/sump system, which could be released to the ocean outfall if appropriate procedures and methods are not followed. The QRA prepared for the EOF estimated the frequency of such a spill at less than one occurrence per million years. The containment at the EOF exceeds the combined capacity of crude oil storage.

PRC 421 production would enter three process streams at the EOF: crude oil processing, gas sweetening, and produced-water disposal.

- Crude oil processing – Pier 421-2 oil/gas/water emulsion would be commingled with crude oil from Platform Holly, and would be processed together at the EOF.
- Gas sweetening – Because of its low sulfur content, Pier 421-2 gas is not sour; however, it would be commingled with production from Platform Holly, then the combined PRC 421/Holly gas stream would be processed in the gas sweetening system at the EOF.

- Produced-water disposal – Separated water from the commingled crude oil would be injected into well WD-1 at the EOF, which is used for disposal of Platform Holly's produced water.

The addition of projected PRC 421 flow volumes would not cause EOF throughput to approach the limits of its permitted capacity, which is lower than its design capacity. In addition, oil produced from PRC 421 does not have constituents or concentrations of constituents that would fall outside of EOF processing system design basis or capacity. Therefore, PRC 421 production is suitable for handling and processing at the EOF.

The EOF includes a total storage capacity of 4,000 barrels, which is not enough storage to accommodate a full day of production from PRC 421 and Platform Holly. Additionally, no other oil storage facilities are available for this production. Therefore, oil produced from PRC 421 would be blended with the Platform Holly oil and continuously transported through Line 96 to the PAAPLP Coastal Pipeline located west of LFC, except for use of the limited storage facilities currently available at the EOF. If, for any reason, the PAAPLP Coastal Pipeline system downstream of the EOF or processing equipment within the EOF were not operating, the Applicant would need to curtail production from Platform Holly and PRC 421 within less than a day. Production from PRC 421 could be shut down within 5 minutes. The maximum amount of oil produced in 5 minutes, based on the maximum instantaneous production rate of 500 BOPD, would be 1.7 barrels. This amount of oil could be accommodated along with that from Platform Holly in the existing storage facilities. Since current throughput at the EOF is 5,000 BOPD (less than 39 percent of its permitted capacity given current design), the increase in existing flows of 150 BOPD reducing to 50 BOPD after 2 years due to addition of PRC 421 production is unlikely to burden existing processing facilities.

Based on the descriptions above and defined throughput levels, the introduction of oil/gas/water emulsion produced at Pier 421-2 would not have adverse effects on the safe operation of the EOF processing systems. The EOF would continue to operate well below its permitted capacity, and therefore maintain an acceptable risk profile in accordance with the County's and City's environmental risk thresholds for public safety. However, additional processing at the EOF would incrementally increase the risk of a hazardous material release and subsequent release of oil into the marine environment; no matter how low the probability, this impact would be significant and unavoidable.

Mitigation Measures

~~Although this impact is significant and unavoidable, the~~ The EOF operates under an approved EAP and OSCP for the South Ellwood Field; however, the EAP would be updated, as specified in MM S-5b, to include information about the new flowline connection and new equipment that would be present on the site as part of the

proposed Project.~~and there is no additional feasible mitigation available that would substantially reduce the risk of release from the EOF.~~

Residual Impacts

This impact would remain significant because there would still be a risk of oil release to the environment, and no mitigation can completely remove that risk.

Impact S-8: Increased Risk of Fire

Project implementation would include production and transport of oil and gas from PRC 421 to the EOF, increase processing of oil and gas at the EOF, and increase transport of oil and gas to market, therefore increasing potential risks related to fire (Less than Significant with Mitigation).

Impact Discussion

A spill of crude oil from the PRC 421 production equipment, pipelines, or EOF facilities could produce public health concerns as a result of fires that may arise if the oil or the oil vapors reach an ignition source and the oil burns. Flammable vapors that may emanate from crude oil include propane, butane, pentane, light ends (ethane and lighter), naphtha, and H_2S. As it emerges from the wellhead, crude oil is a heterogeneous mixture of solids, liquids, and gases. This mixture in addition to hydrocarbons includes sediments, water and water vapor, salts, and acid gases, including H_2S and carbon dioxide. Most of the light ends (e.g., the propane, butanes) are removed from the crude oil during processing at the EOF. However, several events would have to occur before a hazardous consequence would occur. For example, a sizeable oil leak would need to occur, followed by ignition and subsequent fire, and then members of the public would need to be present within the fire zone to be affected, or fire or burning oil would need to escape PRC 421 related facilities and damage adjacent areas or structures.

A fire at the pier, along the 3-inch flowline or at the EOF, however unlikely, would be a significant impact; the pier is located on the beach, often surrounded by water and is not near public buildings, the public may be exposed to this hazard during use of the beach adjacent to the pier. The flowline borders the beach, as well as coastal bluff scrub habitats above and to the north; the EOF and a portion of the flowline border Bell Canyon Creek to the west. The public may experience impacts at one of the neighboring properties, including Bacara Resort and Spa, the Sandpiper Golf Course, and the Bluffs residential development on the Ellwood Mesa. However, with the exception of Sandpiper Golf Course, all of these uses are 2,000 to 4,000 feet away from production, transport and processing facilities. Based on an older QRA prepared for the EOF (SBCFD 2000), crude oil fires could produce serious injury impacts from thermal exposure at a distance of 150 feet; in the case of PRC 421, this distance may be

greater than 150 feet due to the lighter oil produced at PRC 421 (35 American Petroleum Institute [API] gravity) versus Platform Holly (22.4 API gravity). However, the relative increase in volume of PRC production is less than 3 percent of ongoing production from Platform Holly and such production would be commingled with that from Platform Holly during processing, resulting in a small incremental increase in volatility and associated fire hazard after processing. Further, while recreationalists using the beach and golf course could be exposed to a low level of potential hazard from a fire at PRC 421 or the EOF or a subsequent wildfire, there are no homes or other structures immediately proximate PRC 421. Although the piers, access road, and EOF are only accessible from Hollister Avenue, a dead-end road, limiting access for emergency vehicles, substantial firefighting capabilities are present at the EOF along with regular inspections and monitoring of all facilities. Therefore, incremental increases in flammability associated with PRC 421 production would not result in substantial impacts. When combined with the conditional probability of ignition, which would be low given the few ignition sources in the area, and the conditional probability of persons being near the PRC 421 piers or EOF at the time of the spill, risk of exposure to a crude oil fire would be low, but not zero, because there would still be a risk of injury to Venoco employees and the public in recreational areas in the immediate vicinity of PRC 421.

For the Line 96 pipeline route, residential areas and the Ellwood School are located within the injury hazard zones, both thermal and toxic. As mentioned above, the conditional probability of the released crude oil igniting is relatively small. Therefore, risks of thermal impacts from a crude oil fire are low. However, there would still be a risk of injury due to the location of residences and public areas near the pipeline route, and the potential for injuries from toxic vapors resulting from a spill of crude oil.

Although the risk of fire resulting from Project operations is small, even given the relatively lighter oil produced at PRC 421, due to the potential consequences of fire at PRC 421, the EOF, and along the Line 96 pipeline route, this impact is significant. With implementation of the measures below, the impact is less than significant with mitigation.

Mitigation Measures

In addition to the MM below, MM S-4e would require a QRA be prepared for the PRC 421 facilities and any change in use for other facilities (i.e., the EOF, Line 96), and recommendations in the approved QRA be implemented prior to Project operation.

MM S-8. **Fire Prevention and Suppression.** Venoco shall revise the existing Fire Prevention and Preparedness Plan to incorporate the new equipment and operations at PRC 421, and submit to the City of Goleta, Santa Barbara County Fire Department, California Coastal Commission, California Department of Transportation, and California State Lands Commission staffs for review and approval. The plan shall be revised and provided to the

agencies for review prior to commencing operations, and the plan shall be formally updated and circulated within one month of receiving comments from the aforementioned agencies.

Residual Impacts

Implementation of the appropriate safety measures, including fire prevention and suppression capabilities, would reduce but not eliminate the risk of fire and related injury.

Impact S-9: Repressurization Monitoring

Project implementation would include repressurization monitoring, which would be used to obtain necessary information to assess the risk of an accidental release of oil from improperly abandoned offshore oil wells (Beneficial).

Impact Discussion

Currently, the PRC 421 wells are shut-in with no way to assess the current pressure of Vaqueros Reservoir. Because there is a risk of release of oil from improperly abandoned wells, there is no current means to assess such a risk due to reservoir pressurization, which could have a significant and unavoidable impact (see Vaqueros Reservoir Repressurization discussion above under Section 4.2.1). Once Well 421-2 starts to produce as part of the Project, it will provide the opportunity for CSLC reservoir engineers to monitor the reservoir pressure and better understand the potential for leakage from the old abandoned wells; therefore, would be a beneficial impact.

Table 4.2-5. Summary of Project Safety Impacts and Mitigation Measures

Impact	Mitigation Measures
S-1: Release of Oil During Cleanup of 6-inch Pipeline	No additional mitigation is required beyond implementation of BMPs, as proposed.
S-2: Exposure of the Public and Environment to Safety Hazards Due to Collapse of the 421-2 Caisson	**S-2a.** Design Review / Wave Loading Evaluation.
	S-2b. Post Storm Inspection, Monitoring and Cleanup.
S-3: Exposure of the Public and Environment to Safety Hazards Due to Collapse of or Damage to the Existing Timber Bulkhead or Rip-Rap Seawall	**S-3**. Design Review by Civil/Structural Engineer.
S-4: Potential for Release of Oil or Hazardous Materials from Pier 421-2	**S-4a.** Containment. **S-4b.** Response Drills and Planning. **S-4c**. Casing Pressure Testing. **S-4d**. Regular Facility Inspections. **S-4e.** Quantitative Risk Assessment (QRA) and Implementation of QRA-Recommended Measures.
S-5: Potential for Release of Oil or Hazardous Materials From the Crude Oil Flowline	**S-5a**. Install Pipeline Warning Markers. **S-5b.** Develop Emergency Action Plan (EAP)/ Update of South Ellwood Field EAP. **S-5c.** Safety, Inspection, and Maintenance of Oil

Table 4.2-5. Summary of Project Safety Impacts and Mitigation Measures

Impact	Mitigation Measures
	and Gas Pipelines.
S-6: Increased Potential for Release of Oil or Hazardous Materials or Fire from Oil Transfer in Line 96	MM HM-3 from the Line 96 Modification Project EIR would apply.
S-7: Increased Processing of Oil and Gas at the EOF	**S-5b.** Develop Emergency Action Plan (EAP)/ Update of South Ellwood Field EAP. ~~None applicable.~~
S-8: Increased Risk of Fire	**S-8.** Fire Prevention and Suppression.
S-9 Repressurization Monitoring	None required.

4.2.5 Cumulative Impacts Analysis

This section summarizes other proposed or ongoing projects in an effort to assess whether the Project's incremental impacts are cumulatively considerable. The projects are listed in Table 3-3 in Section 3, Cumulative Impacts Methodology. The Project may have cumulatively considerable impacts related to oil spill risk; therefore, this discussion focuses on the oil production projects described in Section 3 because of their potential to increase the risks of oil spills affecting the same areas of coast as the Project.

Projects which could produce an increased risk of oil spill that could impact the same coastal areas as the Project include the following:

- Carpinteria Field Redevelopment Project/Carone Petroleum Corporation, Signal Hill Inc., and Pacific Operators Offshore LLC (POOL);
- Carpinteria Onshore Project/Venoco; ~~and~~
- South Ellwood Field Project/Venoco; and
- Development of 36 non-producing Federal Leases/Various Applicants.

All of these projects would exacerbate the potential oil spill risk of the Project, which has been identified as significant and unavoidable.

Residential projects in the area would have no direct impact on the Project risks. However, some of the projects are residential developments near the Project area. These would increase the populations that could be exposed to a crude oil spill. Potential exposure in the event of a spill could be along the Line 96 pipeline route and in the nearshore coastal areas. Recreation would be expected to increase with the increase in populations living nearby (CSLC 2009). As noted previously, the Project does not contribute to acute safety risks because of the low H_2S content of the crude oil produced at PRC 421.

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4.3 HAZARDOUS MATERIALS

This section addresses the handling, storage, and disposal of hazardous materials and the potential for the Project to release hazardous materials (i.e., petroleum products, solvents, pesticides, herbicides, polychlorinated biphenyls (PCBs), paints, metals, asbestos, and otherwise regulated chemical materials) during resumption of production at State Oil and Gas Lease PRC 421 (PRC 421), including the construction and operation activities at Pier 421-2 and decommissioning and removal of Pier 421-1. This analysis also briefly discusses area resources that could be affected by the operation of secondary Project components (existing facilities not proposed for modification) such as the operation of the Line 96 pipeline and the Ellwood Onshore Facility (EOF). For a full discussion of potential impacts related to the Line 96 pipeline, see the Line 96 Modification Project EIR (Santa Barbara County 2011). Potential impacts resulting from releases of oil-related materials, such as contaminated sediment or a crude oil spill, are also analyzed in other sections of this Environmental Impact Report (EIR), including Section 4.5, Hydrology, Water Resources, and Water Quality. Section 4.2, Safety, evaluates the potential for upset conditions that could result in a release of oil and hazardous materials. Potential impacts associated with a release of hazardous materials by the Project are based on a change from existing conditions. Significance criteria are used to assess the significance of the impacts, and whether mitigation measures (MMs) can be applied to reduce the level of significance.

This section incorporates data from Santa Barbara County 01-ND-34 and City of Goleta 06-ND-001 along with follow up hazardous materials studies associated with those negative declarations (NDs). This document incorporates by reference the conclusions of the Line 96 Modification Project EIR regarding impacts related to hazardous materials associated with operation of the Line 96 pipeline to the Plains All American Pipeline, LP (PAAPLP) Coastal Pipeline west of Las Flores Canyon (LFC), and summarizes these where appropriate.

4.3.1 Environmental Setting

The environmental setting presented in this section represents the baseline conditions existing at the time the Notice of Preparation (NOP) was released (March 16, 2013). The baseline conditions include the existing configuration of the Project site, existing operations, and present environment. Risks associated with a potential release of hazardous materials are then evaluated in relation to the baseline conditions.

Study Area Location and Description

The study area boundary for the Project is described in Section 1.4.1, Study Area Boundary; the area for this hazardous materials analysis includes the immediate on-shore and near-shore areas of the Ellwood coast that would be subject to direct impacts

from a release of hazardous materials. This area generally includes the existing PRC 421 facilities, access road, and tie-in at the existing EOF.

The study area includes, from southeast to northwest: Pier 421-2 (southeastern boundary), Pier 421-1 (approximately 325 feet northwest of Pier 421-2), a portion of the gravel access road (from Pier 421-2 extending northwestward, approximately 1,300 feet along the beach), and the remaining portion of the access road (to EOF [northwestern boundary] extending northwest, approximately 500 feet across the Sandpiper Golf Course). Each steel-pile pier contains sand-filled concrete caissons that are approximately 67 feet long and 42 feet wide. These portions of the study area are depicted on Figure 4.3-1 (shown in blue).

Baseline Conditions for Hazardous Materials Analysis

The baseline conditions are defined in Section 1.4.2, Baseline and Future Conditions. For the hazardous materials analysis, baseline conditions include the current configuration of Piers 421-1 and 421-2, infrastructure, access road, and no current oil production from PRC 421. Additionally, baseline conditions include any potential existing hazardous materials contamination within the study area boundary in soil, sediment, groundwater, or surface water.

Documentation of Existing Contamination within the Study Area Boundary

The potential for unknown historical releases of hazardous materials to the study area can be evaluated by reviewing historical records covering the study area and nearby properties. Such a review typically focuses on previous industrial or commercial uses of properties where use, handling, or storage of hazardous materials could be assumed. Given that oil and gas development has been prevalent in the area since the 1920s, debris and contamination associated with such development can be found in the Ellwood area. Further, the Project site has been used for oil and gas production since 1928 and contamination from previous production activities is likely to be present onsite.

Several environmental databases were reviewed during this analysis to evaluate the potential presence of a known historical release in the study area (see Table 4.3-1). Based on this review, the study area was listed on the following databases:

- **Federal Resource Conservation and Recovery Act (RCRA) Small Quantity Generator (SQG) database.** RCRA SQGs are facilities that generate between 220 and 2,200 pounds (lbs) of hazardous waste per month, or in a one-month timeframe. The study area was listed as Handler identification: CAD981576846, and was last updated July 30, 1997. No additional information was noted on the listing with respect to dates, quantities, or types of hazardous materials.

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Hazardous Materials Baseline Conditions [Revised]

FIGURE 4.3-1

Table 4.3-1. Databases Reviewed for Hazardous Material Analysis

Federal Database	California Database
U.S. Environmental Protection Agency (EPA) RCRA hazardous waste generators	California Environmental Protection Agency (CalEPA) Cal-Sites Database (Cal-Sites)
RCRA Corrective Action Sites (CORRACTS) Treatment, Storage, and Disposal (TSD) facilities	California Department of Toxic Substances Control (DTSC) EnviroStor Database (ENVIROSTOR)
RCRA non-CORRACTS TSD facilities list	DTSC Hazardous Waste Tracking System (HWTS) Reports
Comprehensive Environmental Resource Conservation and Liability Information System (CERCLIS) listing	CalEPA Cortese Hazardous Waste and Substances Site List (Cortese)
CERCLIS No Further Remedial Action Plan (NFRAP)	State Water Resources Control Board (SWRCB) Underground Storage Tank Database (UST)
National Priority List (NPL)	SWRCB List of Historical UST Sites (HIST UST)
Delisted NPL	SWRCB GeoTracker Leaking UST List (LUST)
Emergency Response Notification System (ERNS) list	SWRCB Spills, Leaks, Investigations, and Cleanups List (SLIC)
	DTSC Deed Restriction Listing (DEED)
	DTSC Voluntary Cleanup Program Properties List (VCP)

- **Federal ERNS List through the National Response Center.** The National Response Center provides all oil and chemical spill data reported to the Center since 1990. The study area was listed as Incident Report #741971 dated November 20, 2004, which indicates that a caller reported an unknown dark black sheen on ocean water at Pier 421-1. The reported size of the sheen was 50 feet by 3 feet. No other information on how the apparent release occurred, or how it was remediated, was reported.

- **DTSC Hazardous Waste Tracking System (HWTS).** The HWTS generates reports on hazardous waste shipments for generators, transporters, and treatment, storage, and disposal facilities (TSDFs). The study area was listed on the HWTS as U.S. EPA identification: CAD981576846, under the name of Venoco, Inc., North American Industry Classification System 211111 and Standard Industrial Classification 1311. The status was shown to be active, and the record was entered April 10, 1987 (the facility was owned by ARCO at this time). The record entry in its database appears to be based solely on the study area's U.S. EPA identification number, which reflects the study area's inclusion on the Federal SQG database as described above.

Database Entries for Adjacent Properties

The EOF was also reported on several databases. The listings primarily consisted of small oil spills or releases of natural gas. The largest spill reported was 10 barrels crude

oil to soil in 1995. The release apparently resulted from a valve crack at a storage tank. Additionally, the EOF was listed on the SWRCB GeoTracker database as a facility with underground storage tanks.

Additional Releases at the Project Site

March 1994 – A 6-inch pipeline leak occurred and resulted in a release to soil of approximately 170 barrels (7,140 gallons) beneath the 12th green of the Sandpiper Golf Course near the coastal bluffs. This release impacted surface and subsurface soils at the golf course.

November 22, 2000 – An oil leak was induced during a routine fluid-level check at Pier 421-2, and an oil leak and sludge were noted in association with a storage tank in secondary containment on Pier 421-1. The sludge was tested by a hazardous waste bioassay technique, and was found to be toxic (note that determination of hazardous waste includes four characteristics: toxic, flammable, corrosive, or reactive, and that if a substance is found to be characteristic of one of the four types, then it is considered a hazardous substance, and subject to regulation under the RCRA). The toxic sludge and associated liquids were removed from the storage tank and disposed of properly. This leak apparently did not impact soil, sediment, groundwater, or surface water.

November 27, 2000 – An oil leak occurred during fluid-level check on Pier 421-2, and resulted in the release of approximately 15 gallons. The oil was contained in a drum in secondary containment. This leak apparently did not impact soil, sediment, groundwater, or surface water.

2001 – During emergency repairs to PRC 421 facilities, petroleum-hydrocarbon-contaminated sediment was encountered in three of the five holes dug across the width of Pier 421-2. The contaminated sediment was encountered at a depth of approximately 15 feet, and the contamination appeared to extend to approximately 20 feet below the surface of the top of the sediment. Laboratory testing of the contaminated sediment indicated the presence of several hundred to less than 2,000 parts per million (ppm) diesel- and lube-oil-range petroleum hydrocarbons. Approximately 143 tons of the contaminated sediment was excavated from the area near the holes completed for installation of soldier pile structural sections. The excavated material was transported to an asphalt recycling plant (Santa Barbara County 2001).

January 19, 2004 – A large section of the outer caisson wall of Pier 421-1 sheared off and fell into the surf below. Large pieces of concrete debris and rebar fell to the base of the caisson. Based on the long history of oil and gas production at both PRC 421 wells, it was assumed that fill and sediment inside the caissons at both piers are likely contaminated with petroleum-related constituents. Therefore, it was also noted that the 2004 caisson wall repair was conducted in part to prevent contaminated fill and sediment materials from being released.

During wall repair activities, two leaks were found in the old caisson wall. These leaks were reported by a member of the public, and may correspond to the Federal ERNS listing noted earlier in this section. The leaks were noted as containing both a lighter oily substance and a black tar-like substance, both of which were released to the ocean. The leaks from the wall continued for a period of time during the repair project, and were estimated to reach up to one quart per day. Absorbent pads and booms, and a topical sealant were used in an attempt to minimize the leaks, but those efforts appeared to be unsuccessful. Once the new caisson wall was constructed, concrete was poured between the new and old walls, which could provide a more effective seal for the leak areas on the old wall.

Following completion of the new caisson wall, samples of the leaking substance and a "shale mud/sand" were tested. The shale mud/sand sample included concentrations of total petroleum hydrocarbons (TPH) in the range of 100 to 200 milligrams per kilogram (mg/kg). Risk to human health or the environment cannot be quantified based on the analytical data obtained. However, concentrations in the 100 to 200 mg/kg range for TPH are well below 1,000 mg/kg, which is a commonly used screening value for TPH in soil and a generally accepted regulatory guideline.

The laboratory analysis of the leaking substance that was released from the old caisson wall was found to have a heavier API gravity than would be expected from the oil produced at PRC 421. PRC 421 wells are anticipated to have an API gravity of approximately 35, while the leaking substance was found to be much heavier at 17.8. The source of the leaking fluid remains unknown; however, it was noted in the MND that the substance may not have originated from PRC 421 (City of Goleta 2006a). Alternately, the substance may have been PRC 421 reservoir oil that had partially volatized or decomposed, resulting in a heavier API gravity.

April 1, 2005 – A dark substance was found to be leaking from the east side of the old caisson wall at 421-1 during a California State Lands Commission (CSLC) staff inspection after completion of the caisson wall repair. During subsequent inspections, the leaking substance appeared, based on visual and olfactory evidence, to not be a petroleum release; no oily or slick texture was visible, and an anaerobic sulfurous odor was noted.

August 21, 2006 – Two slow leaks were reported on the east wall of the outer caisson by a member of the public. The area around the leak was described as whitish in color and smelled of sulfur. Santa Barbara County Energy Division staff sampled the fluid during a site visit in response to the reported chemical leak. The fluid did not appear to contain hydrocarbon material, and the source of the leaks remains unknown (City of Goleta 2006a).

Natural Seeps – Prolific natural hydrocarbon seepage occurs offshore of Coal Oil Point in the Santa Barbara Channel, just southeast of the Project site. The seeps emit both liquid and gaseous hydrocarbon phases, with gas predominating. Such hydrocarbon seepage affects ocean and beach sediment chemistry and provides a natural source of petroleum pollution. On a regional scale, the Coal Oil Point seeps represent a significant source of gaseous hydrocarbons and residual asphaltic hydrocarbons, or beach tar. The natural seeps are discussed further in Section 4.1, Geological Resources.

Study Area Receptors

For this analysis, receptors are located in areas in the Project vicinity that have the potential to be adversely affected by the release of hazardous materials as a result of implementation of the Project or its alternatives (see Section 5.0 for the alternatives analysis). If a release of hazardous materials were to occur, the most likely receptors would be located within the study area or its immediate vicinity. Those receptors could include occupants at the Sandpiper Golf Course, personnel at the EOF, beach recreational users, construction personnel, and ecological receptors associated with the upland and near-shore environments near the piers and the access road, including those in sensitive areas, such as wetlands, and surface waters of nearby creeks or the ocean. Additional information on receptors and the environments in Project vicinity is provided in Section 4.2, Safety; Section 4.5, Hydrology, Water Resources, and Water Quality; Section 4.6, Marine Biological Resources; and Section 4.7, Terrestrial Biological Resources.

4.3.2 Regulatory Setting

Regulations applicable to the Project are intended to regulate hazardous materials and hazardous wastes, as well as to manage sites contaminated by hazardous substances. These regulations are also designed to limit the risk of upset during the use, transport, handling, storage, and disposal of hazardous materials. The Project would be subject to numerous Federal, State, and local laws, regulations, and policies. Federal and State laws that may be relevant to the Project are identified in Table 4.0-1. Local laws, regulations, and policies are discussed below.

Local

Santa Barbara County Fire Department (SBCFD)

As noted in Sections 4.1, Geological Resources, and 4.2, Safety, the SBCFD, which is the Certified Unified Program Agency (CUPA) responsible for administering state environmental programs within the county of Santa Barbara, is the overseeing agency for implementing local regulations in the event of a hazardous waste or petroleum spill. The SBCFD may also maintain additional records for the study area from the Site Mitigation Unit, CUPA, and Current Release Information files.

Santa Barbara County Air Pollution Control District (APCD) Rule 325 – Crude Oil Production and Separation

This local regulation applies to equipment used in the production, gathering, storage, processing, and separation of crude oil and natural gas prior to custody transfer. This rule includes provisions for storage tanks, emissions control for produced gas, and requirements for recordkeeping, test methods, inspections, and compliance schedules.

4.3.3 Significance Criteria

The significance criteria for this hazardous materials analysis were developed by considering study-area-specific potential impacts. A hazardous materials impact would be significant if it:

- Creates a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials; or
- Is located on a site included on a list of hazardous materials sites compiled pursuant to Government Code section 65962.5, and as a result would create a significant hazard to the public or the environment.

4.3.4 Impact Analysis and Mitigation

The Project was evaluated for the presence of hazardous substances that, if present in large quantities in existing structures planned for construction/renovation, or known to exist in study area media (soil, sediment, groundwater, or surface water), could result in impacts to human health or the environment. A qualitative evaluation of potential Project impacts was made based on the site-specific information obtained and described in Section 4.3.1, Environmental Setting. Impacts and related MMs related to oil spills and subsequent cleanup activities are addressed in Sections 4.4, Hydrology, Water Resources and Water Quality, 4.5, Biological Resources, 4.1, Geological Resources, 4.2, Safety, and 4.12, Aesthetics/Visual Resources. Because impacts from oil spills are specific to the resource areas listed above, these impacts are not included in this section. Table 4.3-2, located at the end of Section 4.3.4, provides a summary of safety-related impacts and recommended MMs to address these impacts.

Impact HAZ-1: Exposure of Public or Environment to Hazardous Materials

The Project would create a potential hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials during construction and/or project operation (Less than Significant with Mitigation).

Impact Discussion

During the construction phase of the Project, existing petroleum-contaminated soil or sediment could be encountered during soil disturbance activities, including trenching

along the pipeline corridor and caisson repair at Pier 421-2. Contaminated soil may also be encountered during pier and caisson removal at Pier 421-1, which would be performed separately following recommissioning of Pier 421-2; decommissioning and removal is expected to occur approximately 1 year following recommissioning of Pier 421-2.

Disturbance of existing contaminated soil or sediment could result in a release of hazardous materials, which could adversely affect human or ecological receptors. Several spills have been documented at the site during its 70-year history of oil production. In addition, during construction of recent improvements, soils contaminated with hydrocarbons were discovered beneath Pier 421-1 and removed from the site. Open excavations in contaminated areas can increase the potential for erosion, sedimentation, turbidity, and generation of contaminated water by (1) collection of storm water in the open area during storm events, or (2) groundwater influx in areas where the excavation intersects shallow groundwater.

The Project would potentially result in the release of contaminated sediment from the caisson at Pier 421-2 into the environment. The Project includes repairs to all three non-seaward-facing walls of this caisson. These reinforcements would include construction of walls similar to the one built on the seaward facing side of the Pier 421-2 caisson in 2011. This would include installation of steel piles in 25-foot-deep holes drilled around the caisson and concrete panels between the steel piles. Concrete slurry will then be poured between the new panels and the old caisson walls. Exposure of caisson sediment through opening of the caisson structure at Pier 421-2 during construction is not intended as part of the Project; however, construction activities could result in an accidental release of contaminated sediment into the environment.

The only trenching included as part of the Project would be a shallow trench (30 inches deep by 12 inches wide) for the installation of electric cables over a 1-day period. Additionally, the Project has included a technique for upgrades to the existing 6-inch line by in-situ enhancements including addition of a new internal liner of the pipeline. The pipeline would be accessed at the location near the 1994 oil release. Further Project details are described in Section 2.2, Proposed Project.

Decommissioning and removal of Pier 421-1 and associated infrastructure, which would occur following recommissioning of Pier 421-2, also presents the risk of exposing contaminated sediment to the marine environment. The caisson at Pier 421-1 currently contains sediment that may contain hazardous materials, and removal of this structure could result in mobilization of this material into the marine environment. Structures to be removed as part of the decommissioning and removal of Pier 421-1 and underlying sand would be tested for the presence of hazardous materials, and any contaminated sand would be remediated; however, accidental release of contaminated sediment may still occur. During the construction phase for the Project and subsequent

decommissioning and removal of Pier 421-1, other pollutants typically associated with construction activities, such as sediment, concrete curing compounds, sealants, paints (among others) could be released. The potential for and consequences of upset conditions during operations are addressed in Section 4.2, Safety. This impact would be less than significant with mitigation.

Mitigation Measures

Impacts from potential hazardous materials releases during Project construction and operation and during decommissioning and removal of Pier 421-1 would be reduced with implementation of MM WQ-1a from Section 4.5, Hydrology, Water Resources and Water Quality, as well as:

MM HAZ-1a. Proper Personnel Training. Personnel working during the Project's construction, operation, and Pier 421-1 decommissioning and removal phases shall be adequately trained per the requirements included in Venoco's Emergency Action Plan, Oil Spill Contingency Plan, Fire Prevention and Preparedness Plan, Spill Prevention, Control and Countermeasures Plan and other relevant plans. These plans include specific training requirements such that personnel that have the potential to come into contact with contaminated media and/or hazardous materials understand safe work practices, Best Management Practices, and waste management practices, so that a release of hazardous materials can be avoided, controlled, or minimized. Project construction and field personnel shall also be trained to identify possible indicators of a hazardous release, such as hydrocarbon or solvent odors, stained soils, and oily sheens on standing water.

MM HAZ-1b. Conduct a Phase I Environmental Site Assessment (ESA). To gain a better understanding of the study area and its potential to have additional, previously unknown releases of hazardous materials or other environmental concerns, Venoco shall perform a Phase I ESA on the study area prior to issuance of land use permits, which shall incorporate information from Santa Barbara County Fire Department Fire Protection Division (FPD) records and files. The results of this study shall be provided to the City of Goleta, FPD, and California State Lands Commission staffs. Conclusions of the Phase I ESA, including any recommendation of a Phase II and subsequent investigation, shall be followed. Any subsequent work plans for soil and groundwater sampling shall be submitted to FPD for review and incorporated into the current and ongoing assessment under their Site Mitigation Unit Site #371.

MM HAZ-1c. Soil Sampling. During construction activities at Pier 421-2 and during Pier 421-1 decommissioning and removal, all soil materials removed shall be presumed to be contaminated and handled accordingly. The soil materials removed from the caisson will be sampled, profiled, and disposed of or recycled according to regulatory requirements. During all other Project construction activities, ~~Venoco~~ a City of Goleta Soils Inspector/Monitor shall continually visually monitor the soils disturbed within the construction areas to

determine if there is any evidence of undiscovered contamination. The City of Goleta shall hire the Soils Inspector/Monitor, paid for by Venoco, to inspect soil disturbance activities within the City's jurisdiction during all phases of the Project to ensure that any hazardous materials and/or contaminated soils encountered are properly contained and removed. Soil samples may be taken, subject to the direction of the Soils Inspector/Monitor. Any soil suspected of contamination shall be contained on site in appropriate storage container, sampled, profiled, and disposed of or recycled according to regulatory requirements. All soils removed shall be handled in accordance with MM HAZ-1d. All soil sampling results shall be provided to the California State Lands Commission and City of Goleta staffs immediately upon receiving results.

MM HAZ-1d. Removal Action Plan. If sediment within the Project construction and 421-1 decommissioning areas and surrounding soils is determined to contain total petroleum hydrocarbons or other contaminants above California Ocean Plan thresholds and if such sediments may be exposed, prior to commencing construction activities, Venoco shall prepare a Removal Action Plan for the safe removal of contaminated materials from the structures and surrounding area. The action plan shall be circulated to the City of Goleta, Santa Barbara County Fire Department Fire Protection Division, California State Lands Commission (CSLC) staffs for review and comment. Final approval of the plan shall be under the purview of the California Department of Fish and Wildlife Office of Spill Prevention and Response (OSPR) and/or CSLC staffs. Upon approval, sediments shall be removed from construction areas and disposed of in accordance with procedures described in the Removal Action Plan. However, if OSPR and/or CSLC staffs determine that removal of some contaminated sediments would impair the integrity of Pier 421-2 (includes the well, caisson supporting the well, and the causeway leading to the caisson) (either through complete removal of the soil filling the caisson or having to dig underneath), Venoco shall prepare a Decommissioning Plan to remove those remaining contaminated sediments at such time that Pier 421-2 is decommissioned. All other contaminated sediments whose removal would not threaten the integrity of Pier 421-2 would be removed upon approval of the Plan as described above.

MM HAZ-1e. Performance Security. The permittee shall provide to the California State Lands Commission (CSLC) and the City of Goleta, or maintain if already provided, performance securities and agreements for work that would need to be performed at the end of the Project's life. The security and agreement provided to CSLC would cover decommissioning and abandonment of the Well 421-1 and Pier 421-2. The performance security total shall be the estimated amount for the decommissioning/abandonment work. The performance security shall be provided to the CSLC and agreements signed, prior to return to production of the PRC 421 well. The security and agreement provided to the City of Goleta would cover decommissioning and abandonment of the portions of the Project located within the City's jurisdiction, including, but not limited to, the piers, the sea wall supporting the access road, the access road, and the onshore pipelines and cables and ancillary facilities. The performance security

total shall be the estimated amount for the decommissioning/abandonment work, less any amount contributed toward overlapping infrastructure that is covered in the securities and agreements with the CSLC. The performance security shall be provided to the City of Goleta and agreements signed prior to the issuance of the Land Use Permit.

Rationale for Mitigation

Based on past operations, the potential exists for contaminated media to exist within the Project construction areas. Therefore, pre-Project planning, contingency planning, and personnel training would be needed to control, prevent, or eliminate future releases of hazardous materials during Project implementation. Proper personnel training will ensure that Project personnel are prepared for emergency response in the event of a release of hazardous materials, and will be trained in the identification, proper handling, and disposal of such materials. The purpose of a Phase I ESA is to identify environmental concerns that may be associated with a property. Identification of such concerns helps to evaluate the nature, extent, and magnitude of potential contamination at a site, and to identify what media (e.g., soil, sediment, groundwater, or surface water) may have been contaminated. The conclusions of the Phase I may include recommendation of subsequent investigation (Phase II), in which the extent and nature of contamination will be identified. Sampling of sediment in the proposed construction areas will determine whether contamination is present prior to ground disturbance activities. If contamination is present, a Removal Action Plan will define requirements for proper cleanup and disposal, thereby minimizing risk to the public and environment. Additionally, avoiding construction activities during high tides and use of a silt curtain would reduce the probability and severity of a release of hazardous materials into the marine environment. Full implementation of these measures would reduce Impact HAZ-1 to less than significant.

Impact HAZ-2: Release of Contaminated Sediment from the Caisson on Pier 421-2 during Operation of the Project

Contaminated sediment contained within the caisson structures could infiltrate to the surrounding environment (Less than Significant with Mitigation).

Impact Discussion

The Project would extend the use of the aging caisson structure on Pier 421-2. Although the seaward-facing wall has been reconstructed and the remaining walls would be repaired as part of the Project, these walls are subject to weathering, corrosion, and fatigue (see Impact GEO-4) and the potential exists for possibly contaminated sediment contained within the caissons to infiltrate to the surrounding environment. Potential mechanisms and pathways for release of contamination from the caisson are not fully understood; however, potential pathways may include percolation from water infiltration and leakage through the sides and bottom of the caisson wall. The potential for collapse

of the caisson structures is discussed in Section 4.2, Safety (see Impact S-2). This impact would be less than significant with mitigation.

Mitigation Measures

MMs listed in Sections 4.1, Geological Resources, and 4.2, Safety, would reduce the potential for contamination to leak or infiltrate from the caisson structure at Pier 421-2. In particular, MM GEO-4a, Corrosion Protection Design Specification, MM GEO-4d, Inspect Structures During and/or After Storm Events, and MM S-2a, Design Review/ Wave Loading Evaluation, shall be employed to ensure the integrity of the structure. Results from the Phase I and any subsequent Phase II ESAs described in MM HAZ-1b would provide information on the nature and extent of any pre-existing contamination from past site operations.

Rationale for Mitigation

Contaminated sediment may be contained within the caisson structure on Pier 421-2, which is aged and subject to erosion. Although exposure of caisson sediments at Pier 421-2 is not proposed, the potential exists for contamination to leak or infiltrate from the caisson. MMs discussed above will increase the likelihood that any contaminants will be detected and decrease the potential for a release of contaminated sediment. MM GEO-4a, Corrosion Protection Design Specification, and MM S-2a, Design Review/Wave Loading Evaluation, will ensure the structural integrity of the caisson on Pier 421-2 through design specification and repair. Inspections of the caisson structure, as discussed in MM GEO-4d, Inspect Structures During and/or After Storm Events, will lessen the potential for release of caisson media through cracks in the structure. Information obtained from implementation of MM HAZ-1b would provide data for evaluating the potential for pre-existing contamination to infiltrate to the surrounding environment. Full implementation of these measures would reduce Impact HAZ-2 to less than significant.

Table 4.3-2. Summary of Hazardous Materials Impacts and Mitigation Measures

Impact	Mitigation Measures
HAZ-1: Exposure of Public or Environment to Hazardous Materials	**HAZ-1a.** Proper Personnel Training. **HAZ-1b.** Conduct Phase I Environmental Site Assessment. **HAZ-1c.** Soil Sampling. **HAZ-1d.** Removal Action Plan. **HAZ-1e**. Performance Security. **WQ-1a**. Avoidance of High Tides and Silt Curtain.
HAZ-2: Release of Contaminated Sediment from the Caisson on Pier 421-2 during Operation of the Project	**GEO-4a.** Corrosion Protection Design Specification. **GEO-4d.** Inspect Structures During and/or After Storm Events. **S-2a.** Design Review/ Wave Loading Evaluation. **HAZ-1b.** Conduct Phase I Environmental Site Assessment.

4.3.5 Cumulative Impacts Analysis

Given that MMs are used to control, prevent, or eliminate the release of hazardous materials at the study area, implementation of the Project is not anticipated to add to the cumulative effects of implementation of other projects in the area. In addition, the Project and other nearby projects where the use, handling, or disposal of hazardous materials is anticipated are all subject to regulatory standards that must be achieved during construction and operation. Similar to the Project, all future projects in the area would be evaluated on a project-by-project basis and would incorporate measures to reduce any potential impacts from releases of hazardous materials. Mitigation for future projects would be expected to be consistent with applicable standards, regulations, and permits to reduce any potential impacts from releases of hazardous materials. Incorporation of these requirements in other projects would be expected to reduce impacts to less than significant levels. Therefore, the Project is not anticipated to make a contribution to cumulative impacts from the release of hazardous materials. Cumulative impacts from a potential future oil spill are addressed in Section 4.5, Hydrology, Water Resource, and Water Quality, and Section 4.2, Safety.

4.4 AIR QUALITY AND GREENHOUSE GASES

This section summarizes the local climate, current air quality conditions, and regulatory setting related to air quality in the Project area. Air quality impacts associated with the Project and cumulative impacts are also discussed. As necessary, mitigation measures (MMs) are provided to reduce the significance of potential impacts. Information contained in this section was derived from Venoco, Inc.'s (Venoco's) Lease 421 Recommissioning Plan Project Description (May 2013), emission inventories for Venoco facilities affecting the ambient air quality in the region, including the Ellwood Onshore Facility (EOF) and Platform Holly, from the California Air Resources Board (CARB), and the Santa Barbara County Air Pollution Control District (APCD). Emission inventories for these facilities have been compiled based on actual operating data and on the potential to emit (emissions at permitted operational limits) for each facility.

This document incorporates by reference, and refines and summarizes where appropriate, the conclusions of the Line 96 Modification Project Environmental Impact Report (EIR) (Santa Barbara County 2011) regarding Project impacts to air quality associated with operation of the Line 96 pipeline to the Plains All American Pipeline, L.P. (PAAPLP) Coastal Pipeline west of Las Flores Canyon (LFC). This document also incorporates data from Santa Barbara County 01-ND-34 and City of Goleta 06-MND-01.

4.4.1 Environmental Setting

The primary study area covers the Ellwood Coast and South Coast Air Basin. The secondary, more global, study area is that affected by greenhouse gas (GHG) emissions.

Regional Overview

The climate of Santa Barbara County is classified as Mediterranean, characterized by warm, dry summers and mild winters with moderate precipitation. Temperatures are milder near the coastline than inland, with average daily summer highs of 70 degrees Fahrenheit (°F) and average daily winter lows of 40°F. Inland areas experience a wider range of temperatures, from an average summer high in the 80s and 90s to an average winter low in the 30s. Most precipitation occurs during November through April, with an annual rainfall range of 10 to 18 inches along the coast and slightly more in higher elevations. Prevailing winds in the coastal region are from the west/northwest during the day, with an average speed of 7 to 12 miles per hour. Evening winds blow from the east, as the air over the Pacific Ocean cools and creates a low pressure zone. Topography plays a significant role in affecting the direction and speed of winds. Year round, light onshore winds hamper the dispersion of primary pollutants, and the orientation of the inland mountain ranges interrupt air circulation patterns. Pollutants become trapped, creating ideal conditions for the production of secondary pollutants in the coastal zones.

Several types of inversions are common to the area, particularly during May to October. During spring and summer, marine inversions occur when cool air from over the ocean intrudes under warmer air that lies over the land. In summer, the high pressure systems can cause the air mass to sink, creating a subsidence inversion. In winter, weak surface inversions occur, caused by cooling of air in contact with the cold surface of the earth.

Air Quality

Air quality is defined by ambient air concentrations of specific pollutants which have been determined to be of concern with respect to the health and welfare of the general public. The pollutants of concern are: carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), sulfates, lead (Pb), H_2S, vinyl chloride, and visibility reducing particles. Ambient air quality standards have been established by the CARB for each of these pollutants and by the U.S. Environmental Protection Agency (U.S. EPA) for CO, SO_2, NO_2, O_3, PM_{10}, $PM_{2.5}$, and Pb. The California Ambient Air Quality Standards (CAAQS) and the National Ambient Air Quality Standards (NAAQS) are summarized in Table 4.4-1.

Air quality at a given location can be described by the concentration of various pollutants in the atmosphere. Units of concentration are generally expressed in parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). The significance of a pollutant concentration is determined by comparing the concentration to an appropriate national and/or State ambient air quality standard. These standards represent the allowable atmospheric concentrations at which the public health and welfare are protected and include a reasonable margin of safety to protect the more sensitive individuals in the population.

Criteria Pollutants and Air Monitoring. Criteria air pollutants are defined as pollutants for which the Federal and State governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The Federal and State standards have been set at levels above which concentrations generally could be harmful to human health and welfare. These standards are designed to protect the most sensitive persons from illness or discomfort, with a margin of safety. Ambient air quality for the Project area from 2010 to 2012 is summarized in Table 4.4-2.

Santa Barbara County is classified as being in attainment or unclassified for all criteria pollutants with the exception of the California standards for PM_{10} and the 8-hour standard for ozone, as shown in Table 4.4-3. Monitoring is performed to demonstrate attainment or nonattainment of national and State ambient air quality standards. Criteria air pollutants of concern for Santa Barbara County are described below.

Table 4.4-1. Ambient Air Quality Standards for Criteria Pollutants

Pollutant	Averaging Time	California Standards [a, c]	National Standards [b]	
			Primary [d]	Secondary [c, e]
O_3	1-hour [b] 8-hour [a]	0.09 ppm (180 µg/m^3) 0.07 ppm (137 µg/m^3)	NS 0.075 ppm (147 µg/m^3)	NS 0.075 ppm (147 µg/m^3)
CO	8-hour 1-hour	9.0 ppm (10 mg/m^3) 20.0 ppm (23 mg/m^3)	9.0 ppm (10 mg/m^3) 35 ppm (40 mg/m^3)	NS NS
NO_2	Annual Avg. 1-hour	0.030 ppm (57 µg/m^3) 0.18 ppm	0.053 ppm (100 µg/m^3) 0.1 ppm (188 µg/m^3)	0.053 ppm (100 µg/m^3) NS
Sulfur Dioxide, SO_2	Annual Avg. 24-hour 3-hour 1-hour	NS 0.04 ppm (105 µg/m^3) NS 0.25 ppm (655 µg/m^3)	NS NS NS 0.075 ppm (196 µg/m^3)	NS NS 0.5 ppm (1,300 µg/m^3) NS
PM_{10}	Ann. Arith. Mean 24-hour	20 µg/m^3 50 µg/m^3	NS 150 µg/m^3	NS 150 µg/m^3
$PM_{2.5}$	Ann. Arith. Mean 24-hour	12 µg/m^3 NS	12 µg/m^3 35 µg/m^3	12 µg/m^3 35 µg/m^3
Sulfates (SO_4 [b])	24-hour	25 µg/m^3	NS	NS
Pb [f]	30-day Avg. Calendar Qtr. 3-month Avg.	1.5 µg/m^3 NS NS	NS 1.5 µg/m^3 0.15 µg/m^3	NS 1.5 µg/m^3 0.15 µg/m^3
H_2S	1-hour	0.03 ppm (42 µg/m^3)	NS	NS
Vinyl Chloride [f]	24-hour	0.010 ppm (26 µg/m^3)	NS	NS
Visibility Reducing Particles	1 Observation	Insufficient amount to reduce the prevailing visibility[g] to less than 10 miles when the relative humidity is less than 70 percent (California only).		

Notes: ppm = parts per million by volume (micromoles of pollutant per mole of gas) mg/m^3 = microgram/cubic meter; mm = millimeter; NS = No Standard; Avg. = Average; Ann. Arith. Mean = Annual Arithmetic Mean.

[a] California standards for O_3, CO, SO_2 (1-hour), NO_2, $PM_{2.5}$ and PM_{10} are values that are not to be exceeded. SO_4^{-2}, Pb, H_2S, Vinyl Chloride, and visibility-reducing particles standards are not to be equaled or exceeded. Sulfates are pollutants that include SO_4^{-2} ion in their molecule. CA 8-hr O_3 standard is effective as of May 17, 2006.

[b] National Standards, other than O_3 and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year. The O_3 Standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than one. National 1-hour O_3 standard was revoked on June 30, 2005.

[c] Concentration expressed first in units in which it was promulgated. Equivalent units in parentheses are based upon reference temperature of 25°C and a reference pressure of 760 millimeters (mm) of mercury (1,013.2 millibar).

[d] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health. Each state must attain the primary standards no later than three years after that state's implementation plan is approved by the U.S. EPA.

[e] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must attain the secondary standards within a "reasonable time" after the implementation plan is approved by the U.S. EPA.

[f] The CARB has identified Pb and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[g] Prevailing visibility is defined as the greatest visibility, which is attained or surpassed around at least half of the horizon circle, but not necessarily in continuous sectors.

Source: CARB 2011.

Table 4.4-2. Ambient Air Quality Summary for Project Area (2010 through 2012) and Attainment Status of Santa Barbara County (2012)

			Maximum Observed Concentration (# of Days Standard was Exceeded)[a]	
Pollutant		**Year**	**Goleta - Fairview**	**Santa Barbara**
O_3, ppm	1-hour 8-hour	2010	0.072 (0) 0.065 (0)	0.075 (0) 0.062 (0)
	1-hour 8-hour	2011	0.091 (0) 0.076 (1 day)	0.089 (0) 0.077 (1 day)
	1-hour 8-hour	2012	0.065 (0) 0.056 (0)	0.071 (0) 0.058 (0)
CO, ppm	8-hour	2010	0.56 (0)	1.07 (0)
	8-hour	2011	0.57 (0)	1.89 (0)
	8-hour	2012	0.65 (0)	[b] (0)
NO_2, ppm	1-hour Annual Average	2010	0.044 (0) 0.006	0.090 (0) 0.009
	1-hour Annual Average	2011	0.052 (0) 0.006	0.049 (0) 0.010
	1-hour Annual Average	2012	0.041 (0) [b] (0)	0.048 (0) [b] (0)
SO_2	No data available (monitoring station does not monitor this pollutant)			
$PM_{2.5}$, µg/m^3	24-hour Ann. Arith. Mean	2010	23.6 (0) 8.2	17.4 (0) [b]
	24-hour Ann. Arith. Mean	2011	18.4 (0) 8.4	[b] [b]
	24-hour Ann. Arith. Mean	2012	29.0 (0) 9.0	[b] [b]
PM_{10}, µg/m^3	24-hour Ann. Arith. Mean	2010	45.2 (0) [b]	57.6 (3 days) [b]
	24-hour Ann. Arith. Mean	2011	70.0 (2 days) [b]	69.4 (3 days) 25.0
	24-hour Ann. Arith. Mean	2012	48.0 (0) 18.8	59.2 (2 days) [b]

Attainment Status													
1-hour O_3 [c]		**8-hour O_3**		**CO**		**NO_2**		**SO_2**		**$PM_{2.5}$**		**PM_{10}**	
CA	**Fed**	**CA**	**Fed**	**CA**	**Fed**	**CA**	**Fed**	**CA**	**Fed**	**CA**	**Fed**	**CA**	**Fed**
A	N/A	**N**	U/A	A	U/A	A	U/A	A	U/A	U	U/A	**N**	U/A

Notes: The values are provided in the units promulgated by the U.S. EPA.
CA = California State Standards; A = Attainment of Standards; N = Nonattainment; U = Unclassified; U/A = Unclassified/Attainment, NA = not applicable. Ann. Arith. Mean = Annual Arithmetic Mean.

[a] Number or percent of exceedances of the most restrictive standard (usually, the State Standard).

[b] Insufficient data available to determine value.

[c] National 1-hour O_3 standard was revoked on June 30, 2005, with all applicable designations.

Source: CARB 2013; Santa Barbara County APCD 2013.

Ozone (O_3). The most widespread air quality problem in the State, O_3, is a colorless gas with a pungent, irritating odor. O_3 is not emitted directly into the atmosphere; it is formed primarily when reactive organic compounds (ROCs) and nitrous oxide (NO_x) react in the presence of sunlight. O_3 may pose its worst health threat to those who already suffer from respiratory diseases; however, it also harms healthy people. The health effects of O_3 can include reduced lung function, aggravated existing respiratory illness, and irritated eye, nose, and throat tissues. Chronic exposure can cause permanent damage to the alveoli of the lungs.

Sulfur Dioxide (SO_2). SO_2 is a colorless gas. At high concentrations, it has a pungent, irritating odor. In the atmosphere, it reacts with oxidants or particles to form sulfates and sulfuric acid particles in equilibrium, both of which are more hazardous than the original SO_2. The main sources of SO_2 are fuel burning and metal ore processing. Sulfur is an impurity in fossil fuels (especially coal) and in many ores. Santa Barbara County has been in attainment with the California and national SO_2 standards for the last 10 years.

Lead (Pb). Pb in the atmosphere occurs as PM. The combustion of leaded gasoline is the primary source of Pb emissions in the South Coast Air Basin. Other sources of Pb include the manufacturing of batteries, paint, ink, ceramics, and ammunition and secondary Pb smelters. With the phase-out of leaded gasoline, secondary Pb smelters, battery recycling, and manufacturing facilities are becoming Pb emission sources of greater concern. Prolonged exposure to atmospheric Pb poses a serious threat to human health. Health effects associated with exposure to Pb include gastrointestinal disturbances, anemia, kidney disease, and in severe cases, neuromuscular and neurological dysfunction. Of particular concern are low-level Pb exposures during infancy and childhood. Such exposures are associated with decrements in neurobehavioral performance (including intelligence quotient performance, psychomotor performance, and reaction time) and growth. The county is in attainment with the NAAQS and the CAAQS for Pb.

Nitrogen Dioxide (NO_2). NO_2 is a by-product of fuel combustion that absorbs blue light, resulting in a brownish-red cast to the atmosphere and reduced visibility, and that contributes to the formation of PM_{10}. The principal form of nitrogen oxide (NO) produced by combustion is nitric acid, but NO reacts quickly to form NO_2 and NO_x (a mixture of NO and NO_2). NO_2 acts as an acute irritant, but is only potentially irritating at atmospheric concentrations. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis, while some increase in bronchitis in children (2 to 3 years old) has been observed at concentrations below 0.3 ppm. Santa Barbara County is in attainment of the California and national 1-hour and 8-hour NO_2 standards.

Carbon Monoxide (CO). Automobiles and other types of motor vehicles are the main source of CO pollution in Santa Barbara County. CO gas is colorless and odorless, which adds to its danger. CO concentrations typically peak nearest a source, such as

roadways, and decrease rapidly as distance from the source increases. In high concentrations, CO can cause physiological and pathological changes, and ultimately death, by incapacitating the red blood cells and interfering with their ability to carry oxygen to body tissues. The symptoms of excessive exposure – headaches, fatigue, slow reflexes, and dizziness – also can occur in healthy people. Santa Barbara County is in attainment of the California and national one-hour and eight-hour CO standards.

Fine Particulate Matter (PM_{10} and $PM_{2.5}$). PM_{10} and $PM_{2.5}$ consist of extremely small suspended particles or droplets that are 10 and 2.5 micrometers or smaller, respectively, in diameter that can lodge in the lungs and contribute to respiratory problems. PM_{10} and $PM_{2.5}$ arise from such sources as road dust, diesel soot, combustion products, abrasion of tires and brakes, demolition operations, and windstorms. They also are formed in the atmosphere from NO_2 and SO_2 reactions with ammonia. PM_{10} and $PM_{2.5}$ scatter light and significantly reduce visibility. PM_{10} and $PM_{2.5}$ pose a serious health hazard, alone or in combination with other pollutants. More than half of the smallest particles inhaled would be deposited in the lungs and can cause permanent lung damage. Fine particulates also can have a damaging effect on health by interfering with the body's mechanism for clearing the respiratory tract or by acting as a carrier of an absorbed toxic substance. Santa Barbara County is in exceedance of the California annual arithmetic mean and 24-hour PM_{10} standards (see Table 4.4-3). Santa Barbara County is Unclassified for the recently added State $PM_{2.5}$ Standard.

Hydrogen Sulfide (H_2S). H_2S is an odorous, toxic, gaseous compound that can be detected by humans at very low concentrations. Concentrations detectable by smell (this can vary from 0.5 parts per billion [ppb] detected by 2 percent of the population to 40 ppb, qualified as annoying by 50 percent of the population) are significantly lower than concentrations that could affect human health (2 ppm [2,000 ppb] can cause headaches and increased airway resistance in asthmatics; inhalation of 600 ppm is lethal). The gas is produced during the decay of organic material and is also found naturally in petroleum and natural gas. The county is in attainment of the H_2S standard.

Toxic Air Contaminants (TACs). TACs are compounds that are known or suspected to cause short-term (acute) and/or long-term (chronic non-carcinogenic or carcinogenic) adverse health effects. Vulnerable subpopulations are those with preexisting respiratory or cardiovascular disease, especially the elderly, while increased hospital admissions and morbidity from respiratory disease have been associated with PM exposure in adults and children. PM exposure is also associated with an increased risk of lung cancer in epidemiological studies (CARB 2005). Sources of TACs within Santa Barbara County include industrial processes, gasoline stations, paint/solvent operations, and fossil fuel combustion. In 1998, CARB identified diesel particulate matter (DPM) as a TAC based on its potential to cause cancer, premature deaths, and other health problems. DPM is a by-product of the diesel fuel combustion process that is emitted in exhaust from construction heavy equipment, trucks, marine vessels, and other sources.

Regional Emissions

Emissions within the County are estimated annually by the APCD. Table 4.4-3 lists the estimated emissions by source category.

Table 4.4-3. Emission Inventory for Santa Barbara County

Emission Sources [a]		CO (MT/yr)	ROC (MT/yr)	NO_x (MT/yr)	SO_2 (MT/yr)	PM_{10} (MT/yr)
Onshore	Stationary	1,551	3,244	2,843	552	554
	Area-Wide	9,433	3,051	333	8	10,584
	Mobile	82,532	5,039	11,047	305	572
	Natural	11,404	47,378	8,707	0	1,843
	Total Onshore	**103,369**	**58,712**	**22,930**	**865**	**13,553**
Offshore	Stationary	N/A	303	213	N/A	N/A
	Mobile	N/A	914	18,017	N/A	N/A
	Natural	N/A	2,004	0	N/A	N/A
	Total Offshore	N/A	**3,221**	**18,230**	-	-
All Sources		-	**61,933**	**41,160**	-	-

Notes: MT/yr = metric tons per year.

ROC and NOx from 2010 Clean Air Plan and reflect the year 2007; CO, SO_2 and PM10 are no longer included in the Clean Air Plan inventory and are from the 2002 Clean Air Plan Update Emissions Inventory representing 1999.

[a] Petroleum activities are a part of Stationary Sources.

Source: Santa Barbara County APCD 2002, 2011a.

Odor Issues Associated with Oil and Gas Production Facilities and PRC 421

Oil production facilities typically produce odors that can be objectionable to the public, and of particular concern is H_2S. Other Ellwood area oil facilities, including the Ellwood Marine Terminal (EMT) and barges which are not part of the Project, have historically produced odors that have generated complaints from the public. Approximately 50 complaints regarding odors from the EMT were received from 2005 to 2011, a frequency of approximately eight complaints per year. The EOF has also generated complaints and has been the subject of an abatement order from APCD. There were two occurrences of odor complaints associated with EOF operations in 2007. One complaint occurred on October 29, 2007, and the exact source of the release was not confirmed, although a low-level H_2S alarm near the edge of the Venoco's property line was triggered. The other complaint occurred on November 14, 2007, and was attributed to gas released from a water settling tank (T-201) and an oil shipping tank (T-202). An H_2S leak on February 11, 2010, also resulted in odor complaints, and was due to a tank valve that was left open during maintenance on a compressor in the gas plant. Automated systems shut down gas operations at Platform Holly and the EOF, until APCD authorized restart later in the day. On May 31, 2010, the 16-inch main Lo-Cat solution line came apart which resulted in the immediate shutdown of the Lo-Cat process. The Lo-Cat process uses a non-hazardous chelated iron solution to convert

H_2S from the Platform Holly gas stream to elemental sulfur. The location of the leak was the LoCat Unit, upstream of where the solution contacts the platform gas. As such, no platform gas was released to the atmosphere. The leak caused some of the solution to spray on to the fence, frontage road and some shrubbery. One fence line odor sensor was activated at <1 ppm (City of Goleta 2011).

Some odor events could be attributed to natural gas seeps (a documented phenomenon caused by the leaking of oil and gas from the sea-floor) near Platform Holly and offshore of the Ellwood Coast. Off Coal Oil Point, portions of these seeps are captured by a large subsea metal pyramid "tent" installed in the 1980s. However, natural seeps also occur in other locations off of Coal Oil Point where they are not captured but escape into the atmosphere, and create odors if H_2S is present in the gas.

As noted in Section 4.2, Safety, "sweet" crude oil, with low sulfur content (below 0.6 percent) and low H_2S content, is produced from PRC 421 (the H_2S content in PRC 421 gas is approximately 10 ppm, below levels at which H_2S is considered to be a potential source of injury to humans [see Section 4.2, Safety, for a complete discussion]). Crude produced from the South Ellwood Field (Platform Holly) contains much higher concentrations of sulfur and H_2S (see Table 4.2-2). The crude oil that would be produced by the Project and transported through Line 96 would not be a source of acute toxic impacts to human receptors if released and is not expected to be a source of odors that would be a nuisance to the public.

Greenhouse Gases (GHGs) and Global Climate Change

Global climate change is a change in the average weather of the earth which can be measured by wind patterns, storms, precipitation, and temperature. Scientific consensus has identified that the human-related emission of GHGs above natural levels is a significant contributor to global climate change. GHGs are any gases that absorb infrared radiation in the atmosphere, including water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), fluorocarbons, and O_3. GHGs lead to the trapping and buildup of heat in the atmosphere near the earth's surface, known as the Greenhouse Effect. The atmosphere and the oceans are reaching their capacity to absorb CO_2 and other GHGs without significantly changing the earth's climate. The increase in GHGs in the earth's climate is projected to substantially affect a wide range of issues and resources, including sea level rise, flooding, water supply, agricultural and forestry resources, and energy demand. California's Climate Change Portal (www.climatechange.ca.gov) states:

> Climate change is expected to have significant, widespread impacts on California's economy and environment. California's unique and valuable natural treasures - hundreds of miles of coastline, high value forestry and agriculture, snow-melt fed fresh water supply, vast snow and water fueled recreational opportunities, as well as other natural wonders - are especially at risk.

In addition, the Intergovernmental Panel on Climate Change (IPCC), in the section of its Fifth Assessment Report by Working Group II, "Climate Change 2014: Impacts, Adaptation, and Vulnerability," (IPCC 2014; released March 31, 2014) specific to North America (Chapter 26), stated in part:

> **North American ecosystems are under increasing stress from rising temperatures, CO_2 concentrations, and sea-levels, and are particularly vulnerable to climate extremes (*very high confidence*).** Climate stresses occur alongside other anthropogenic influences on ecosystems, including land-use changes, non-native species, and pollution, and in many cases will exacerbate these pressures (*very high confidence*). [26.4.1; 26.4.3]. Evidence since the Fourth Assessment Report (IPCC 2007) highlights increased ecosystem vulnerability to multiple and interacting climate stresses in forest ecosystems, through wildfire activity, regional drought, high temperatures, and infestations (*medium confidence*) [26.4.2.1; Box 26-2]; and in coastal zones due to increasing temperatures, ocean acidification, coral reef bleaching, increased sediment load in run-off, sea level rise, storms, and storm surges (*high confidence*) [26.4.3.1].

California has already been affected by climate change: sea level rise, increased average temperatures, more extreme hot days and increased heat waves, fewer shifts in the water cycle, and increased frequency and intensity of wildfires. Higher sea levels can result in increased coastal erosion (which may have a secondary effect such as uncovering hazards such as occurred in March 2014 along the Santa Barbara coastline), more frequent flooding from storm surges, increased property damage, and reduced waterfront public access options. Other projected climate change impacts in California include: decreases in the water quality of surface water bodies, groundwater, and coastal waters; decline in aquatic ecosystem health; lowered profitability for water-intensive crops; changes in species and habitat distribution; and impacts to fisheries (California Regional Assessment Group 2002). These effects are expected to increase with rising GHG levels in the atmosphere.

Fossil fuel combustion represents the vast majority of the anthropogenic GHG emissions, with CO_2 being the primary GHG. In 2010, total U.S. GHG emissions were 6,822 million metric tons[7] (MMT) of carbon equivalents, of which 84 percent were CO_2 emissions; approximately 33 percent of these GHG emissions were associated with electricity generation, and approximately 26 percent were associated with transportation (EPA 2012). About half of the electricity in the U.S. is generated from coal, producing a U.S. GHG emissions rate of about 1,363 pounds per megawatt hour (lbs/MWh); this rate is lower for western states, primarily due to the increased use of hydroelectric and natural gas. The California Independent Service Operator area (which includes some generation outside of California) has a GHG emission rate of about 687 lbs/MWh due to the contribution of hydroelectric, nuclear and renewable sources.

[7] A metric ton, or tonne, is a unit of weight equivalent to 1,000 kilograms (2,205 pounds) versus an Imperial unit ton which is the equivalent of 2,000 pounds (907 kilograms).

The majority of California's GHG emissions (81%) are CO_2 produced from fossil fuel combustion (CARB 2008). In 2012, California's gross GHG emissions totaled 458.68 MMT of CO_2 equivalents ($MMTCO_2e$), with the transportation sector the largest category (167.38 $MMTCO_2e$, 36%) followed by electrical power generation (95.09 $MMTCO_2e$, 21%), industry (89.16 $MMTCO_2e$, 19%), commercial/residential (42.28 $MMTCO_2e$, 9%), and agriculture (37.86 $MMTCO_2e$, 8%) (CARB 2014; www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_00-12_2014-03-24.pdf.[8]

According to the IPCC, the concentration of CO_2, the primary GHG, has increased from approximately 280 parts per million (ppm) in pre-industrial times to well over 380 ppm. The current rate of increase in CO_2 concentrations is about 1.9 ppm/year; present CO_2 concentrations are higher than any time in at least the last 650,000 years. To meet the statewide GHG reduction target for 2020, requiring California to reduce its total statewide GHG emissions to the level they were in 1990 (Health & Saf. Code, § 38550), and the 2050 goal of 80 percent below 1990 levels (Executive Order S-3-05), not only must projects contribute to slowing the increase in GHG emissions, but, ultimately, projects should contribute to reducing the State's output of GHGs. To reach California's GHG reduction targets, it is estimated that per capita emissions will need to be reduced by slightly less than 5 percent per year during the 2020 to 2030 period, with continued reductions required through midcentury.

In its 2008 "Report on Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act," the California Air Pollution Control Officers Association (CAPCOA) stated:

> [w]hile it may be true that many GHG sources are individually too small to make any noticeable difference to climate change, it is also true that the countless small sources around the globe combine to produce a very substantial portion of total GHG emissions (CAPCOA 2008).

The global warming potential (GWP), or potential of a gas or aerosol to trap heat in the atmosphere, of different GHGs varies since GHGs absorb different amounts of heat. A common reference gas, CO_2, is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as CO_2 equivalent (CO_2e). CO_2e is the amount of GHG emitted multiplied by the GWP. The GWP of CO_2 is therefore defined as 1. Methane has a GWP of 21; therefore, 1 pound of methane produce 21 pounds of CO_2e. Table 4.4-4 shows a range of gases with their associated GWP, their estimated lifetime in the atmosphere, and the range in GWP over 20, 100, and 500 years.

GHG emissions are generally classified as direct and indirect. Direct emissions are associated with the production of GHG emissions in the immediate Project area, and include combustion of natural gas, combustion of fuel in engines and construction

[8] Not all GHG sources are included, so the components do not add up to the total.

Table 4.4-4. Global Warming Potential of Various Gases

Gas	Life in Atmosphere (years)	20-year GWP (avg)	100-year GWP (avg)	500-year GWP (avg)
Carbon dioxide	50-200	1	1	1
Methane	12	21	56	6.5
Nitrous oxide	120	310	280	170
HFC-23	264	11,700	9,100	9,800
HFC-125	32.6	2,800	4,600	920
HFC-134a	14.6	1,300	3,400	420
HFC-143a	48.3	3,800	5,000	1,400
HFC-152a	1.5	140	460	42
HFC-227ea	36.5	2,900	4,300	950
HFC-236fa	209	6,300	5,100	4,700
HFC-4310mee	17.1	1,300	3,000	400
CF4	50,000	6,500	4,400	10,000
C2F6	10,000	9,200	6,200	14,000
C4F10	2,600	7,000	4,800	10,100
C6F14	3,200	7,400	5,000	10,700
SF6	3,200	23,900	16,300	34,900

Source: EPA 2007.
GWP = Global Warming Potential; avg = average; CF = chlorfluorocarbon; HFC = hydroflourocarbon.

vehicles, and fugitive emissions from valves and connections of equipment used during Project implementation or throughout the Project life. Indirect emissions include emissions from vehicles (both gasoline and diesel).

4.4.2 Regulatory Setting

A summary of the Federal and State regulatory setting for air quality is provided in Table 4.0-1, while the local regulatory setting is discussed below.

Local

Santa Barbara County Air Pollution Control District (APCD)

As directed by the Federal and State Clean Air Acts, local air districts are required to prepare plans with strategies for attaining and maintaining State and Federal O_3 standards. To ultimately achieve the air quality standards, the rules and regulations limit emissions and permissible impacts from activities within the local air districts. Some rules also specify emission controls and control technologies for each type of emitting source. The regulations also include requirements for obtaining an Authority to Construct (ATC) permit and a Permit to Operate (PTO).

The Santa Barbara County APCD is the agency with jurisdiction over air quality attainment in the County. The Project would be permitted as a stationary source, and all aspects of the Project and alternatives occurring in the County must obtain an APCD permit, if applicable. Increases in emissions of any non-attainment pollutant or its pre-

cursor from a new or modified project that exceed thresholds identified in APCD Rule 802.E are required to be mitigated. Specific APCD permit requirements such as Best Available Control Technology (BACT) would be addressed in the APCD permit process.

City of Goleta Climate Action Plan

The City of Goleta Climate Action Plan was developed as a response to the statewide reduction goal outlined in Assembly Bill (AB) 32, also known as the Global Warming Solutions Act of 2006 (Health & Saf. Code, § 38500 et seq.). The Scoping Plan for AB 32, developed and implemented by the CARB, identifies specific measures to achieve these reductions and recommends that local governments establish GHG reduction targets for both their municipal operations and the community that are consistent with those of the State. The City's Climate Action Plan meets the requirements of AB 32 and Executive Order S-3-05. In order to reduce above GHG emissions, the Climate Action Plan includes reduction measures of GHG sources for building energy, water consumption, on-road and off-road transportation, and solid waste.

4.4.3 Significance Criteria

Construction Thresholds

Emissions from construction activities are generally short-term and temporary. Neither the City of Goleta nor the APCD have daily or quarterly quantifiable emission thresholds established for short-term construction emissions. Pursuant to APCD Rule 202, construction emissions of any criteria pollutant (except CO) that has the potential to exceed 25 tons per year in a 12-month period would require that the owner of the stationary source provide offsets, per Rule 804. In the absence of adopted thresholds, 25 tons per year is used as the significance threshold for construction emissions of ROG and NO_x. PM_{10} emissions should be estimated and standard MMs implemented, as required in the Santa Barbara County APCD (2005) Air Quality Attainment Plan.

Operational Thresholds

PRC 421 has not been operational and has not produced emissions since 1994 when the facility was temporarily shut in to complete emergency repairs and clean-up, following the discovery a leak in the PRC 421 6-inch line. Therefore, for the purposes of this analysis, impacts to air quality from operations are compared to the existing physical environmental baseline which is zero emissions. The APCD guidelines only contain a peak daily emission threshold for criteria pollutants. Operations at Pier 421-2 would not result in substantial increase in peak daily emissions. However, the Project would result in greater annual emissions. Therefore, to address potential long-term air quality impacts, Project emissions were compared to an annual emission threshold. Impacts are considered to be to be significant if operation of the Project would:

- Emit from all Project sources, both stationary and mobile, more than the daily trigger for offsets or Air Quality Impact Analysis set in the APCD New Source Review Rule for pollutants (i.e., 240 lbs/day for ROC or NOx; 80 lbs/day for PM_{10}. (CO, is an attainment pollutant and doesn't have a daily operational threshold);
- Emit more than 25 tons per year of any one criteria pollutant;
- Emit more than 25 pounds per day of NOx or ROC from motor vehicle trips only;
- Cause or contribute to a violation of any CAAQS or NAAQS (except ozone);
- Exceed APCD Board-adopted health risk public notification thresholds; or
- Not be consistent with the adopted Federal and State air quality plans for Santa Barbara County.

Cumulative impacts would be deemed significant if the Project is found to have an individually significant air quality impact.

Greenhouse Gas Thresholds

The SBCAPCD does not currently have a formally adopted GHG threshold; however, CSLC staff recommend that Project-generated GHG impacts would be potentially significant if any net Project-related increase in CO_2e, occurred annually (i.e., a zero emissions threshold for GHG emissions above baseline). The zero emissions threshold assures that the Project would not contribute to any net increase in GHG emissions over the current facility baseline, and would not impede further progress in meeting the AB 32 mandated reductions and the S-3-05 Executive Order goal of an 80 percent reduction by 2050.

4.4.4 Impact Analysis and Mitigation

The analysis of air quality impacts follows guidance provided by the Santa Barbara County APCD Scope and Content of Air Quality Sections in Environmental Documents (2011) and the State CEQA Guidelines. Air quality impacts associated with recommissioning Pier 421-2 and decommissioning and removal of Pier 421-1 are expected as a result of Project construction and operations. Project construction emissions would include particulate and combustion emissions associated with trenching for the purpose of installing new power cables and repairing the existing 6-inch line, and combustion of fossil fuels from travel on access roads, operation of the drill rig during installation of the electric submersible pump (ESP), and operation of other construction equipment during repairs to the caisson wall. Decommissioning and removal of Pier 421-1 approximately 1 year after PRC 421 recommissioning would also result in particulate and combustion emissions from operation of construction equipment and earthwork related to demolition and removal of the pier and caisson.

Emissions from the Project, including decommissioning and removal of Pier 421-1, were estimated using emission factors and equipment estimates from Venoco Inc.'s Recommissioning Plan for Lease PRC 421 (May 2013). Operational emissions from primary Project components would consist primarily of fugitive emissions from valves, piping components, well heads, well cellars, and processing equipment at the EOF. Operational emissions from secondary Project components would consist primarily of fugitive emissions related to pipeline transport. Operational emissions from oil transportation were calculated using emissions factors from the Line 96 Modification Project EIR and those provided by Santa Barbara County APCD. Table 4.4-8, located at the end of Section 4.4.4, provides a summary of air quality-related impacts and recommended MMs to address these impacts.

Impact AQ-1: Increase in Emissions from Construction

Project construction could potentially result in increased emissions at the Project site (Less than Significant).

Impact Discussion

Project construction would generate temporary air pollutant emission from a variety of activities, including trenching, heavy construction equipment use, construction worker trips, hauling of demolition material, delivery of building materials and equipment, and future removal of existing structures, including from decommissioning and removal of Pier 421-1. Table 4.4-5 shows the estimated emissions associated with Project construction and following decommissioning and removal of Pier 421-1. The equipment list was taken from Venoco's Lease 421 Recommissioning Plan (May 2013).

Table 4.4-5. Estimated Project Construction Emissions

	Emission Source	NO_x tons	ROC tons	CO tons	SO_2 tons	PM_{10} tons
2014	On-site Construction Emissions	6.36	0.74	3.06	0.007	0.28
	Construction Traffic Emissions	<0.01	0.00	0.03	0.00	0.06
	Total	*6.36*	*0.74*	*3.06*	0.007	*0.34*
	Significance Thresholds (tons/year)	25	25	25	25	25
	Are Thresholds Exceeded?	No	No	No	No	No
2015	On-site Construction Emissions	0.064	0.01	0.05	0.00	0.0075
	Construction Traffic Emissions	0.002	0.00	0.005	0.00	0.105
	Total	*0.066*	*0.01*	*0.06*	*0.00*	*0.112*
	Significance Thresholds (tons/year)	25	25	25	25	25
	Are Thresholds Exceeded?	No	No	No	No	No

Note: Calculations include emissions from construction equipment and vehicles traveling to and from the site, including 10 trucks bringing supplies, 10 trucks hauling material to the recycling facility in Ventura, and 40 worker trips per day (this is a conservative estimate relative to the 12 workers that are estimated to be needed for Project construction). Additionally, emissions from 40 haul trips for decommissioning and removal activities in 2015 are included. Recommissioning activities in 2014 are assumed to occur over 90 days, and decommissioning activities in 2015 are assumed to occur over 30 days.

Construction would occur over an estimated 90 days, 8 hours per day, 5 days per week, with decommissioning and removal of Pier 421-1 requiring 30 days and occurring 1 year after PRC 421 recommissioning. Project emissions (including from Pier 421-1 decommissioning/removal) are included in the following analysis. Assumptions are shown in the table and footnotes. As indicated in Table 4.4-5, Project construction would generate emissions due to construction equipment use and traffic associated with construction workers, equipment/supply deliveries, and demolition debris hauling. Over the Project life, including emissions from both Project construction in 2014 and Pier 421-1 decommissioning and removal in 2015, worst-case emissions from construction activities are estimated at 6.426 tons for NO_x, 0.75 tons for ROC, 3.12 tons for CO, 0.007 tons for SO_2, and 0.452 tons for PM_{10}.

As stated above, neither the City of Goleta nor the APCD have established thresholds of significance for construction emissions, but the APCD generally considers emissions of any criteria pollutant that exceed 25 tons per year to be significant. The emissions from Project construction would be well below this level and therefore, impacts to air quality from construction emissions would less than significant. Nevertheless, mitigation is required by APCD policy for all construction activities to minimize emissions of ozone precursors, fugitive dust, and particulate emissions from diesel exhaust.

Mitigation Measures

The estimated emissions presented in the table are shown without mitigation applied. The following MMs should be incorporated into the construction phase of the Project, to reduce impacts as much as feasible.

MM AQ-1a. Prohibit Unnecessary Truck Idling. The construction contractor shall limit unnecessary truck idling on site in excess of five minutes.

MM AQ-1b. Use of Diesel Emission Reduction Measures. The construction **contractor** shall implement the following measures, as feasible.

- Diesel construction equipment meeting the California Air Resources Board (CARB) Tier 1 emission standards for off-road heavy-duty diesel engines shall be used. Equipment meeting CARB Tier 2 or higher emission standards should be used to the maximum extent feasible.
- Diesel powered equipment should be replaced by electric equipment whenever feasible.
- If feasible, diesel construction equipment shall be equipped with selective catalytic reduction systems, diesel oxidation catalysts and diesel particulate filters as certified and/or verified by the U.S. Environmental Protection Agency (EPA) or California.
- Catalytic converters shall be installed on gasoline-powered equipment, if feasible.
- All construction equipment shall be maintained in tune per the manufacturer's specifications.

- The engine size of construction equipment shall be the minimum practical size.
- The number of construction equipment operating simultaneously shall be minimized through efficient management practices to ensure that the smallest practical number is operating at any one time.
- Construction worker trips should be minimized by requiring carpooling and by providing for lunch onsite.

MM AQ-1c. Maintain Construction Equipment. All construction equipment shall be properly maintained according to manufacturers' specifications.

MM AQ-1d. Compliance with State Portable Air Toxics Control Measure. Any portable diesel engines greater than 50 horsepower used in construction shall comply with the State Portable Air Toxics Control Measure and be certified to Tier 1, 2, or 3 non-road engine standards.

MM AQ-1e. Establish On-Site Equipment Staging Area and Worker Parking Lots. The staging area and worker parking lots shall be restricted to either paved surfaces or soil stabilized unpaved surfaces only.

MM AQ-1f. Fugitive Dust Management. Venoco shall implement the following measures in accordance with requirements of the Santa Barbara Air Pollution Control District.

- During construction, use water trucks or sprinkler systems to keep all areas of vehicle movement damp enough to prevent 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. Increased watering frequency should be required whenever the wind speed exceeds 15 mph. Reclaimed water should be used whenever possible. However, reclaimed water should not be used in or around crops for human consumption.
- Minimize amount of disturbed area and reduce on site vehicle speeds to 15 miles per hour or less.
- If importation, exportation and stockpiling of fill material is involved, soil stockpiled for more than two days shall be covered, kept moist, or treated with soil binders to prevent dust generation. Trucks transporting fill material to and from the site shall be tarped from the point of origin.
- Gravel pads shall be installed at all access points to prevent tracking of mud onto public roads.
- After clearing, grading, earth moving or excavation is completed, treat the disturbed area by watering, or revegetating, or by spreading soil binders until the area is paved or otherwise developed so that dust generation will not occur.
- The contractor shall designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties shall include holiday and weekend periods when work may not be in progress. The name and telephone number of such persons shall be provided to the Air Pollution Control

District prior to land use clearance for map recordation and land use clearance for finish grading of the structure.

Rationale for Mitigation

Construction emissions would be reduced by idling time restrictions, using emission reduction technologies, maintaining equipment in proper working order, compliance with State measures calling for non-road engine standards certifications, fugitive dust control measures, and reducing activity on unpaved surfaces. Particulate filters can reduce NO_x emissions by 1.6 to 18 percent, and PM emissions by 20 to 62.9 percent. Combined use of diesel particulate filters/catalysts are available for certain models of engines and certain model years that can reduce diesel particulate emissions by 25 percent for Level 1 particulate controls, by 50 percent for Level 2 particulate controls (which includes alternative fuels), and by 85 percent for Level 3 particulate controls. Certain diesel particulate catalysts can also reduce NO_x emissions by 25 percent. Use of alternative diesel fuel would reduce NO_x and PM emissions by 14 and 63 percent, respectively, compared to use of conventional diesel (CARB 2001). Full implementation of these measures would ensure Impact AQ-1 remains less than significant.

Impact AQ-2: Increase in Emissions from Operations

The Project would increase fugitive emissions from facilities at Pier 421-2, the EOF, and the pipeline used to transport produced oil (Less than Significant).

Impact Discussion

Project operational emissions would consist primarily of fugitive emissions from piping components, well heads and well cellars at Pier 421-2, as well as valves and other components located along the pipelines used to transport the oil (Table 4.4-6). NO_x is not a pollutant associated with fugitive emissions from component leak paths and therefore would not be emitted from these sources; however NO_x operational emissions from the EOF are currently 10 tons/year and would increase by 0.38 tons/year with increased EOF operations for processing PRC 421 oil (see Appendix D). This would still be below the 25 ton/year threshold for NO_x.

Peak daily emissions are estimated to be well below daily thresholds of significance for all criteria pollutants, and would be less than significant. These emissions would also not reach the annual threshold of significance of 25 tons per year.

Table 4.4-6. Estimated Operational Emissions

	Pounds/Day					Tons/Year				
	NO_x	**ROC**	**CO**	**SO_x**	**PM_{10}**	**NOx**	**ROC**	**CO**	**SO_x**	**PM_{10}**
Fugitive Emissions from Pier[1]	N/A	2.096	-	-	-	N/A ~~0.583~~	0.383	-	-	-
Line 96 Pipeline Increased Throughput[2]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Increased EOF Processing[3]	N/A ~~3.794~~	18.925	20.827	1.795	0.645	N/A ~~0.692~~	3.454	3.801	0.328	0.118
Total	*N/A ~~3.794~~*	*21.021*	*20.827*	*1.795*	*0.645*	*N/A ~~1.275~~*	*3.837*	*3.801*	*0.328*	*0.118*
Significance Thresholds	55	55	NA	NA	80	25	25	25	25	25
Thresholds Exceeded?	No	No	NA	NA	No	No	No	NA	NA	No

[1] Refer to Appendix D for calculations of fugitive emissions.
[2] Because the Line 96 Modification Project EIR (Santa Barbara County 2011) proposes to keep the pipeline full at all times, the 3.6% increase in Project throughput would not be expected to increase fugitive pipeline emissions.
[3] Based on increase of 150 barrels of oil per day (BOPD) from current operations at EOF as described in the Line 96 Modification Project Final EIR (Santa Barbara County 2011). Assumes increase in fugitive emissions would be linear with increased volume, which likely produces conservatively high estimates.

Mitigation Measures

None required.

Impact AQ-3: Odor Emissions from Operation

The Project could potentially result in increased nuisance odor events (Less than Significant).

Impact Discussion

Releases of odorous compounds such as H_2S or petroleum gases could create nuisance odors affecting adjacent areas used for recreation, and residential areas within 0.6 mile and a school within 0.8 mile of the Project site. The potential for increased odors from the introduction of PRC 421 crude oil into the Line 96 pipeline would be minimal because the PRC 421 oil would represent only 3.61 percent of the total oil transported through the pipeline, most of which is from Platform Holly, which produces approximately 4,000 barrels of oil per day (BOPD) (City of Goleta 2013).[9] Odor nuisance due to increased venting resulting from mixing oils of different vapor pressures is expected to minimally add to existing odors from oil well operation. Potential oil spills could create objectionable odors due to evaporation of odorous compounds from the spilled oil surface. However, oil produced from the PRC 421 is sweet and low in sulfur

[9] Estimate is based on an estimated instantaneous production from PRC 421 not exceeding 500 BOPD and an average 150 BOPD for the first 2 years, dropping to 50 BOPD after this initial period.

content, thus odors from the Project due to H_2S are anticipated to be minimal. Any increase in odorous compounds releases would be a significant impact as it would violate APCD Rule 303.

Mitigation Measures

None required.

Impact AQ-4: Project Would Result in a Net Increase in GHG Emissions

Project oil and gas production and drilling and construction would increase GHG emissions. (Less than Significant with Mitigation)

The Project would generate emissions of GHGs that are known to contribute to global climate change. The majority of Project GHG emissions would be CO_2, and Project construction would directly contribute approximately 78 metric tons of CO_2e to the atmosphere (Appendix D). Operational GHG emissions from the Project would be limited to fugitive emissions from valves and fittings, and indirect emissions related to electricity consumption for pumping of produced oil (Table 4.4-7).

The Project would also contribute to current supplies of oil and gas in California. Based on 421 production estimates of 150 BOPD in the first month, a linear rate of decline from 150 to 50 BOPD in the first 2 years, and leveling off at 50 BOPD over the next 18 years, approximately 402,000 barrels would be produced over the Project lifetime.

Table 4.4-7. Estimated GHG Emissions from Project Operation

	Estimated GHG Emissions (metric tons CO_2e[1] per year)
Fugitive Emissions from Line 96 related to additional PRC 421 oil[2]	2.1
Fugitive Emissions from Pier 421-2[3]	8.0
Indirect Emissions from Electricity Consumption for Oil Pumping[4]	157.3
Total	*167.4*

[1] CO_2 equivalents, which provide a summary of all GHGs, taking into account their relative global warming potential. Refer to Appendix D for details.

[2] Because the Line 96 pipeline is typically filled with oil (and thus producing fugitive emissions through leak paths), additional PRC 421 production would have little effect on fugitive emissions from the pipelines. However, for a conservative analysis the Project's proportional share of fugitive emissions from the pipelines has been included.

[3] Fugitive emissions for Pier 421-2 operation was calculated based on the number of valves and connections estimated by Venoco to be required, and factors for leakage of valve and connections from SBCAPCD permitting of the EOF.

[4] GHG emissions from pipeline transportation were estimated based on the projected electricity consumption of 2.94 gigawatt-hours per year identified in the Line 96 Modification Project EIR (Santa Barbara County 2011), and correspond to pipeline transportation to the tie-in with the PAAPLP Coastal Pipeline. The number presented is the Project share of pipeline transport at the average monthly output expected during the highest production rates at the commencement of production (i.e., 150 BOPD for a maximum of 3.61 percent of total transport in the first year).

As discussed in Section 4.14, Energy and Mineral Resources, California's oil refineries processed approximately 618,999,000 barrels of crude oil into a variety of products in

2012. The total amount of oil produced over the production period of the Project represents less than 0.01 percent (approximately 0.0003 percent at peak year production) when compared to California supplies in 2012 (618,999,000 barrels). This is a nominal amount of production compared to California's existing oil and gas supplies and would incrementally contribute to the current supply of oil and gas.

Based on CO_2 emission factors from the U.S. EPA (2013), end uses of the estimated total oil produced from the Project (402,000 barrels) could potentially produce a total of approximately 190,545 tons (0.17 $MMTCO_2e$). See Appendix D for CO_2 emissions by oil product per barrel. Lifetime emissions from the refined oil produced from PRC 421 represent less than 0.04 percent of the 451.6 $MMTCO_2e$ GHG emissions produced in California in 2010 (CARB 2013). This is a gross estimate of GHG emissions from the eventual use of refined oil generated by the Project. Determining the exact products yielded and emission comparisons from oil produced from PRC 421 is speculative and subject to change depending on the refineries processing the oil, the CO_2 emissions from varying fuel products, and the varying sources consuming such products. As provided above, this Project would incrementally contribute to the current demand and consumption for oil and gas; however, it is too speculative at this time to conclude the Project would have any overall net changes in GHG emissions from the end use of such products. The CSLC has no control over the ultimate end products that may be produced from the oil from recommissioning PRC 421 and no authority to regulate GHG emissions from the use of such products.

Presently there are no State or Federal thresholds for GHG emissions. Subsequent to the adoption of AB 32, there was little regulatory guidance with regard to analyzing GHG emission impacts in CEQA-compliant documents. The State Office of Planning and Research promulgated new regulations on March 18, 2010, amending the State CEQA Guidelines to address evaluation of GHG emissions in CEQA documents. Although the new regulations do not require lead agencies to adopt significance thresholds with respect to GHG emissions, they do require lead agencies to determine the significance of such emissions-based data. Currently the Santa Barbara County APCD is proposing updates to their Environmental Review Guidelines to include guidance for evaluating the significance of the impacts of GHG emissions from new or modified stationary sources; however, as of the publication of this EIR there are no County thresholds for GHG emissions from projects. Until such time the Santa Barbara County APCD establishes GHG thresholds, the threshold of "zero net increase" for GHG emissions recommended by CSLC staff would require mitigation and would be less than significant with implementation of MM AQ-4.

Mitigation Measures

The production of GHG emissions from Project construction would be reduced by the implementation of MM AQ-1a through MM AQ-1e. GHG emissions from Project operations would be mitigated by the following MM:

MM AQ-4 Greenhouse Gas Monitoring and Reduction Strategies. The Applicant shall be required to quantify and report annually the greenhouse gas (GHG) emissions associated with Project operations using methodologies prescribed for the California Climate Action Registry General Reporting Protocol, the California Air Resources Board (CARB) Compendium of Emission Factors and Methods to Support Mandatory Reporting of Greenhouse Gas Emissions (CCAR 2009, CARB 2007c) and the U.S. Environmental Protection Agency (EPA) Mandatory Reporting of Greenhouse Gases annual reports. Copies shall be provided to the California State Lands Commission (CSLC) and Santa Barbara County Air Pollution Control District (APCD) staffs, including a reporting of all mitigation measures applied. In addition, Venoco shall prepare and submit a GHG emission reduction program to CSLC staff for review and approval prior to ~~issuance of the Land Use Permit~~commencement of construction. Venoco shall ~~implement the approved GHG emission reduction program~~ detail specific measures to reduce net GHG emissions to zero on an annual basis over the life of the Project. Annual updates shall specify any changes in such measures required to meet targeted reductions. The following measures, or their equivalent, shall be used individually or in combination to achieve such reductions:

- On-site increased equipment efficiencies or operational modifications such as using more efficient de-watering systems at the EOF or other measures to reduce the need for crude heating;
- Implementation of off-site GHG reduction programs in Santa Barbara County as approved by the APCD; and/or
- Purchase of "credits" ~~from a source~~ or offsets through existing adopted plan or mitigation program such as CARB's Cap-and-Trade program or Climate Action Reserve, the City of Goleta's Climate Action Plan, or other equivalent approved or certified program that is verified by the CSLC staff or CARB.

Rationale for Mitigation

This measure implements the requirements of Section 15126.4, subdivision (a), of the State CEQA Guidelines regarding GHG emissions. Consistent with these Guidelines, this measure would allow for:

- Funding of measures in an existing adopted plan or mitigation program designed to reduce GHG emissions. These Plans include CARB's Cap-and-Trade program or Climate Action Reserve, the City of Goleta's Climate Action Plan or other equivalent approved or certified program.

- Reductions in emissions resulting from the Project through implementation of project features such as improvements in efficiency.
- Annual monitoring and reporting of GHG emissions and required reduction measures.

MM AQ-4 requires the annual quantification of GHG emissions (already required by State mandatory GHG reporting programs pursuant to Cal. Code Regs., tit. 17, § 95101 and AB 32 California cap-and-trade programs under AB 32 [Cal. Code Regs., tit. 17, § 95802]) to determine the level of reductions needed each year. This EIR estimates a reasonable worst-case level of GHG emissions during the peak year of operations (with peak gas and crude production levels as described in Section 2, Project Description). Most years, GHG emissions would be less than that tabulated in this document.

The GHG emissions increases are estimated to be above the threshold applied in this evaluation. If emissions levels exceed thresholds, implementation of reduction measures is required to reduce these emissions to levels below the thresholds. As the future operational characteristics of the processes cannot be exactly defined, GHG emission reduction requirements would be determined each year. For example, the crude oil/emulsion mix from the PRC 421 will vary over its productive life and will require varying levels of heating during processing.

Although there is uncertainty with the absence of APCD regulatory requirements to control GHG emissions and the exact levels of efficiency improvements that could be implemented at the EOF, the emissions reductions that may be needed are not substantial and could be achieved with onsite operational efficiency improvements. For example, GHG reductions could be achieved by using high efficiency emulsion heaters to replace the existing heater treaters. Reductions of more than 200 MT CO_2e could be achieved depending on the heater design. In the absence of other onsite measures, the Applicant could also obtain off-site offsets or aid off-site GHG reduction projects to reduce GHG emissions to the zero threshold through reductions in emissions at other facilities, or by purchasing “credits” from the California Climate Action Reserve or California’s Cap-and-Trade Program.

The incorporation of State accredited programs, such as Climate Action Reserve and Cap-and-Trade and local adopted GHG reduction programs listed under the City of Goleta Climate Action Plan, provide several options for the Project GHG reduction program to achieve targets. The Applicant may choose to incorporate the following State-accredited programs or local GHG reduction strategies into the GHG reduction program:

- The Cap-and-Trade program administrated by CARB is a statewide initiative to achieve the requirements set by AB 32. It establishes market-based GHG regulation, establishing a price on carbon emissions, and sets a firm annual cap

on these emissions. Subsequently the cap will decline three percent per year. Further details on the Cap-and-Trade program may be found at http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm.

- The Climate Action Reserve establishes standards for carbon offset projects, oversees independent third-party verification bodies, issues carbon credits generated from projects and tracks the transaction of credits in a transparent, publicly-accessible system. Further information may be found at http://www.climateactionreserve.org/.

- The City of Goleta Climate Action Plan identifies various measures to effectively meet GHG reduction targets outlined in AB 32. These include a number of City-aided outreach programs that may be selected for the funding of off-site mitigation projects. The City of Goleta Climate Action Plan is available online at http://www.projectgoleta.com/wp-content/uploads/2014/06/COG-Final-Climate-Action-Plan.pdf

Therefore, impacts would be less than significant with mitigation.

Table 4.4-8. Summary of Air Quality Impacts and Mitigation Measures

Impact	Mitigation Measures
AQ-1: Increase in Emissions from Construction	**AQ-1a.** Prohibit Unnecessary Truck Idling. **AQ-1b.** Use of Diesel Emission Reduction Measures. **AQ-1c.** Maintain Construction Equipment. **AQ-1d.** Compliance with State Portable Air Toxics Control Measure. **AQ-1e.** Establish On-Site Equipment Staging Area and Worker Parking Lots. **AQ-1f.** Fugitive Dust Management
AQ-2: Increase in Emissions from Operation	None required.
AQ-3: Odor Emissions from Operation	None required.
AQ-4: Project Would Result in a Net Increase in GHG Emissions	**AQ-4.** Greenhouse Gas Monitoring and Reduction Strategies. **AQ-1a.** Prohibit Unnecessary Truck Idling. **AQ-1b.** Use of Diesel Emission Reduction Measures. **AQ-1c.** Maintain Construction Equipment. **AQ-1d.** Compliance with State Portable Air Toxics Control Measure. **AQ-1e.** Establish On-Site Equipment Staging Area and Worker Parking Lots.

4.4.5 Cumulative Impacts Analysis

Project impacts were assessed in conjunction with the projects identified in Table 3-3.

Impact AQ-5: Project Would Contribute to Cumulative Air Quality Impacts

The Project would contribute to the cumulative increase in emissions in Santa Barbara County, which is currently in non-attainment for the State Ambient Air Quality Standards for ozone and PM_{10} (Less than Significant).

Impact Discussion

The Project would contribute to the cumulative increase in emissions in Santa Barbara County, which is currently in non-attainment with California O_3 and PM_{10} standards. However, because Project operational emissions would be limited to fugitive emissions from pipeline valves and joints, this contribution would not be significant. Two coastal oil development projects proposed in Santa Barbara County (see Section 3, Cumulative Impacts Methodology)—the Venoco Carpinteria Onshore project and Carpinteria Field Redevelopment Project (located about 25 miles and 21 miles southeast of the Project site, respectively)—are individually likely to have significant air quality impacts, along with other residential, commercial, institutional, or recreational projects in the Project area. For example, nearby residential projects could have significant air quality impacts associated with new vehicle trips and any wood-burning (rather than gas-burning) fireplaces. Because the Project would have a negligible contribution to these cumulative impacts, this impact is less than significant. Project operations would also contribute to the cumulative increase in GHG emissions, which would be less than significant with implementation of MM AQ-4 requiring no net increase of GHG emissions. The end uses of the estimated total oil produced from the Project would also cumulatively contribute to GHG emissions. Lifetime emissions from the refined oil produced from PRC 421 represent less than 0.04 percent of the 451.6 $MMTCO_2e$ GHG emissions produced in California in 2010 (CARB 2013). Based on the demand of oil based products, this contribution would come from other sources if not produced from PRC 421.

Mitigation Measures

None required.

4.5 HYDROLOGY, WATER RESOURCES, AND WATER QUALITY

This section addresses potential impacts on marine and freshwater hydrology, water resources, and water quality resulting from recommissioning State Oil and Gas Lease PRC 421 (PRC 421). The environmental setting focuses on the most relevant characteristics of existing marine and onshore water resources in the Project vicinity. Offshore currents, wave action and marine and freshwater quality are important in understanding the effects of a possible accidental release of oil or other hazardous materials on these resources. The impact analysis evaluates the potential effects of the Project, including cumulative impacts, and identifies potential mitigation measures (MMs). This section does not address water use as the Project would only have one-time limited fresh water use for pipeline flushing. This section relies on information from various sources including the National Oceanic and Atmospheric Administration (NOAA), State Water Resources Control Board (SWRCB), Central Coast Regional Water Quality Control Board (RWQCB), Santa Barbara County, and Scripps Institution of Oceanography.

4.5.1 Environmental Setting

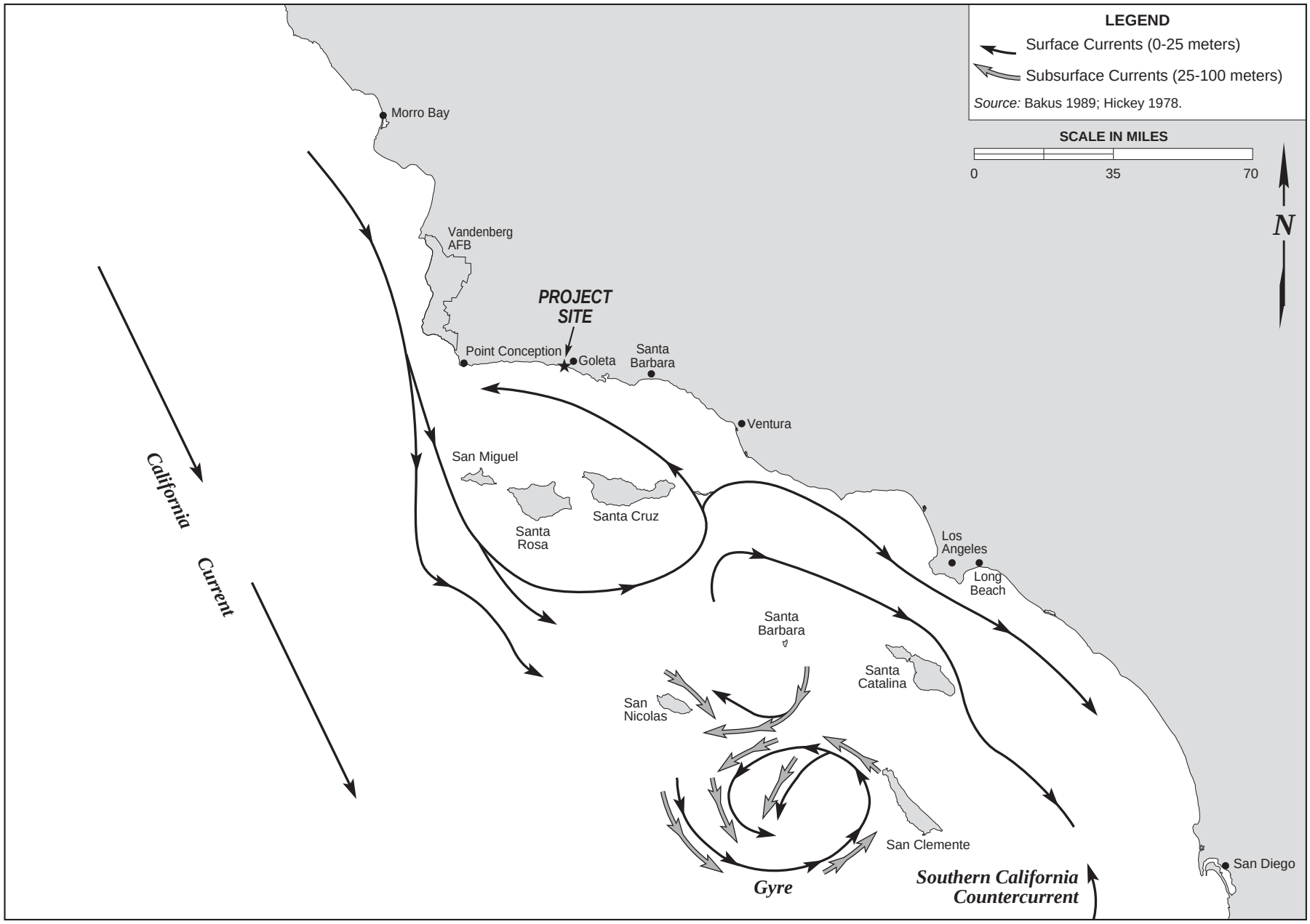
The primary study area for marine and freshwater hydrology, water resources, and water quality includes the nearshore marine environment in the Project vicinity, Bell Canyon and Tecolote Creeks to the northwest, and Devereux Creek to the southeast. The secondary study area includes the waters of the Santa Barbara Channel, the greater Southern California Bight, and the drainages that are located along the Line 96 pipeline to Las Flores Canyon (LFC).

Marine Environment

Regional Oceanographic Processes

The Project site is located along the landward edge of Santa Barbara Channel, near the western edge of the City of Goleta, along an area known as the Ellwood Coast. Major currents in the Project vicinity include the California Current, which dominates, and the Southern California countercurrent that flows northward along the continental shelf (Figure 4.5-1).

The California Current is an eastern-boundary current that flows south, carrying cool, nutrient-rich water from the sub-arctic region of the Pacific (DiGiacamo et al. 1995). Waters in the California Current are characterized by seasonably stable, low salinity (32 to 34 parts per thousand [ppt]), low temperature (55 to 68 °Fahrenheit [°F]), and high nutrient concentrations.



Ocean Current System in the Project Vicinity

FIGURE 4.5-1

The Southern California countercurrent carries warm, saline, and less oxygenated waters from Baja California into the Channel. Typically, winds blow from the northwest, parallel to the central California coast. The Southern California countercurrent is strongest when these winds relax between the months of December and February. When the winds gain strength between March and June, the Southern California countercurrent relaxes and surface water near the coast is transported offshore and down the coast and replaced by cooler, nutrient-rich seawater from underneath. This process is referred to as upwelling.

Surface and Subsurface Flows in the Santa Barbara Channel

The mean flows of surface waters within the Channel are counter-clockwise and monthly average flows reach 3 knots (nautical miles [nm] per hour) during most of the year (Winnant et al. 1999). However, currents and surface transport are highly complex within the Channel and are affected by periodic winds, coastal promontories, and subsurface bathymetric features. Subsurface currents are important in determining the fate of oil and other contaminants that may be released. Average monthly current profiles in the Channel are often strongly sheared and rotate in a counter-clockwise direction as depth increases. Average flow speed of subsurface flows increases with depth throughout the majority of the year. The exception is during the late fall when the surface flows intensify and become comparable to the speed of subsurface flows (CSLC 2009; NOAA 2005).

Local Wave Action

Waves generated on the surface of the ocean develop from a mixture of remotely generated ocean swells and local winds. Due to the presence of the Channel Islands off the coast, the Santa Barbara Channel is comparatively sheltered from swells generated outside the Channel; consequently, wave heights within the Channel are typically low, generally ranging from three to six feet throughout most of the year. Waves are typically larger during winter storms that encroach on the California coastline from the west, although the coastline is sheltered from North Pacific swells by Point Conception (CSLC 2009). However, large swells from winter and fall storms occasionally penetrate into the Channel and create high surf conditions along the coast. For example, El Niño conditions in 1983 generated very large surf, which combined with exceptionally high tides to cause extensive damage along normally calm sections of the coastline within the Channel. More recently, storms in the winter of 2005 to 2006 generated very high surf along the Goleta coast, with wave heights exceeding 15 feet at exposed point breaks (NOAA 2005).

Waves land on the mainland shore of the Channel at a slightly oblique angle, generally from the west. This drives a long-shore current toward the east within the surf zone (Hickey 1993). As a result, the net transport of particulates suspended in the water

column near shore is toward the east, in contrast to the typically westward transport that is observed farther offshore.

Marine Water Quality

Marine water quality is affected by a number of factors including oceanographic processes, contaminant discharge, erosion, and freshwater inflow. Petroleum development activities, commercial and recreational vessels, natural hydrocarbon seeps, river runoff, municipal wastewater outfalls, and minor industrial outfalls contribute to the increased presence of nutrients, trace metals, synthetic organic contaminants, and pathogens in ocean waters and sediments.

The presence and transport of nutrients, trace metals, and other contaminants in marine water affect and are affected by five seawater properties: temperature, salinity, turbidity, alkalinity, and dissolved oxygen. Vertical profiles of water quality properties measured in the Channel between 1999 and 2001 are displayed in Figure 4.5-2.

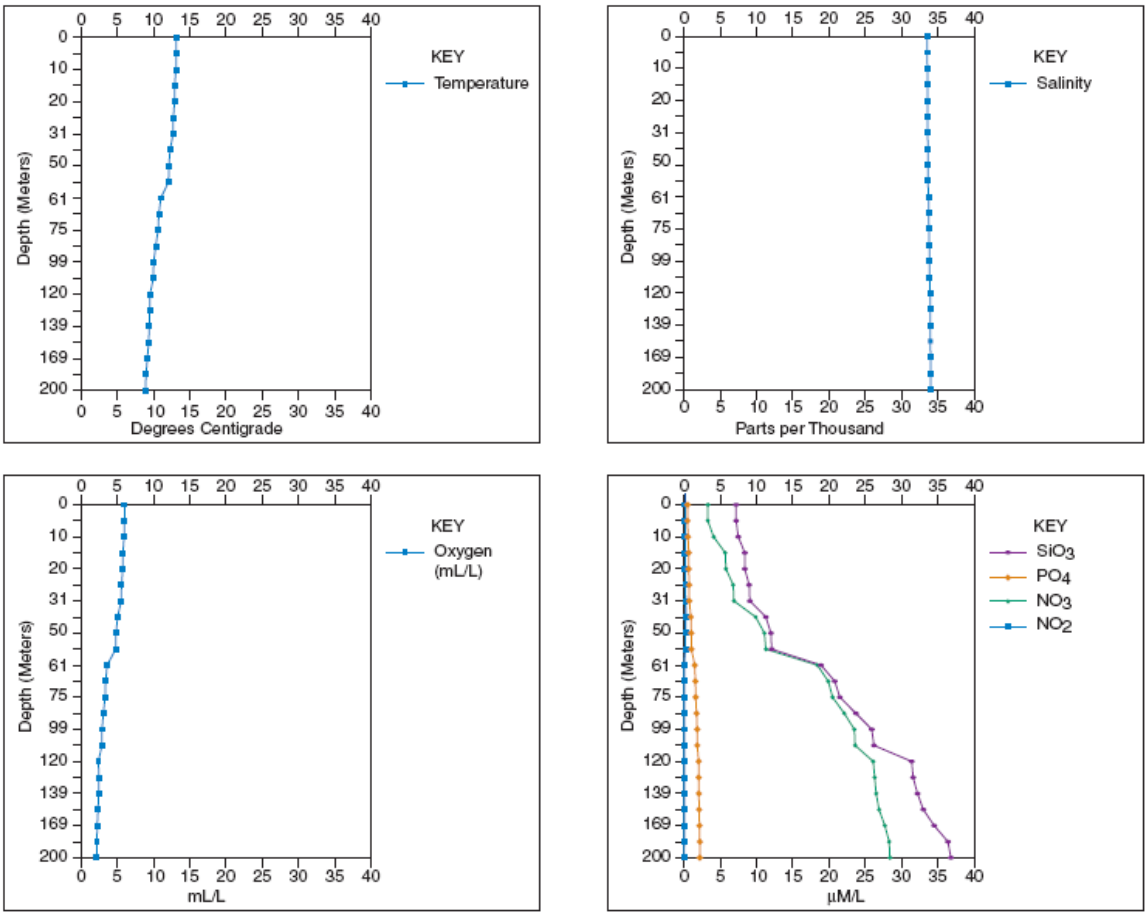


FIGURE 4.5-2. VERTICAL PROFILES OF WATER QUALITY PROPERTIES IN THE SANTA BARBARA CHANNEL

Source: Scripps Institution of Oceanography 2000.

The vertical density structure or stratification (determined by temperature and salinity at increasing depths within the water column) determines the amount of vertical mixing that occurs within the water column. Highly stratified waters inhibit vertical mixing of water, nutrients, and contaminants. Therefore, a contaminant introduced by a point source (e.g., a leak in a pipeline at a specific depth) would remain within the water column and would not rapidly rise to the ocean surface or sink into the bottom sediments. In the winter and spring, the Channel is characterized by cold, high nutrient surface water, and a shallow thermocline (i.e., highly stratified). In the summer and fall the Channel is characterized by warm, low nutrient surface water, and a deep thermocline (i.e., highly mixed) (Santa Barbara Long-Term Ecological Research Program 2003).

Within the mixed surface waters, dissolved oxygen levels are uniformly high and near saturation. This layer is known as the euphotic zone due to the penetration of light in this zone. Correspondingly, nitrate and phosphate are depleted in the surface mixed layer due to uptake by primary production (phytoplankton blooms) in the euphotic zone. Wind-driven upwelling, which periodically replenishes surface waters with nutrient-rich water from below, is an important feature of the Channel and is largely responsible for its productive fishery. The presence of nutrient-rich water (high levels of nitrates and phosphates) near the sea surface significantly enhances primary productivity. Below the surface, oxygen concentrations steadily decrease with depth due to losses from respiration and decomposition (CSLC 2009). Turbidity in the euphotic zone is determined by the concentration of suspended particulate matter (PM) near the sea surface. Turbidity is increased in coastal waters as a result of storm runoff, sediment re-suspension, discharge of wastewater, and phytoplankton blooms.

Trace Metals

Ambient trace metal concentrations in the water column typically occur at levels below the detection limit of standard analytical methods. Therefore, to measure such contaminants in seawater, resident California mussels (*Mytilus californianus*) are used as indicator organisms to indirectly monitor water quality. Mussels accumulate contaminants directly from the seawater and ingested food. Measuring the level of concentrated contaminants in mussels in samples over specific periods of time provides a measure of the concentration of contaminants in the water column over time.

The State Mussel Watch Program (run by the SWRCB) has been monitoring the concentration of contaminants in mussels since 1971 and provides a long-term indication of the ambient level of trace metals along the California coast. The objective of this program is to examine trends in trace metals along the coast of California and identify areas where spikes in certain metals occur (SWRCB 2004). Trace metal concentrations at the nearest sampling location to the Project site, Santa Barbara

Harbor, were higher than the average concentration of trace metals at all sampling locations in the Channel with the exception of silver, arsenic, nickel, and selenium.

Petroleum Hydrocarbons

Petroleum hydrocarbons are organic contaminants that enter the ocean both naturally and as the result of human error (i.e., oil spills). The principal sources of petroleum hydrocarbons in the Channel include:

- Urban runoff of road material, auto exhaust, lubricating oils, gasoline, diesel fuel, and tire particles;
- Produced-water discharges;
- Atmospheric deposition from the combustion of fossil fuels;
- Vessel leaks, spills, and exhaust;
- Leaching of creosote from wooden pilings;
- Oil and grease contained in municipal sewage effluent; and
- Natural oil seeps.

Natural seeps found along the coasts of Santa Barbara and Ventura counties discharge significant quantities of oil and tar to the near-shore waters of the Channel. Studies conducted in the late 1970s found that between 16,000 and 240,000 barrels of oil enter the Channel annually from natural seeps. Further, the Western States Petroleum Association estimates 150 to 170 barrels of oil seep from the sea floor near Coal Oil Point (approximately 5 miles southeast of the Project area) each day (Helix 2006). Consequently, the intertidal zone at Goleta, particularly along the Ellwood Coast in the Project vicinity, frequently experiences naturally occurring oil and tar from the Coal Oil Point Seep.

Generally, oil entering the ocean naturally through seeps does not severely degrade open ocean water quality. Oil spills cause the most degradation to water quality during and for a few weeks after each spill. Most components of crude oil are not soluble in seawater and float on the sea surface; therefore, impacts to the water column are limited. In addition, aromatic hydrocarbons, such as benzene and toluene, which are considered the most toxic to marine life, evaporate quickly after a spill. Other weathering processes, such as spreading, dissolution, dispersion, emulsification, photochemical oxidation, and microbial degradation, decrease the volume of the oil slick and increase the viscosity (thickness) of the spilled oil. Consequently, mortality of marine organisms resulting from the physical effects of smothering and coating is the greatest concern. However, toxicological effects from exposure to aromatic hydrocarbons can be significant if unweathered oil reaches the shoreline, particularly in

areas with rocky shorelines, enclosed embayments, estuaries, and wetlands. These impacts are discussed further in Section 4.6, Marine Biological Resources.

Aquatic Environment

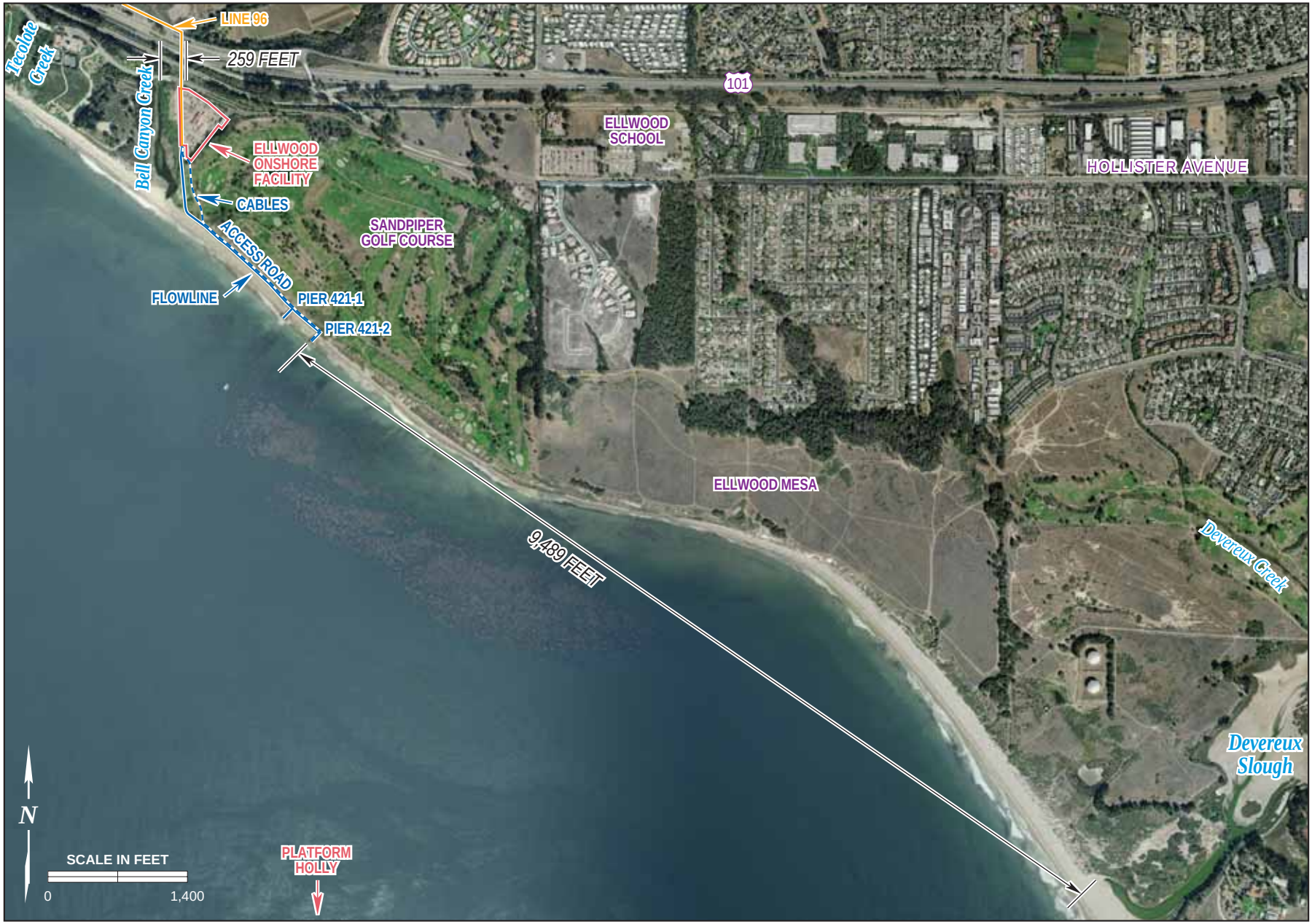
Surface Water

Primary Project components are situated in the surf zone, near shore areas and on low-lying coastal areas immediately inland from the beach. The nearest drainages to the Project area are Bell Canyon and Tecolote Creeks to the northwest and Devereux Creek to the southeast. Bell Canyon and Tecolote Creeks drain primarily rural and agricultural areas northwest of the urban areas of the City of Goleta and discharge into lagoons at the west of the Project site. Devereux Creek drains a largely urbanized watershed, which encompasses the western portions of the City of Goleta, and empties into the Devereux Slough located approximately 1.8 miles southeast of the Project area. Runoff from the inland portions of the Project site could potentially drain into Bell Canyon Creek (Figure 4.5-3).

Four wetlands are located near the Project site: Bell Canyon Creek and three wetland areas that are supported by seeps located along the toe of the bluff adjacent to the Project access road. The largest (approximately 5,440 square feet) and most diverse of the three seep-related wetlands is located east of the access road terminus and Well 421-2. The dominant species in all of these seep-related wetland areas is saltgrass (*Distichlis spicata*), and the surface waters present in at least the larger seep-related wetland are sufficient to support breeding populations of Pacific tree frogs (*Pseudacris regilla*) and western toads (*Anaxyrus boreas*), and as habitat for avian species.

Water Quality

The SWRCB (2010) has listed Bell Canyon Creek as impaired for nitrates under their 303d listing program. Water quality sampling was performed during storm events in Bell Canyon, Tecolote, and Devereux Creeks as part of the countywide “Project Clean Water” program until 2002. The most recent Project Clean Water quality analysis report that includes data for these creeks is for rain year 2001 to 2002. During this rain year, both Bell Canyon and Devereux Creeks exceeded the maximum contaminant standards for copper, mercury, and zinc. Tecolote Creek also exceeded the standard for copper and zinc, but not mercury. In addition, Bell Canyon and Tecolote Creeks exceeded the maximum diazinon standard and Devereux and Tecolote Creeks exceeded the maximum standard for chlorpyrifos. Tecolote Creek also exceeded the maximum standard for malathion. Oil and grease, and total petroleum hydrocarbon (TPH), were not detected in any of the samples for either of these creeks (Santa Barbara County 2002).



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Surface Water Resources [Revised]

FIGURE 4.5-3

Water quality data collected during two prior rain years (1999 to 2000 and 2000 to 2001) were similar to 2001 to 2002 data. During the 2000-2001 rain year, both Bell Canyon and Devereux Creeks exceeded the standard for copper, mercury and zinc, while Tecolote Creek only exceeded the standard for copper and zinc. Similarly, all three creeks exceeded the standard for diazinon. In addition, Bell Canyon and Tecolote Creeks exceeded the standard for chloropyrifos. Tecolote Creek also exceeded the standard for malathion. Oil and grease and TPH were not detected in any of the samples for these creeks (Santa Barbara County 2001). Water quality sampling during the 1999 to 2000 rain year detected oil and grease and TPH during one sampling event of Bell Canyon Creek. In addition, all three creeks exceeded the standard for copper, lead, and zinc. Bell Canyon Creek also exceeded the standards for arsenic, chromium, diazinon and malathion (Santa Barbara County 2000).

Groundwater

The Project area is adjacent to the West Subbasin of the Goleta Groundwater Basin. This underground reservoir is considered hydrologically separate from the North and Central Subbasins of the Goleta Groundwater Basin. Available storage in the West Basin is estimated to be 7,000 acre-feet (af). Based on the most recent analysis, the West Subbasin is in a state of surplus. However, water in this subbasin is considered poor quality and low yield, but is classified as beneficial use drinking water by the RWQCB under the *Water Quality Control Plan for the Central Coastal Region* (Central Coast Basin Plan) (Santa Barbara County 2005).

4.5.2 Regulatory Setting

Federal and State laws, regulations, and policies related to this issue area are discussed in Table 4.0-1;e local laws, regulations, and policies are discussed below.

Local

Santa Barbara County Fire Department (SBCFD)

As noted in Sections 4.1, Geological Resources, and 4.2, Safety, the SBCFD is the overseeing agency for implementing local regulations in the event of a hazardous waste or petroleum spill.

Project Clean Water

The Santa Barbara County Water Agency, Project Clean Water was established to reduce or eliminate discharges of pollution into creeks, rivers, ponds, or ocean waters, through implementation of National Pollutant Discharge Elimination System (NPDES) permit requirements and applicable regulations. This agency completes storm water sampling at select locations throughout the county. The County Water Agency is

currently in the process of adopting provisions of the Storm Water Phase II Final Rule, which requires the operator of a regulated small municipal separate storm sewer system (MS4) to obtain NPDES permit coverage because discharges of storm water from such systems are considered point sources.

City of Goleta General Plan/Coastal Land Use Plan (GP/CLUP)

The City of Goleta adopted its GP/CLUP in November 2006. Included as part of its plan are the policies of the California Coastal Act. GP/CLUP policies relevant to the Project are described below:

- Land Use Policy 10.4(b) – If resumption of production is considered for approval for PRC 421, on-pier processing of the oil at a site within the tidal zone should not be approved unless it is demonstrated that there is no feasible and less environmentally damaging alternative to processing on the pier. The development of new processing facilities over the ocean would result in an increased level of risk of environmental damage.
- Policy CE 2 – Preserve, restore, and enhance the physical and biological integrity of Goleta's creeks and natural drainages and their associated riparian and creekside habitats.
- Conservation Guiding Principle 5 – Protect water quality and the biological diversity of Goleta Slough and Devereux Slough.
- Conservation Guiding Principle 9 – Manage water resources at the watershed level cooperatively with other agencies to maintain high groundwater and surface water quality and to protect marine aquatic habitats.
- Policy CE 6 – Preserve and protect the biological integrity of marine habitats and resources within and adjacent to Goleta.
- Policy CE 10 – Manage groundwater and surface water resources to promote water quality and quantity adequate to support natural ecosystem processes and functions.

4.5.3 Significance Criteria

Impacts to water quality would be considered significant if:

- Contaminant concentrations within the Channel Islands National Marine Sanctuary (CINMS) or within Santa Barbara Channel coastal wetlands measurably increase relative to background concentrations;
- Water quality objectives contained in the Central Coast Basin Plan are violated;
- Water quality objectives contained in the *California Ocean Plan* are violated;
- Water quality criteria in the Proposed California Toxics Rule are violated;

- Project operations or discharges that change background levels of chemical and physical constituents or elevate turbidity producing long-term changes in the receiving environment of the site, area, or region, thereby impairing the beneficial uses of the receiving water occur; or
- Contaminant levels in the water column are increased to levels with the potential to cause harm to marine organisms even if the levels do not exceed formal objectives in the Central Coast Basin Plan or *California Ocean Plan*.

4.5.4 Impacts Analysis and Mitigation

Erosion and sedimentation from short-term construction activities, including trenching for installation of two electrical cables and repair of the 6-inch line beneath the existing access road, could adversely affect surface water quality in Bell Canyon Creek. However, impacts would be reduced through the employment of standard erosion and sediment control Best Management Practices (BMPs) that would be outlined in the Erosion and Sediment Control Plan, required by the City of Goleta Grading Ordinance, including watering of disturbed soils, silt fences, and temporary sediment barriers. In addition, Venoco would be required to develop a Storm Water Pollution Prevention Plan (SWPPP) for construction activities and obtain a General Construction Permit from the SWRCB, which would prevent contaminated runoff from the construction site, which could contain trace metals or small amounts of petroleum hydrocarbons, from entering Bell Canyon Creek. Further, as construction would last for approximately 45 days; impacts to surface water quality would be short-term and less than significant.

However, the Project would incrementally increase the potential for an accidental release of limited amounts of crude oil to the marine environment. Analyses of risk presented in Section 4.2, Safety, indicate the limited possibility of a release of crude oil into the marine environment, including a potential for undetected slow leaks. In addition, resuming production and prolonging the life of the aging caisson on Pier 421-2 could increase the potential for a release of contaminated sediment to affect water quality (see Section 4.3, Hazardous Materials).

Table 4.5-1, located at the end of Section 4.5.4, provides a summary of water-related impacts and recommended MMs to address these impacts.

Impact WQ-1: Temporary Construction Impacts to Marine Water Quality

Short-term construction activities along the access road and seawall, and in the surf zone could adversely affect marine water quality (Less than Significant with Mitigation).

Impact Discussion

With completion of the recent emergency repairs to the seaward-facing wall of the caisson at Pier 421-2, construction activities on the beach and within the surf zone would be limited, but may include use of vehicles and other construction equipment on the beach for seawall repair, pipeline construction support, and Pier 421-2 improvements. Additionally, decommissioning activities at Pier 421-1—which would include grading and excavation to remove the caisson, pier and piles—and reinforcement of the seawall along the access road would disturb material in and adjacent to the surf zone.

Potential environmental concern associated with excavation within the surf zone is that potentially contaminated sediments would be exposed or contaminants would be mobilized through pore water movement to the biologically active zone or overlying water column. While disturbance of sediment can increase turbidity (suspended sediments) in the water column, these effects would be temporary (for the duration of any construction activities) and confined to the immediate Project vicinity. Further, activity would occur within the active surf zone, a naturally turbid area within the ocean environment. Proposed construction activities would disturb sand along the surf zone; however, these sediments would be expected to settle rapidly and would not create extensive turbidity plumes. Therefore, the potential increase in suspended sediments during construction would result in a less than significant temporary impact**.**

In addition to potential turbidity, construction activities on the beach and within the surf zone could release contaminated mud and sand from the caissons and underlying soil to the ocean. Repair activities conducted on the Well 421-1 caissons detected two leaks in the caisson wall which were sampled for contaminants. Results of chemical analyses performed on mud and sand within the caisson revealed the presence of TPH at levels of 100 to 200 parts per million (ppm). Tests for benzene, toluene, ethylbenzene, xylenes, and short-chain hydrocarbons resulted in non-detectable results. In addition, hydrocarbons were detected in the soil surrounding the piers at a depth of 15 feet below ground. Further, analytical sampling conducted in October 2006 on water from the caissons detected trace amounts of arsenic, mercury, and selenium; all amounts were below water quality threshold levels. The potential release of hydrocarbon contaminated sand from subsurface soil and rock soil into the surf zone is would be subject to feasible mitigation as discussed below, and would be less than significant with mitigation.

Mitigation Measures

In addition to the implementation of MM HAZ-1a through HAZ-1d, the following MMs would apply.

MM WQ-1a. Avoidance of High Tides and Silt Curtain. Venoco shall schedule in-water construction efforts to avoid times of high tides (defined herein as tides greater than +5 feet as predicted by the National Oceanic and Atmospheric Administration). Prior to implementation of any in-water construction, affected sediments shall be tested for the presence of hydrocarbons and trace metals. Any potentially contaminated sediment which may be disturbed during caisson repairs would be contained within the Project area for off-site disposal at an appropriate waste facility, and disposed of according to State and Federal regulation. Regardless of the presence of contaminated sediment, Venoco shall install measures to reduce siltation of the nearshore marine environment during in-water construction, potentially including but not limited to a silt curtain, installation of sheet piling, and/ or soil removal techniques such as hydro-displacement and weighted floating. Venoco shall prepare a plan to monitor the performance of the adopted measure and identify thresholds for localized turbidity to ensure that they are performing as expected and not impairing water quality. If it is found that turbidity threshold values are being repeatedly exceeded, construction activities shall be temporarily halted until a better capture solution is implemented. Additionally, in order to protect spawning endangered species, monitoring should occur to ensure that a turbidity plume from construction in the marine environment does not reach the mouth of Bell Creek or Tecolote Creek and that turbidity in the lagoon does not increase as a result of construction activities. If a plume reaches the mouth of the lagoon, construction should be halted until turbidity returns to normal levels.

MM WQ-1b. Water Quality Certification. Venoco shall complete and implement a Spill Prevention, Control and Countermeasures (SPCC) Plan and implement any additional MMs mandated by the State Water Resources Control Board (SWRCB) through the Section 401 water quality certification process.

Rationale for Mitigation

Implementation of the MMs above would reduce potential water quality impacts to below State thresholds. Removal of contaminated sediments from construction zones prior to implementing the decommissioning and removal of Pier 421-1 and any additional required in-water construction activities (if possible without impairing the integrity of Pier 421-2) would prevent the release of petroleum hydrocarbons resulting from Project activities. Removal of contaminated sub-soil mobilized during drilling would prevent it from reaching the surf zone. Erection of a silt curtain would reduce the dispersion of contaminated sediments from the soils surrounding the piers into the water column and prevent elevated turbidity levels within the active surf zone. Full implementation of these measures would reduce Impact WQ-1 to less than significant.

Impact WQ-2: Temporary Construction Impacts to Wetlands

Short-term construction activities along the access road and could adversely affect water quality in adjacent wetlands (Less than Significant with Mitigation).

Impact Discussion

Construction activities along the access road may temporarily affect three small wetlands located between the access road and the Sandpiper Golf Course. Such activities include excavation and installation of subsurface cables for power and system control between the Ellwood Onshore Facility (EOF) and Pier 421-2, and extending and upgrading the existing 6-inch line to accommodate one internal 3-inch flowline from Pier 421-2 to the tie-in at the EOF. These activities may result in a disturbance to wetland habitats and associated plant and wildlife species due to trenching, deposition of spoils, and operation of heavy equipment. Additionally, decommissioning and removal of Pier 421-1 would include construction activities that may impact wetlands along the access road when heavy construction machinery is used to remove the well, pier, and caisson at Pier 421-1. Since a wetland delineation has not yet been performed for the Project area, additional wetlands may be present that could be impacted by Project activities.

All wetland areas would be protected with temporary construction fencing to prevent entrance into these areas during construction activities; however, the potential for the Project, including subsequent decommissioning and removal of Pier 421-1, to disturb wetlands would remain. This impact would be less than significant with mitigation.

Mitigation Measures

In addition to the implementation of MM TBIO-1a, TBIO-1b, TBIO-1d, and TBIO-1e described in Section 4.7 Terrestrial Biological Resources, the following MM would apply.

MM WQ-2. Wetland Delineation, Avoidance and Minimization. Venoco shall engage a qualified biologist to conduct a Wetland Delineation and prepare a Wetland Delineation Report, subject to approval and permitting by the City of Goleta, California Department of Fish and Wildlife, Army Corps of Engineers, and California Coastal Commission, to determine the precise location of all wetlands within and in the vicinity of the Project, including the access road, the flow line, the cables, sea wall bulkheads, and riprap sea-walls. The Report shall be reviewed and approved prior to City issuance of the Land Use Permit. Prior to commencement of construction, all wetland areas located within and adjacent to the Project area will be flagged for fencing by a qualified wetland scientist. If wetlands identified in the Wetland Delineation Report cannot be avoided, the Applicant shall consult with appropriate agencies including the City of Goleta, California Department of Fish and Wildlife, California Coastal Commission, and the Regional Water Quality Control Board to design measures to minimize impacts to the wetland and appropriate restoration standards and methods, if necessary following construction.

Rationale for Mitigation

Implementation of MMs WQ-2, TBIO-1a, TBIO-1b, TBIO-1d, and TBIO-1e would reduce short-term construction-related impacts to wetlands by protecting biologically sensitive areas in the immediate Project area, providing for construction supervision, and requiring restoration and enhancement of impacted habitats. After implementation of these MMs, impacts to wetlands from short-term construction activities would be mitigated to a less than significant level.

Impact WQ-3: Oil Spill Impacts to Surface and Marine Water Quality

Accidental discharge of petroleum hydrocarbons into the surf zone from Pier 421-2 and flowline would adversely affect surface or marine water quality (Significant and Unavoidable).

Impact Discussion

Upon Project implementation, oil would be produced at Well 421-2 (which is located in the surf zone) and sent to the EOF via pipeline for processing. Transportation of oil that has been processed at the EOF would be via the Line 96 onshore pipeline, connecting to the Plains All American Pipeline, L.P. (PAAPLP) west of Las Flores Canyon (LFC). The Project thus presents three possible sources of oil spill to marine or surface waters: from Well 421-2, from the flowline to the EOF, and from Line 96.

An accidental release of oil during production at Pier 421-2 could occur from a well casing blow out or from potential wave or seismic damage to the Project caisson, seawall, or pipeline. The maximum amount of oil which could potentially be released during a worst-case oil spill from Well 421-2 is 1.7 barrels (see Section 4.2, Safety).

The current PRC 421 flowline is located approximately 200 feet east of Bell Canyon Creek. Proposed safety measures for the pipeline include repairing a deteriorated section and pressure testing the existing 6-inch line, and inserting an internal liner and a 3-inch flowline within the existing pipeline. In the event of a leak in the 3-inch flowline, the oil/gas/water emulsion would be contained within the 6-inch line. Upon detection of liquid in the 6-inch line the well pump would be completely shut in. It is estimated that shut in would be complete within 15 seconds of leak detection. A leak detection sensor would also be provided within the 6-inch line and if a leak were detected shut in would also automatically occur. The potential exists, however slight, for oil to be released from the pipeline during the 15-second interval prior to shut in of the pump, in the time before the leak is detected. The amount of oil potentially released to the environment during this period of time is dependent on the size of the leak in the pipeline.

The transport of PRC 421 oil approximately 8.5 miles through the Line 96 pipeline would also present a risk of oil release with impacts to in-stream water quality for multiple creeks along the Gaviota Coast. Although pipelines are generally the safest method

available for the transportation of crude oil, spills could potentially occur through accidental damage to the pipeline caused by natural (e.g., seismic activity, flooding) or man-made causes (e.g., construction activity, valve failure). However, because the pipeline would be new and would include all of the most recent safety features, the likelihood of a potential spill is low (see Section 4.2, Safety). The Line 96 pipeline incorporates mainline block valves that limit the volume of oil that could potentially be spilled to 60 barrels from Llagas Creek and 52 barrels from Corral Canyon.

A spill from the Pier 421-2, from the flowline, or from Line 96 could release limited amounts of petroleum hydrocarbons into the marine environment within Santa Barbara Channel. Devereux Creek and its mouth (Devereux Slough) are located approximately 1 mile southeast of the Project site. Devereux Slough is part of the University of California Reserve System and is a protected wetland which provides habitat and nesting area for numerous shorebirds and migrating birds (see Section 4.6, Marine Biological Resources and Section 4.7, Terrestrial Biological Resources). Even a limited crude oil spill between 0.5 to 1.7 barrels from PRC 421 could introduce petroleum hydrocarbon contaminants above background concentrations into the slough (see Section 4.2, Safety) and impact the aquatic environment. Therefore, a large crude oil spill into marine or surface water resources near the Project site could exceed stated significance thresholds (California Toxics Rule, Ocean Plan, and Basin Plan) and would be significant.

Spilled oil results in impacts to marine water quality as addressed in the *California Ocean Plan* (Table 4.5-1). Surface slicks limit equilibrium exchange of gases at the ocean-atmosphere interface. This reduces near-surface oxygen concentrations, particularly with the increased biochemical oxygen demand of crude-oil emulsions. As the seawater-oil emulsion mixes into the water column, turbidity would increase and toxic hydrocarbons would be released into the water column and seafloor sediments. Weathering can widely disperse tar balls, which may eventually be ingested by pelagic and benthic biota, with adverse effects. Although a surface slick can disperse within a few hours of a spill in harsh sea conditions, lingering effects could persist for much longer periods. For example, it took approximately two years for mussel tissue burdens of aromatic hydrocarbons to return to background levels after the Exxon Valdez Oil Spill (Boehm et al. 1995). Although this spill was several orders of magnitude larger than any spill possible under implementation of the Project, monitoring results indicate the potential for long-term effects. The increased potential for accidental discharges of petroleum hydrocarbons into marine waters is considered a significant impact because the Project would increase the likelihood of an oil spill at the Project site and because such a spill could result in tangible damage to marine water quality in excess of concentrations identified in regulatory criteria.

Oil from a surface spill would disperse and weathering would, in turn, affect the long-term persistence and toxicity of oil. Further, the soluble and more toxic components of crude oil (e.g., benzenes and other lower molecular weight aromatic compounds), would

volatilize and dissipate naturally from the environment. Consequently, the toxicity of a potential spill may be reduced somewhat by natural weathering processes during dispersion. However, insoluble oil fractions could potentially settle in bottom sediments or get trapped by aquatic vegetation and affect water quality for several years. This is more likely to occur in Devereux Slough than Bell Canyon Creek as the current flows from west to east and Bell Canyon Creek is located west of the Project. Further, oil spills to Bell Canyon Creek would be near the mouth of the creek and spilled oil would likely disperse quickly into the Pacific Ocean, particularly in winter months when seasonal storms wash natural sand berms from the Bell Canyon Creek into the ocean and water levels are higher; whereas spills within the Santa Barbara Channel and those that flush out of Bell Canyon Creek are likely to flow towards Devereux Slough.

Venoco currently maintains two plans that deal with oil spills: an Emergency Action Plan (EAP) and the South Ellwood Field Oil Spill Contingency Plan (OSCP). The EAP details actions to occur following a spill, including directions on spill containment and logistical details such as site access, staging areas, and boat launching locations (Venoco 2011a). The OSCP addresses inspection and maintenance, training and drills, notification procedures, and provides general oil spill response and cleanup techniques for various terrains, including for creeks and rivers (Venoco 2011b). OSCP appendices contain maps and listings of potentially affected sensitive resources such as plant and wildlife habitats, creeks and drainages, beaches, sloughs, marshes, etc., in the surrounding area. Implementation of the above plans would reduce impacts associated with larger oil spills. Nonetheless, impacts would be significant and unavoidable.

Mitigation Measures

In addition to the implementation of MMs described in Section 4.2, Safety, Section 4.6, Marine Biological Resources, and Section 4.7, Terrestrial Biological Resources, the following MMs would apply:

MM WQ-3a. Pipeline Monitoring. In addition to the installed safety measures on the pipeline from Pier 421-2 to the EOF tie-in (e.g., low-pressure alarm system and automatic shut-in), Venoco staff shall conduct daily visual monitoring of the access road above the pipeline and soils adjacent to the access road. Staff shall inspect for obvious indicators of a small leak such as petroleum smells and any seepage of oil or visible sheen in soils adjacent to the roadway. If any indicators are present, Venoco shall (1) notify City of Goleta and California State Lands Commission (CSLC) staffs within 24 hours, (2) conduct further investigations to determine the source of the indicator, and (3) repair the pipeline as necessary upon City and CSLC staff approval.

MM WQ-3b. Storm Water Pollution Prevention Plan (SWPPP). A site-specific SWPPP shall be prepared for construction activities and the existing Ellwood area SWPPP shall be updated to include the Project and submitted to the Regional Water Quality Control Board (RWQCB), Central Coast Region, and

City of Goleta to prevent adverse impacts to nearby waterways associated with oil spills and contaminated storm water releases not covered under the Emergency Action Plan (EAP), which only applies to "significant events." This plan shall include site-specific diagrams illustrating primary surface drainage features (e.g., Bell Canyon Creek, Devereux Creek and Devereux Slough, and proposed spill containment, delineation of drainage features) and a description of Best Management Practices (BMPs), including spill containment equipment and procedures tailored for the Project site.

The Project also incorporates by reference MMs contained in the certified Line 96 Modification Project EIR, including MM BIO-3, which required preparation of an OSCP to address sensitive biological resources along the pipeline alignment, and MM HM-3, which required block valves on the Line 96 pipeline to be capable of remote actuation.

Rationale for Mitigation

Implementation of these MMs would reduce the probability of an oil spill and the resulting consequences to the surface or marine waters. The identified measures would enhance planning and preparedness to respond to the oil spill and would reduce both the potential oil spill size and the potential for oil spills. The measures would also increase the effectiveness of an oil spill cleanup effort.

Regular monitoring of the soils adjacent to the access road above pipeline would reveal potential pipeline damage from third-party incidents or natural disasters and would help identify potential hairline fractures and leaks that may not be detected by installed leak detection systems. Regular monitoring would also encourage regular maintenance of the pipeline to prevent spills. Implementation of the SWPPP would minimize potential impacts of small spills and contaminated storm water releases by providing site-specific information and management practices regarding protection of nearby water resources. Incorporation of measures from the Line 96 Modification Project EIR would reduce the likelihood and volume of an accidental oil release from the Line 96 pipeline.

Residual Impacts

Marine water quality impacts associated with accidental oil spills are categorized as significant because the proposed MMs would not be completely effective in reducing the significant risk of a spill, nor would they adequately eliminate the significant effect of a spill on marine resources. A large spill (see definition in Section 4.2, Safety) would violate many water quality regulations and have a deleterious effect on the marine environment and biota. It would generate visible surface sheens, significantly reduce the penetration of natural light, reduce dissolved oxygen, degrade indigenous biota, and result in hydrocarbon contamination within the water column and marine sediments. The duration and area of the impact would be largely dictated by the size and location of the

spill, and the various physical conditions of the sea at the time of the spill. Impacts would last from days to weeks and extend for tens of miles.

Mitigation of water quality impacts from a major marine oil spill is largely a function of the efficacy of the spill response measures. The effectiveness of spill cleanup measures is dependent on the response time, availability and type of equipment, size of the spill, and the weather and sea state during the spill. Only some of these aspects are within the control of the spill response team. In addition, many oil spill response measures, such as dispersants, have impacts of their own.

With the natural flushing processes of Bell Canyon Creek and implementation of the SPCC Plan, safety measures for the pipeline, and the above MMs, impacts to surface water quality in Bell Canyon Creek would be less than significant. However, implementation of the OSCP, EAP, and other MMs would not reduce impacts of a large oil spill to a less than significant level, particularly in Devereux Slough where insoluble oil fractions could potentially be trapped in sediments for years or in creeks and drainages present along the Line 96 pipeline route between the EOF and LFC. These impacts are considered significant.

Under the regulatory-based significance criteria described in Section 4.5.3, Significance Criteria, even small oil spills could potentially be significant. Many regulations and guidelines establish limits based on the presence of a visible sheen on the ocean surface. This criterion is reflected in the static sheen test for free oil identified in the NPDES General Permit, U.S. Coast Guard (USCG) regulations, and the aesthetic criterion C.1 in the Ocean Plan Standards (see Table 4.5-1). Therefore, even with the imposition of the MMs, this impact remains significant and unavoidable.

Table 4.5-1. Summary of Hydrology and Water Quality Impacts and Mitigation Measures

Impact	Mitigation Measures
WQ-1: Temporary Construction Impacts to Marine Water Quality	**HAZ-1a.** Proper Personnel Training. **HAZ-1b.** Conduct Phase I ESA. **HAZ-1c.** Soil Sampling. **HAZ-1d.** Removal Action Plan. **WQ-1a.** Avoid High Tides and Silt Curtain. **WQ-1b.** Water Quality Certification.
WQ-2: Temporary Construction Impacts to Wetlands	**WQ-2.** Wetland Delineation, Avoidance and Minimization **TBIO-1a.** Locate Power Cables and Pipeline Outside Wetland Areas. **TBIO-1b.** Project and Biological Monitors. **TBIO-1d.** Protect Stockpiles of Excavated Material. **TBIO-1e.** Maintain Equipment.
WQ-3: Oil Spill Impacts to Surface and Marine Water Quality	**WQ-3a.** Pipeline Monitoring. **WQ-3b.** Storm Water Pollution Prevention Plan. All MMs described in Sections ~~4.3~~ 4.2, Safety, 4.6, Biological Resources, and 4.7 Terrestrial Biological Resources and MM BIO-3 and MMHM-3 from the Line 96 Modification Project EIR would apply.

4.5.5 Cumulative Impacts Analysis

Impact WQ-4: Cumulative Impacts to Marine Water Quality

Potential oil spills occurring as a result of recommissioning of PRC 421 could result in contributions to cumulative water quality impacts on the waters of the Santa Barbara Channel (Significant and Unavoidable).

Potential Project-related oil spills could contribute to cumulative water quality impacts offshore the Project site. Projects which could produce an increased risk of oil spill that could impact the same coastal areas as the Project are listed in Table 3-2 in Section 3, Cumulative Impacts Methodology. The Carpinteria Offshore Field Redevelopment, South Ellwood Field Project, and Carpinteria Onshore Projects would involve increased offshore/near-shore drilling and associated crude oil transportation, which would also increase the risks of oil spills and result in water quality impacts from the discharge of produced water into the marine environment. Any development of the undeveloped outer continental shelf (OCS) leases would result in additional exploratory drilling, increases in vessel traffic and potential oil spills to the marine environment that would have a cumulative effect alongside the Project. All of these projects would exacerbate an already significant and unavoidable impact associated with the Project's risks of spills to the marine environment.

Mitigation Measures

Each of these projects must meet regulatory requirements designed to reduce the probability and consequences of accidental releases to the environment. However, even the best-designed and implemented MMs, such as safe design of the facilities, oil spill contingency plans, training and drills, and availability of oil spill cleanup means, cannot eliminate all risk of an oil spill.

Rationale for Mitigation

Implementing regulatory requirements with industry BMPs can lower the risk and consequences of an accidental oil spill.

Residual Impacts

The Project's contribution to cumulative impacts would remain significant and unavoidable.

4.6 MARINE BIOLOGICAL RESOURCES

This section describes the marine resources in the immediate Project area and Santa Barbara Channel and the potential Project-related impacts, including unanticipated accidents such as an oil spill, could have on those resources. The Environmental Setting section is based primarily on existing literature, but has been augmented with the authors' personal experience in the Project area. The impact section identifies potential impacts to marine resources from decommissioning and removal of Pier 421-1 and caisson repairs on Pier 421-2, and identifies mitigation for potentially significant impacts. Operational impacts would be limited to accidents including an oil spill. Mitigation Measures (MMs) are identified to reduce the potential effects of these accidents.

This document incorporates by reference the conclusions of the Ellwood Marine Terminal (EMT) Lease Renewal Environmental Impact Report (EIR) (California State Lands Commission [CSLC] 2009) and Line 96 Modification Project EIR (Santa Barbara County 2011) regarding marine biological resources and summarizes these conclusions where appropriate. This document also incorporates data from Santa Barbara County 01-ND-34 and City of Goleta 06-MND-01.

4.6.1 Environmental Setting

The primary study area includes the Ellwood Coast region and marine habitats that extend approximately 1 mile seaward from the PRC 421 piers. The secondary study area includes the Gaviota Coast along the Line 96 pipeline and the Santa Barbara Channel.

Study Area

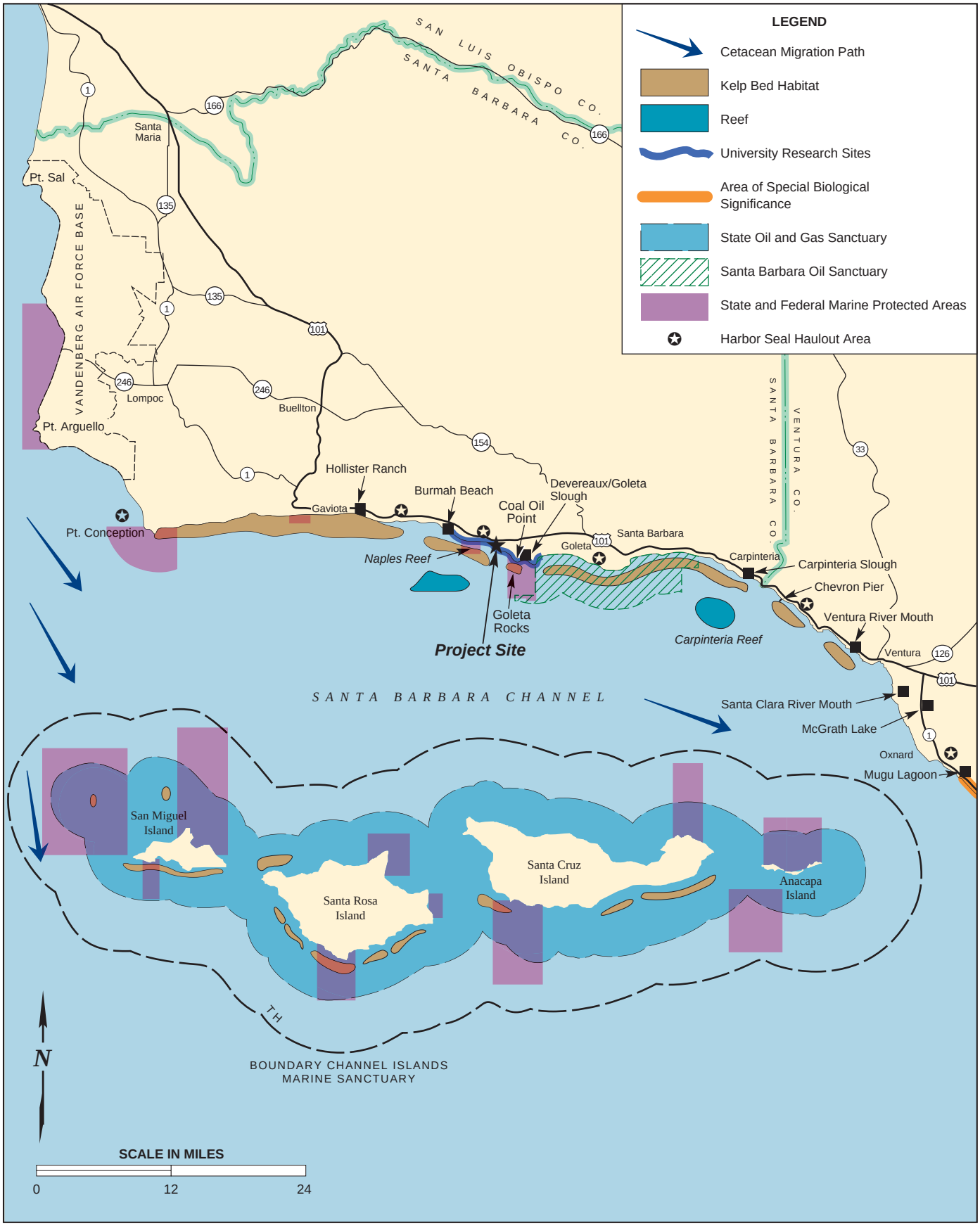
PRC 421 is located on the Ellwood coast in the Santa Barbara Channel, which occupies the northwest corner of the Southern California Bight. The sea floor in the Santa Barbara Channel consists of a complex topography of ridges, islands, and basins. The complicated physiography of the region has created a diverse collection of marine environments. The bathymetric features greatly influence such factors as current flow and sediment transport and these processes in turn have profound effects on the biological communities (Chambers Group 1987, Dailey et al. 1993). In Southern California, upwelling occurs along both mainland and island shores as northwest winds displace coastline surface water that is then replaced by nutrient rich deeper water. Upwelling is most intense in April, May, and June and is one of the factors that accounts for the high productivity and diversity of marine life in the study area.

The Santa Barbara Channel is bordered on its seaward margin by the northern Channel Islands consisting of Anacapa, Santa Cruz, Santa Rosa, and San Miguel. These islands support unique and important marine communities and also shelter the mainland coast

from the direct force of the incoming south swell. Point Conception shelters the Channel from northwest swells. The Channel thus provides a relatively protected and benign environment for marine organisms. The Channel lies along important migration routes for marine mammals, fishes and seabirds and also contains a rich, diverse assemblage of resident marine life. These abundant marine resources support a number of important commercial fisheries, aquaculture, and kelp harvesting. Marine habitats within the Channel include mud, sand, and rocky bottoms, as well as scattered offshore reefs and extensive kelp forests along the coastal and island margins. Sandy and rocky beaches as well as mud-bottom marshes and estuaries line the coast.

The Ellwood Coast region extends for approximately 2 miles west from Coal Oil Point to the Bacara Resort. This section of coast is characterized by a broad sweep of south-facing sandy beach, broken in several places by rocky intertidal habitat and the mouths of one major and two minor estuaries. Within this reach, rocky intertidal habitat is concentrated at Coal Oil Point and within the bay approximately 1 mile west of Coal Oil Point, opposite the western areas of the Ellwood Open Space and the east end of Sandpiper Golf Course (Figure 4.6-1). Sandy beaches tend to aggregate in areas surrounding the estuary mouths and can be ephemeral and replaced by shale or sandstone shingle in areas away from sand sources during the winter months. The mouth of the area's major estuary, the Devereux Slough, lies approximately 0.25 mile west of Coal Oil Point. Seasonal freshwater discharge and sand deposition from this slough provide substantial input to the marine environment, including supporting a wide sandy beach backed by an extensive dune system west of the slough mouth. Toward the western border of the Ellwood Coast, the estuaries of two perennial coastal streams, Bell and Tecolote Canyon creeks, contribute both sand and seasonal freshwater input into this coastal ecosystem.

The offshore regions of the Ellwood Coast are characterized by a gently sloping seafloor that averages 36 feet in depth approximately 1 mile from the shoreline. These offshore areas include a mix of low rocky reef and sand bottom substrate. Both the eastern reaches of this area west of Coal Oil Point and the western areas off of Bell and Tecolote Canyon creeks appear to be dominated by sandy substrate, becoming increasingly rocky toward the central area of the Ellwood Coast, including areas offshore from the Project site (Figure 4.6-2; Chambers Group 1987; Santa Barbara County 1991). Kelp beds are scattered throughout both sandy and rocky substrate areas offshore of the Ellwood Coast, but tend to be concentrated and most persistent in areas of rocky substrate. The immediate Project vicinity supports the Ellwood Coast's largest kelp bed. This kelp bed encompasses over 50 acres and begins approximately 500 feet offshore of the existing caissons and extends for over 1 mile east southeast along the Ellwood Coast before terminating in areas apparently dominated by sandy bottom substrate east of the Sandpiper Golf Course (Figure 4.6-2).



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Sensitive Biological and Marine Resource Areas in the Region of the Proposed Project

FIGURE 4.6-1

Marine Habitats in the Vicinity of the Proposed Project

FIGURE 4.6-2

The importance of marine resources in the Ellwood area has been recognized through the establishment of the Naples and Campus Point State Marine Conservation Areas (SMCAs). Campus Point SMCA was established in 2012 to protect marine resources along and off the coast of UCSB, Isla Vista, and the Coal Oil Point Reserve. Campus Point SMCA is designed to protect habitat and species diversity and a wide diversity of habitat types including eelgrass, surfgrass, kelp, rocky reefs, shallow subtidal, rocky intertidal, oil seeps, sand, and the estuarine inputs of Devereux Slough. This SMCA covers 10.51 square miles, including Campus Point. The Naples SMCA covers 2.58 square miles, and protects Naples Reef, located approximately 0.75 mile offshore. These SMCAs are "no take" areas that protect natural habitats and marine life, with both commercial and recreational fishing or removal of wildlife prohibited; take of marine resources pursuant to operation and maintenance of artificial structures per any required federal, state and local permits, or as otherwise authorized by the CDFW is permitted.

Marine Biological Resources

Plankton

The term plankton refers to organisms that drift with the current. Plankton includes phytoplankton (drifting primary producers, such as diatoms and dinoflagellates) and zooplankton (slightly mobile animals, such as small crustaceans, swimming mollusks, jellyfish, and the drifting eggs and larvae of fishes and benthic invertebrates). Planktonic communities are characterized by patchiness or unevenness in distribution, composition, and abundance.

The most comprehensive data for zooplankton in California waters come from the California Cooperative Oceanic Fisheries Investigations (CalCOFI) program initiated in 1949. This program has shown that zooplankton tend to be extremely variable in space and time. Zooplankton abundance at any given location may vary by as much as an order of magnitude from season to season and year to year. The occurrence of particular zooplankton species or populations along the California coast is largely governed by currents. Long-term averages of the zooplankton standing stock in the study area show peak zooplankton abundances in the spring and summer months, and lowest abundances during the winter (Kramer and Smith 1972; Dawson and Pieper 1993). Copepods, thalaceans, euphausiids, and chaetognaths usually account for most of the biomass in CalCOFI samples. The most abundant fish larvae are northern anchovy (*Engraulis mordax*), Pacific hake (*Merluccius productus*), and rockfish (*Sebastes* spp).

Phytoplankton assemblages are affected by nutrients, light, water temperature, currents and upwelling, and grazing (Hardy 1993). Species assemblages of phytoplankton in the study area differ spatially and temporally (Hardy 1993). Near the thermocline, for

example, an area of elevated chlorophyll concentration often occurs with a vertical species assemblage that is different from that of the surface layer. Onshore-offshore phytoplankton assemblages differ, but temporal changes between stratified and upwelling conditions tend to be more significant than onshore-offshore changes.

A subsurface chlorophyll maximum layer generally is present in the study area; in general, phytoplankton abundance and primary production are higher near-shore than offshore (Hardy 1993). The biomass of phytoplankton in Southern California has been found to decrease with increasing distance from shore within the first 6 miles offshore. The depth of maximum phytoplankton abundance usually differs between individual species. Large dinoflagellates are often numerous near the surface, while diatoms are more abundant below a water depth of about 65 feet. Primary production generally shows a subsurface maximum in the study area.

Zooplankton populations in the study area can be divided into near-shore and offshore populations (Dawson and Pieper 1993). The near-shore region includes those waters shoreward of the continental shelf/slope break or approximately at the 650 feet depth contour. Transects along the shelf in the study area have shown that the near-shore zooplankton biomass decreases at stations farther from the coast (Dawson and Pieper 1993). However, different taxa had different distributions and some taxa were more abundant farther from shore than inshore.

Zooplankton of the offshore region include many of the same species found near-shore, but also include more oceanic and deeper water species (Dawson and Pieper 1993). Offshore from the edge of the shelf, zooplankton biomass is variable with depth, but generally higher in the region of chlorophyll, with a maximum at 73 to 83 feet. Zooplankton biomass off Southern California declined during the El Niño years of the 1990s but appears to have recovered (Goericke et al. 2005).

Fish eggs and larvae (ichthyoplankton) are an important component of the planktonic community. Because of the importance of commercial and recreational fisheries, ichthyoplankton are the most studied component of plankton in the study area. Northern anchovy is by far the most abundant species of ichthyoplankton in the study area (Cross and Allen 1993). Other abundant ichthyoplankton taxa in the study area include rockfish, California smoothtongue (*Leuroglossus stilbius*), Pacific hake, Mexican lampfish (*Triphotorus mexicanus*), and various species of croaker (scianidae). Within the study area, the larvae of jack mackerel, Pacific hake, and mesopelagic fishes (fishes of mid-water depths) are most abundant 6 to 60 miles from the coast (Cross and Allen 1993). California halibut (*Paralichthys californicus*), turbots (*Peluronichthys* spp.), sea basses (*Paralabrax* spp.), and blennies (*Hypsoblennius* spp) have larvae that are most abundant within 6 miles of the coast. The larvae of clinids (*Gibbonsia* spp.), queenfish (*Seriphus politus*), California clingfish (*Gobiesox rhessodon*), gobies, silversides, and diamond turbot (*Hypsopsetta guttulata*) are most abundant within 1.2 miles of the coast.

Northern anchovy, rockfish, and sanddab (*Citharichthys* spp.) larvae are common both onshore and offshore.

Intertidal Habitat

The mainland shoreline of the Santa Barbara Channel is primarily sandy. Approximately 74 percent of the Santa Barbara County coastline consists of sandy beach and approximately 93 percent of the Ventura County coastline is sand (Dugan et al. 2000). Boulder fields are often present under sandy beaches along the Santa Barbara coast and are alternately exposed and covered by shifting sand. Only about 23 percent of the shores of the Channel Islands consist of sand beach.

Extensive rocky intertidal habitats exist within the Project vicinity.

The beach adjacent to Piers 421-1 and 421-2 is ephemeral and primarily sandy during the summer months but exhibiting patchy sand with large areas of exposed shale shingle shelf during the winter months. Intertidal boulder fields also are present in the Ellwood area and significant tidepool habitat occurs within the bend of “Ellwood Cove” approximately 0.5 mile east of the Project site and off Coal Oil Point further to the southeast. Rocky intertidal habitat, primarily boulders and cobble, also occurs west of the Project area up-coast from the Bacara Resort. Rocky intertidal habitat is designated as environmentally sensitive habitat (ESH) by the City of Goleta General Plan/Coastal Land Use Plan (GP/CLUP), the Santa Barbara Local Coastal Plan (LCP), and the University of California Santa Barbara (UCSB) Long Range Development Plan.

Sandy beaches in California are inhabited by an abundant invertebrate community that is an important food source for vertebrate predators including shorebirds, seabirds, marine mammals, and fishes (Dugan et al. 2000). More than 60 different species of intertidal invertebrates were identified in a survey of 15 beaches in Santa Barbara and Ventura counties (Dugan et al. 2003). Intertidal invertebrates of sandy beaches show a characteristic zonation related to tidal exposure. The composition of the invertebrate community at a given beach as well as the zonation tends to be extremely dynamic due to the highly mobile nature of the sandy substrate and the resources on which these animals depend (Dugan and Hubbard 2006). Most exposed sandy beaches have two to three zones inhabited by distinct groups of mobile animals. These zones generally correspond to the relatively dry substrate of the upper intertidal zone at and above the drift line, the damp sand of the mid-intertidal zone, and the wet sand of the lower intertidal zone. Sandy beaches on the mainland coasts of Ventura and Santa Barbara counties are generally richer in species than beaches of the Channel Islands.

The lower intertidal zone (swash zone) in Southern California sandy beaches is dominated by the filter feeding mole crab, *Emerita analoga*, which moves up and down the beach with the tides. The polychaete "bloodworm," *Euzonus*, also is common in the mid to lower intertidal. In the upper intertidal, drift kelp is an important source of food for many invertebrates. Common organisms associated with macrophyte wrack include beach hoppers (*Megalorchestia* spp.), kelp flies (*Coleopa vanduzeei*), isopods (*Alloniscus perconvexus* and *Tylos punctata*) and various species of beetles.

The sandy intertidal areas at Ellwood Beach were sampled in 1986 (Chambers Group 1987) and the dominant organisms collected were the sand crabs, *Emerita analoga* and *Blepharipoda occidentalis,* and the polychaete worm *Nephtys californiensis* in the lower intertidal; the isopod *Excirolana linguifrons* and the bloodworm *Euzonus muronata* in the mid-intertidal; and the beach hoppers *Megalorchestia californiana* and *M. corniculata* in the upper intertidal.

Engle (2001) sampled the sandy intertidal organisms at Ellwood just up the coast (west) from the PRC 421 piers in 2001. The upper beach was characterized by large numbers of isopods (*Tylos punctatus)*, beach hoppers, and kelp flies. The mid-intertidal was dominated by the isopod *Excirolana chiltoni* and beach hoppers. Infauna sampled in the lower intertidal included mole crabs (*Emerita analoga*), polychaete worms (*Lumbrinereis zonata* and *Nephtys californiensis)*, Pismo clams (*Tivela stultorum*), and bean clams (*Donax gouldi*).

Rocky intertidal organisms, like those in the sandy intertidal, tend to be distributed in bands or zones related to tidal height. The occurrence of particular species is based on physical and biological factors such as the ability to withstand exposure to air and to survive "sanding-in" as well as competition for limiting resources, especially space (Chambers Group 1987, Thompson et al. 1993).

The boulder field at Ellwood has been extensively studied by researchers from the UCSB (Dixon 1978; Fawcett 1978; Sousa 1977; Thompson et al. 1993). This type of habitat is subject to repeated natural disturbance, both through agitation and overturning of the cobbles by wave action and by periodic sand inundation. The structure and composition of the marine community attached to the boulders depend on the severity of past disturbance and on how long the boulders have been exposed for recolonization by larvae and or regrowth of colonies surviving the last disaster. Early successional stages of the boulder community tend to be characterized by the green algae (*Ulva* spp.) and the barnacles (*Chthamalus* spp.). Perennial red algae of several species typify the next successional stage. If two years or more went by without major disturbance the tops of the boulders became dominated by the red alga *Gigartina caliculata*. The important feature of this system is that for both invertebrate and algal assemblages, diversity was highest at intermediate frequencies of disturbance.

The Ellwood boulder field community underwent a profound change in composition and dynamics after the large storms of 1983 (Thompson et al. 1993). Wave energy was so high that virtually all of the boulders were violently tumbled and all species of algae and invertebrates were driven to low abundances. Early recolonization by *Ulva* and the tube-building polychaete *Phragmatopoma californica* occurred but later successional stages were slow to re-appear.

Intertidal habitat at Coal Oil Point to the east of PRC 421 consists of flat sandstone shingle with scattered boulders and a high sand influence, especially in the upper zones (Ambrose et al. 1992). Tidepools are extensive along the beach and the area is characterized by tar from oil seeps (Tway 1991). The boulder habitat is dominated by the green algae *Ulva* and *Enteromorpha.* Larger rocks are dominated by the acorn barnacle *Chthamalus* and the anemone *Anthopleura elegantissima.* Clusters of mussels *Mytilus californianus* also occur. Several species of red algae also are present. The rocky intertidal at Coal Oil Point has been designated an Environmentally Sensitive Habitat Area (ESHA) in the Santa Barbara County LCP for its remarkable rich intertidal invertebrate fauna (Santa Barbara County 1982).

Subtidal Habitat

The vast majority of the subtidal benthic habitat on the study area consists of soft bottom. The soft bottom benthic invertebrates of the Southern California mainland shelf have been studied extensively. Twelve of the 15 most abundant infaunal taxa in this region are annelid worms; 11 were various taxa of polychaetes and the twelfth was oligochaetes (Ranasinghe et al. 2003). The most abundant taxon on the mainland shelf was the spionid polychaete worm (*Spiophanes duplex*), followed by the brittle star (*Amphiodia urtica*), phoronid worms, and another spionid polychaete (*Prionospio pinnata*). Infaunal assemblages in very shallow water, less than 33 feet deep, are very much influenced by wave surge and tend to be dominated by fast-moving crustaceans and opportunistic polychaetes (Thompson et al. 1993).

Epifaunal communities (invertebrates that live primarily on the surface of the sediments) include a total of 313 species of epifaunal invertebrates (Allen et al. 2002). Three widely occurring species were white sea urchin (*Lytechinus pictus*), California sand star (*Astropecten verrelli*), and ridgeback shrimp (*Sicyonia ingentis*). The shallow inner shelf, of less than 70 feet depth, has the lowest invertebrate abundance, biomass, and diversity. Invertebrate abundance, biomass, and diversity increased from the inner to the middle shelf, and from the middle shelf to the outer shelf. Characteristic species of the inner shelf included blackspotted bay shrimp (*Crangon nigromaculata),* tuberculate pear crab (*Pyromaia tuberculata*), spiny sand star (*Astropecten armatus*), and yellowleg shrimp (*Farfantepenaeus californiensis*). California sand star, ridgeback rock shrimp, and white sea urchin characterized the middle shelf. Species typical of the outer shelf (deeper than 330 feet [100m]) included orange bigeye octopus (*Octopus californicus*),

northern heart urchin (*Brisaster latifrons),* mustache bay shrimp (*Neocrangon zacae*), flagnose bay shrimp (*Neocrangon resima*), and hinged shrimp (*Pantomus affinis*).

In the shallow sandy subtidal habitat at Ellwood, the tube worm *Diopatra ornata* is the dominant epifaunal invertebrate (Chambers Group 1987). Sand dollar beds (*Dendraster excentricus*) occur in 20 to 30 foot water depths. Other characteristic species on the sand bottom between 20 and 50 foot water depths at Ellwood include the Kellett's whelk (*Kelletia kelleti*), the tube dwelling anemone (*Pachycerianthus imbricata*), the elbow crab (*Heterocrypta occidentalis*), the hermit crabs (*Paguristes* spp.), and the cone snail (*Conus californicus*).

An introduced species of eelgrass (*Zostera asiatica*) occurs in about 18 to 40 foot water depth on soft bottom along the southern Santa Barbara mainland coast. Eelgrass is a flowering plant that enhances biological value where it grows. Eelgrass beds provide important habitat for invertebrates as a source of food and attachment, and for marine fishes that seek the shelter of the beds for protection and also forage on invertebrates that colonize the eelgrass blades and sediments in and around eelgrass vegetation. Small amounts of eelgrass were observed off Ellwood during underwater surveys in 1986 (Chambers Group 1987).

Subtidal hard bottom habitat is limited off the mainland shelf of the study area, although subtidal rocky habitat is much more common off the Channel Islands. Rocky subtidal habitat has particular biological value because it provides attachment sites for algae including giant kelp (*Macrocystis pyrifera*) and sessile invertebrates and it provides shelter and food for fishes and mobile invertebrates such as spiny lobster (*Panulirus interruptus*).

The coastline in the Project region has typically been characterized by large beds of giant kelp, which comprise a distinct and complicated type of marine community. Kelp offers food, attachment sites and microhabitats for invertebrates and provides food and shelter for fishes. Kelp beds off the Santa Barbara County mainland coast between Jalama and Carpinteria are designated an ESHA area in the Santa Barbara County LCP (Santa Barbara County 1982).

Two kinds of beds of giant kelp historically have occurred off the Santa Barbara coast east of Point Conception: kelp growing on rocks and kelp growing on sand. In most locations off California, kelp holdfasts require solid substrate for secure attachment, especially in wave-exposed conditions. The kelp beds along the Santa Barbara coast southeast of Point Conception lie in well protected areas and the sand-based kelp had unusual holdfasts that were able to penetrate into the soft bottom and persist (North 1994).

In 1982 and 1983, most of the extensive kelp beds near Santa Barbara were destroyed by large waves and poor growing conditions associated with an El Niño event (MBC

Applied Environmental Sciences 1992). The rock-based kelp recovered but the sand based kelp never did. By the late 1980s and early 1990s, after a long period of drought years, sand based kelp began to show signs of recovery. Starting in 1993, several years (e.g., 1993, 1995, and 1998) of heavy rainfall and rough seas occurred in Southern California. In addition, 1998 was another El Niño year. The high temperatures and low nutrients associated with the El Niño conditions are stressful for giant kelp. Most of the sand-based kelp that had started to return to the southern Santa Barbara shoreline disappeared between 1993 and 1998. In the years since the 1998 El Niño, sand-based kelp has returned sporadically to the mainland coast of the Santa Barbara Channel. However, the only persistent kelp beds have been those associated with hard substrate. Effects of the most recent El Niño (2009-2010) were not yet available.

Some rocky subtidal habitat supporting giant kelp occurs in the eastern portion of the Ellwood area offshore from Pier 421-2 (Chambers Group 1987). The rocky subtidal habitat off Ellwood consists of low rocky reef in 25 to 35 foot water depth. Dominant invertebrates in this habitat include pholad clams, the tunicate *Styela montereyensis*, the urchins *Strongylocentrotus franciscanus, S. purpuratus*, and *Lytechinus anamesus* as well as the hydroid *Aglaopenia struthionides*. Giant kelp is common on these low reefs. Other kelp species in this habitat include *Egregia menzisii* and *Cystoseira osmundacea*.

Significant subtidal rocky habitat supporting a large kelp forest occurs offshore of the Isla Vista area between Coal Oil Point and Goleta Point east of PRC 421. Common invertebrates in this area include Kellet's whelk, wavy top shell (*Astraea undosa*), sea urchins (*S; strongylocentrotus* and *S. purpuratus*), tunicates (*Styela montereyens),* sea stars (*Pisaster giganteus* and *P. brevispinus*) and giant keyhole limpets (*Megathura crenulata*) (N. Davis, personal observations). In addition to giant kelp, the brown alga *Pterygophora californica* is common in the Isla Vista kelp bed.

Naples Reef, located approximately 2 miles to the northwest of PRC 421, is a significant rocky reef and kelp area that is designated as an ESHA in the Santa Barbara County LCP (Santa Barbara County 1982). Naples Reef supports a great diversity of invertebrates and algae. The reef is about 1 acre in size and averages 26 to 40 foot depth (Chambers Group 1987). Naples Reef is an important fishing and SCUBA diving area and has been used as a research site by UCSB marine biologists for decades.

Fishes

Common water column fishes in the upper water column and near-shore waters of the study area include northern anchovy and Pacific mackerel (*Scomber japonicus*) and predatory schooling fishes, such as Pacific bonito (*Sarda chilensis*) and yellowtail (*Seriola lalandi*); and by large solitary predators, like blue sharks (*Prionice glauca*) and swordfish (*Xiphias gladius*) (Cross and Allen 1993). Northern anchovy is the most

abundant epipelagic fish in the study area (Aspen 2005). The largest schools occur within 25 miles of the coast over deepwater, particularly escarpments and submarine canyons. During daylight hours in summer and fall, large compact anchovy schools may be found at depths of 360 to 600 feet. These schools rise to the surface at night and disperse. In spring, many small schools are found at the surface during the day, and the fish scatter over a wide area at night. Most fishes of the epipelagic zone are widely distributed in the study area.

Common water column species of near-shore soft bottoms include jacksmelt (*Atherinopsis californiensis*), topsmelt (*Atherinops affinis*), California grunion (*Leuresthes tenuis*), queenfish, walleye surfperch (*Hyperprosopon argenteum*), white seaperch (*Phanerodon furcatus)*, northern anchovy, and white croaker (*Genyonemus lineatus*), a bottom feeder that lives in the water column (Cross and Allen 1993; Chambers Group 1994). A number of other water column species including Pacific bonito, jackmackerel (*Trachurus symmetricus)*, and brown smoothhound (*Mustelus henlei*) also sometimes occur in near-shore waters. Most of the water column species found in California near-shore waters are widely distributed from bays and estuaries out to ocean depths of 100 feet or more (Love 1996).

Demersal fishes of the study area soft bottom habitats in the study area a total of at least 143 species of fish, with white croaker, Pacific sanddab (*Citharichthys sordidus*), California lizardfish (*Synodus lucioceps*), and queenfish among the most abundant (Allen et al. 2002). The lowest values of fish abundance, biomass, and species richness are generally found on the inner shelf at depths shallower than 100 feet, with the middle shelf of depths of 100 to 400 feet having higher numbers of species (Allen et al. 2002).

Characteristic species of the inner shelf include California halibut, barred sand bass (*Paralabrax nebulifer*), speckled sanddab (*Citharichthys stigmaeus*), and white croaker (Allen et al. 2002). Species typical of the middle shelf include yellowchin sculpin (*Icelinus quadriseriatus*), hornyhead turbot (*Pleuronichthys verticalis),* bigmouth sole *(Hippoglossina stomata*), longfin sanddab (*Citharichthys xanthostigma*), California lizardfish, longspine combfish (*Zaniolepis latipinnis)*, pink seaperch (*Zalembius rosaceus*), plainfin midshipman (*Porichthys notatus*), and California tonguefish (*Symphurus atricaudus*). Finally, abundant species of the outer shelf, at water depths of 430 feet or greater, included Dover sole (*Microstomus pacificus*), Pacific sanddab, slender sole (*Lyopsetta exilis*), and shortspine combfish (*Zaniolepis frenata*).

The most abundant fish observed in soft bottom habitat during underwater surveys off Ellwood was the speckled sanddab (Chambers Group 1987). Other fish species observed in the sandy subtidal off Ellwood included thornback ray (*Platyrhinoides triseriata*), California halibut, California lizardfish, pipefish (*Syngnathus* sp.), diamond turbot, and round stingray (*Urolophus halleri*).

Many fish species are associated with rocky habitat. Fishes congregate around rocky features. Fish abundance on reefs is related to the presence or absence of kelp (*Macrocystis pyrifera*) and substrate relief, although bottom relief greater than 3 feet has been found to have little effect on fish species diversity and abundance (Cross and Allen 1993).

Common fish species of shallow reefs in the study area include garibaldi (*Hypsypops rubiunda*), blacksmith (*Chromis punctipinnis*), bass (*Paralabrax* spp), halfmoon (*Medialuna californiensis*), sheephead (*Semicossyphus pulcher*), opaleye (*Girella nigricans*), painted greenling (*Oxylebius pictus*), rock wrasse (*Halichoeres semicinctus*), seniorita (*Oxyjulis californica*), and various species of surf perches (Family Embiotocidae) and rockfish (Cross and Allen 1993). Deep reefs are dominated by rockfish.

Depletion of rocky substrate fishes by over fishing has recently become of considerable concern. Species considered over fished include widow rockfish (S*ebastes entomelas*), canary rockfish (*Sebastes pinniger*), yelloweye rockfish (*Sebastes ruberrimus*), darkblotched rockfish (*Sebastes crameri*), bocaccio (*Sebastes paucispinus*), Pacific ocean perch (*Sebastes alutus*), lingcod (*Ophiodon elongates*), and cowcod (*Sebastes levis*). To protect these species, Cowcod Conservation Areas have been established.

The most frequently observed fish species in rocky areas during underwater surveys off Ellwood was the kelp bass (*Paralabrax clathratus*) (Chambers Group 1987). Other common fish species associated with shallow water hard substrate at Ellwood included blacksmith, sheephead, seniorita, pile perch (*Rhacochilus vacca*), black perch (*Embiotica jacksoni*), sand bass, lingcod, cabezon (*Scorpaenichthys mrmoratus*), sarcastic fringehead (*Neoclinus blanchardii*), and several species of rockfish (*Sebastes atrovirens, S. caurinus, S. chrysomelas,* and *S. rastrelliger*).

Fish species killed during detonations to remove an abandoned pier from PRC 421 in October 2005 were identified and counted (Howarth 2006). The most abundant fish species affected by explosives on PRC 421 were topsmelt and Pacific sardine (*Sardinops sagax caeruleus*). Other species collected included jack mackerel, black surfperch, rainbow surfperch (*Hypsurus caryi*), shiner surfperch (*Cymatogaster aggregate*), white surfperch, kelp surfperch (*Brachyistius frenatus*), striped surfperch (*Embiotica lateralis*), rubberlip surfperch (*Rhacochilus toxotes*), halfmoon, sheephead, giant kelpfish (*Heterostichus rostratus*), pink surfperch, and several rockfishes (*Sebastes chrysomelas, S. rastrelliger, S. atroviresn, S. serranoides,* and *S. paucispinis*).

Sandy intertidal habitat in Southern California is used for spawning by a near-shore fish, the California grunion, which lays its eggs in the high intertidal zone between March and August. During the grunion spawning season, eggs and developing embryos are buried

in the sand to incubate between the highest tides of each month, at the full and new moon. Beaches in the Project area are used by grunion (City of Goleta 2006).

Seabirds

The continental shelf in the study area is biologically productive and supports a wide variety of seabirds, many in high densities (Mills et al. 2005). Their distribution and abundance is subject to temporal fluctuations, both seasonally and from year to year, as prey population densities fluctuate. Seabirds are wide-ranging and many of the seabirds that occur in the Project area migrate seasonally through the area. Other species are resident to the area. Many species roost and nest on the Channel Islands. Seabirds forage widely. Those roosting and nesting on the Channel Islands forage in offshore waters and around the islands, but many species including brown pelicans (*Pelecanus occidentali californicus)* and cormorants *(Phalcrocorax* spp.) often fly from the islands each day to forage in near-shore waters. Seabirds, sea ducks (scoters), loons (*Gavia* spp.), and western grebes (*Aechmorphus occidentalis*) constitute most of the avifauna that use the study area (Baird 1993). Seabird densities tend to be greatest near the northern Channel Islands (i.e., San Miguel, Santa Rosa, Santa Cruz, and Anacapa) in winter and north of Point Conception in spring. Seabird densities are higher along island and mainland coastlines as compared to the open ocean (Mills et al. 2005).

Seabirds tend to congregate at the shelf/slope break, where water depth increases rapidly from about 330 to 6,500 feet. The shelf break/slope fronts and convergences are important habitats for seabirds due to physical processes that promote productivity and concentrate prey (Mills et al. 2005). The diversity of seabirds in the study area is lowest from May to August and highest from fall to early spring (Baird 1993).

The Channel is noted for its rich marine avifauna (Chambers Group 1992). A variety of marine birds including pelicans, gulls, terns, sea ducks, cormorants, grebes and true sea birds occur in the near-shore waters off the Santa Barbara coast and would be expected in the Ellwood area. Large numbers of seabirds pass through the area during this migration on their way to northern breeding grounds. Lehman recorded spring seabird migration at Goleta Point, approximately 3 miles east of PRC 421 (Lehman 1994). The most abundant species observed were Arctic loon (*Gavia arctica*), surf scoter (*Melanitta perspicillta*), brant (*Branta bernicia*), Brandt's cormorant (*Phalacrocorax pencillatus*), Bonaparte's gull (*Larus philadelphia*) and Forster's tern (*Sterna forsteri*).

The Channel Islands, especially the northern islands, are extremely important breeding areas for seabirds. These islands support 12 breeding species, including the State’s entire population of brown pelicans, Xantus's murrelets (*Synthliboramphus hypoleucus scrippsi*), and black storm-petrels (*Oceanodroma melania*) (Mills et al. 2005). The greatest number of species and individual breeding seabirds occur on San Miguel

Island (Mills et al. 2005). The California brown pelican breeds on Anacapa and Santa Barbara Islands.

In the fall of 2005, the offshore portion of Pier 421-1, which had become separated from the mainland pier and remained under ARCO's ownership, was removed. This pier, which became known as "Bird Island," supported large numbers of roosting brown pelicans and cormorants (*Phalacrocorax* spp.) and also supported nesting by Brandt's cormorants. In addition to brown pelicans and cormorants, other marine birds that were observed to use the old pier included snowy egret (*Egretta thula*), little blue heron (*E. caerulea*), Heermann's gull (*Larus heermanni*), California gull (*L. californicus*), and western gull (*L. occidentalis*) (Compton 2006). The pier was located about 850 feet offshore in 32 feet of water and consisted of a wooden deck with steel supports.

To compensate for the loss of bird habitat from removal of the pier, a new structure was installed. Each of the new structures consists of a large column supporting three triangularly shaped platforms projecting out from the column at different directions and at slightly different heights (Compton 2006). Below these three platforms is a circular ledge extending all the way around the column. The structures are arranged in a line extending southwest to northeast in the same general area as the abandoned pier. The Audubon Society was contracted to survey the structures after completion, and have observed nesting Brandt's cormorant, brown pelican, double-crested cormorant (*P. auritus*), snowy egret, Heermann's gull, and western gull (Santa Barbara Audubon Society 2011). Between 2005 and 2010, Brandt's cormorant was by far the most abundant species on the structures, and use by other bird species was noted to be less than for the old pier (Santa Barbara Audubon Society 2011).

The waters off Ellwood were monitored for marine mammals during the removal of the old pier on PRC 421. The monitors also recorded observations on seabirds. Seabirds observed in Project area waters included California brown pelican, Brandt's cormorant, double-crested cormorant, Arctic loon, brant, western gull, Heermann's gull, California gull, horned grebe (*Podiceps auritus*) and great egret (*Casmerodius albus*).

Marine Mammals

The marine mammal fauna of the study area includes at least 34 species that have been identified from sightings or strandings (Bonnell and Daily 1993). All marine mammals are protected under the Marine Mammal Protection Act of 1972 (MMPA). Marine mammals that may occur in the Project area include mysticetes (baleen whales), odontocetes (toothed whales), pinnipeds (seals and sea lions), and the southern sea otter (*Enhydra lutris nereis*). Six species of cetacean are listed as Federal endangered. Two species of pinniped and the southern sea otter are listed as Federal threatened. Listed marine mammals are discussed in detail in the Sensitive Marine Species section below.

California gray whales (*Eschrichtius robustus*) pass through California during their annual migrations between their summer feeding grounds in Alaska and their breeding and calving grounds in Baja California. They are the most common baleen whale in the Channel. Southbound gray whales usually occur in the study area between December and mid-February (Bonnell and Daily 1993). The northbound migration occurs between mid-February and May. Gray Whales Count observed southbound gray whales from November to April and northbound gray whales from January to mid-May (Gray Whales Count 2007). The migration pathway through the study area is broad and somewhat diffuse (Bonnell and Daily 1993). Some whales travel close to the mainland while others follow a more offshore route along the Channel Islands.

The Channel Islands support pinniped rookeries for four species – California sea lions (*Zalophus californianus*), northern fur seals (*Callorhinus ursinus*), northern elephant seals (*Mirounga angustirostris)*, and harbor seals (*Phoca vitulina richardsi*) (Aspen 2005). Two of the Channel Islands, San Miguel and San Nicolas, are the largest pinniped rookeries on the west coast south of Alaska. California sea lions are the most abundant pinniped in the Santa Barbara Channel.

Marine mammals in the Project area were monitored during the demolition of the abandoned pier on PRC 421 in October and November 2005. The most frequently sighted species were harbor seals and California sea lions. Bottlenose dolphins (*Tursiops truncatus*) also were observed frequently. Between 55 and 75 common dolphin (*Delphinus* sp.) were seen about 3 nautical miles (nm) from the pier.

In August 2006, from their observation location at Coal Oil Point, Gray Whales Count observed 34 southbound gray whales (including one calf), 989 bottlenose dolphins (including 217 calves), 12 sea otters, 40 humpback whales, 28 unidentified large whales, and one northern elephant seal. Over the course of 2007, Gray Whales Count observed 567 northbound gray whales (including 52 calves), 28 southbound gray whales, 901 bottlenose dolphins (including 24 calves), 1,060 common dolphin species, three Pacific white-sided dolphins, 66 sea otters, eight unidentified large whales, six humpback whales, and one northern elephant seal (Gray Whales Count 2007).

Harbor seals haul out about 0.4 mile east of Naples Point at a site known locally as “Burmah Beach,” about 2 miles up the coast from the PRC 421 wells. This secluded hauling ground and rookery has been used both day and night by as many as 200 harbor seals (Santa Barbara County 2008). The Naples harbor seal rookery is designated an ESHA in the Santa Barbara County LCP (Santa Barbara County 1982).

Sensitive Marine Species

Table 4.6-1 lists sensitive marine species that may occur in the Ellwood area.

Table 4.6-1. Listed Marine Species that May Occur in the Ellwood Area

Common Name	*Scientific Name*	Status	Habitat	Notes/Occurrence	Frequency
Invertebrates					
White Abalone	*Haliotis sorenseni*	FE	Open, low relief rock or boulder habitat surrounded by sand at 80 to 200 feet depths (Hobday and Tegner 2000)	Point Conception to Baja CA; in water as shallow as 25 feet in the Santa Barbara Channel (Aspen 2005)	Moderate
Fishes					
Southern Steelhead	*Oncorhynchus mykiss*	FE (south of Point Concep-tion); CSC	Anadromous; returns to natal streams and rivers to spawn;	Spawns in coastal streams in Santa Barbara County	High
Reptiles					
Loggerhead Sea Turtle	*Caretta caretta*	FT	Open ocean, coastal waters, and beaches	Nest primarily near Japan and Australia (Aspen 2005); occasionally observed off southern CA usually during the summer months	Low
Pacific Ridley Sea Turtle	*Lepidochelys olivacea*	FT	Open ocean, coastal waters, and beaches tropical and warm temperate waters	Nesting beaches are along the coasts of Mexico and Costa Rica (Aspen 2005); infrequent visitors to waters north of Mexico, although stranded turtles have been found as far north as Washington	Low
Leatherback Sea Turtle	*Dermochelys coriacea*	FE	Open ocean, coastal waters, and beaches	Most common sea turtle in U.S. waters north of Mexico; frequently off CA during the summer and fall over the continental slope (Aspen 2005); eastern pacific migratory corridor occurs along the west coast of the U.S. and Mexico	Low
Birds					
California Least Tern	*Sterna antillarum browni*	FE; SE (nesting colony)	Near-shore waters; breeding populations in CA restricted to coastal locations; forage close to their breeding colonies in bays, harbors, and near-shore ocean waters	Least terns successfully produced chicks at Coal Oil Point in 2006 for the first time in 40 years.	High
Marbled Murrelet	*Brachyramphus marmoratus*	FT; SE	Forages in near-shore waters	Late summer, fall, winter visitor to southern CA, including Channel Islands	Moderate

Table 4.6-1. Listed Marine Species that May Occur in the Ellwood Area (continued)

Common Name	*Scientific Name*	Status	Habitat	Notes/Occurrence	Frequency
Xantus' Murrelet	*Synthliboramphus hypoleucus*	ST	Forages in near-shore waters	Breeds on Santa Barbara, Anacapa, and San Clemente Islands	Moderate
Mammals					
Guadalupe Fur Seal	*Arctocephalus townsendi*	FT	Rocky shorelines and caves	Breeds primarily on Isla de Guadalupe off Baja CA, Mexico coast (Carretta et al. 2004); second rookery was discovered at Isla Benito del Este, Baja CA; individual animals appear regularly at the Channel Islands (Aspen 2005)	Low
Steller Sea Lion	*Eumetopias jubatus*	FT	Rocky and sandy beaches; temperate waters	Southernmost breeding ground is Año Nuevo Island in central CA (Aspen 2005); uncommon in southern CA (Bonnell and Dailey 1993)	Low
Southern Sea Otter	*Enhydra lutris nereis*	FT	Shallow near-shore waters with rocky or sandy bottoms that support large populations of their benthic invertebrate prey (Aspen 2005)	Population occurs primarily from north of Año Nuevo Island in to Point Conception (U.S. Geological Survey [USGS] 2004); small numbers observed regularly east of Point Conception	High
Blue Whale	*Balaenoptera musculus*	FE	Cold and temperate waters offshore	Aggregate in Santa Barbara Channel along the shelf break at about the 650 feet isobath (Aspen 2005); most frequent west of San Miguel Island and along the north sides of San Miguel and Santa Rosa, and the western half of Santa Cruz Island; offshore Channel Islands (Larkman and Veit 1998)	Low
Sei Whale	*Balaenoptera borealis*	FE	Temperate and subtropical waters	Wintering grounds to feeding grounds that extend from west of the Channel Islands as far north as Alaska in summer (Aspen 2005); rare in CA waters	Low
Fin Whale	*Balaenoptera physalus*	FE	Cold and temperate waters offshore	Summer distribution is generally offshore and south of the northern Channel Island chain, particularly over the Santa Rosa-San Nicolas Ridge	Low

Table 4.6-1. Listed Marine Species that May Occur in the Ellwood Area (continued)

Common Name	*Scientific Name*	Status	Habitat	Notes/Occurrence	Frequency
Humpback Whale	*Megaptera novaeangliae*	FE	Migrate along submarine ridges and occasionally enter the coastal waters of the San Pedro and Santa Barbara Channels (Lagomarsino and Price 2001)	Summer through fall along the shelf break off the Channel Islands (Aspen 2005)	Low
North Pacific Right Whale	*Eubalaena japonica*	FE	Temperate waters along the shelf and slope	Since 1955, only five sightings of right whales have been recorded in waters off southern CA (Aspen 2005)	Low
Sperm Whale	*Physeter macrocephalus*	FE	Offshore waters year-round in water depths greater than 3330 feet	Peak abundance from April to mid-June and again from late August through November as they pass by during migration (Aspen 2005)	Low

FE = Federal Endangered; ST = State Threatened; FT = Federal Threatened; SE = State Endangered; FP = CDFW Fully Protected.

White Abalone (*Haliotis sorenseni*) – Federal Endangered: In May 2001, white abalone became the first marine invertebrate to be listed as a Federal endangered species. White abalone is a mollusk that occurs on rocky habitat from Point Conception to Baja California at 80 to 200 feet depths (Hobday and Tegner 2000). White abalone has been recorded in water as shallow as 25 feet in the Santa Barbara Channel (Aspen 2005). White abalone are typically found in open low relief rock or boulder habitat surrounded by sand (Hobday and Tegner 2000). There has been a greater than 99 percent decline in both the abundance and density of white abalone in California since the 1970s (Hobday and Tegner 2000). The abalone fishery contributed to the decline of white abalone by over harvesting and reduced the density to the point where recruitment success has been unlikely. White abalone have a moderate potential to occur in rocky habitat in the Ellwood area.

Southern Steelhead (*Oncorhynchus mykiss)* – Federal Endangered: Steelhead are the ocean-going form of rainbow trout. They spawn in coastal streams, but spend their adult lives in the ocean. The southern Evolutionarily Significant Unit of steelhead extends from the Santa Maria River in San Luis Obispo County to the U.S.-Mexican Border. Steelhead occur at times in many of the coastal streams in Santa Barbara County. Steelhead enter their home streams from November to April to spawn (Aspen 2005). Juveniles usually migrate to sea in spring.

Green Sea Turtle (*Chelonian mydas*) – Federal Threatened: Green sea turtles nest primarily in Mexico and on the Galapagos Islands (Aspen 2005). Off the Pacific coast, sightings have been recorded as far north as British Columbia, although most observations of this species are from northern Baja California and Southern California

(Aspen 2005). Green sea turtles once were common in San Diego Bay, but now appear to be limited to a single channel in the southern part of the bay where they are year-round residents (Aspen 2005). Green sea turtles are seen from time to time off the Southern California coast, usually during the summer months.

Loggerhead Sea Turtle (*Caretta caretta)* – Federal Threatened: Loggerhead sea turtles occur worldwide, but nest primarily near Japan and Australia (Aspen 2005). Loggerhead sea turtles are occasionally observed off Southern California during the summer months. In 2005, the National Marine Fisheries Service (NMFS) issued a final rule to protect loggerhead sea turtles that follow warmer El Niño currents and risk becoming entangled in drift gillnet fishing operations. The regulation prohibits drift gillnet fishing in U.S. waters off Southern California for the months of June, July, and August during an El Niño year that raises sea surface temperatures off Southern California.

Pacific Ridley Sea Turtle (*Lepidochelys olivacea)* – Federal Threatened: This species also sometimes is called the Olive Ridley sea turtle. Ridley sea turtles occur worldwide in tropical and warm temperate waters. In the eastern north Pacific, this species' major nesting beaches are along the coasts of Mexico and Costa Rica (Aspen 2005). These sea turtles are infrequent visitors to waters north of Mexico, although stranded Ridley sea turtles have been found as far north as Washington. A Ridley sea turtle was stranded at Ellwood Beach in 2004 (J. Cordaro, NMFS, pers. com. 2006).

Leatherback Sea Turtle (*Dermochelys coriacea*) – Federal Endangered: Leatherback sea turtles in the eastern Pacific are probably part of the western Mexico, Central America, and northern Peru breeding population (Aspen 2005). Leatherbacks are the most common sea turtle in U.S. waters north of Mexico. Leatherback sea turtles are sighted relatively frequently off California, particularly during the summer and fall. Most observations of leatherback sea turtles off California have been over the continental slope (Aspen 2005). It has been suggested that an eastern Pacific migratory corridor for leatherback sea turtles occurs along the west coast of the U.S. and Mexico.

California Least Tern (*Sterna antillarum browni*) – Federal Endangered; State Endangered: The California least tern ranges from the San Francisco Bay area southward into South America. They are present in California during their breeding season of mid-April to mid-September. Recently, least terns have started nesting at the Coal Oil Point Reserve, just east of Ellwood, and in 2006 produced the first chicks there in 40 years. Least terns forage close to their breeding colonies in bays, harbors, and near-shore ocean waters. Least terns forage in the ocean from just beyond the surf line to up to 1 to 2 miles out to sea (Collins et al. 1979). The majority of least tern foraging in the ocean is within 1 mile of shore in water less than 60 feet deep (Atwood and Minsky 1983). Least terns would be expected to forage in Project area waters during their breeding season.

Xantus' Murrelet (*Synthliboramphus hypoleucus*) – State Threatened: Xantus' murrelets range from Baja California to Oregon and Washington. Xantus' murrelets are common spring and summer residents to the Channel Islands and near-shore islands and offshore mainland waters (Lehman 1994). They nest colonially in only 12 to 15 locations, including Santa Barbara, Anacapa, San Miguel, Santa Catalina, San Clemente, and Santa Cruz Islands. Santa Barbara Island contains the largest breeding concentration of this species in the world (Burkett et al. 2003). An effort to remove black rats from Anacapa Island has re-established nesting by Xantus' murrelets there. This species forages throughout the study area from these nest sites, particularly in the area between Santa Barbara and Santa Catalina Islands and the mainland, but densities are low (Mills et al. 2005).

Marbled Murrelet (*Brachyramphus marmoratus*) – Federal Threatened; State Endangered: Marbled murrelets are very rare late summer, fall, and winter visitors to near-shore waters in Southern California, including several of the Channel Islands (Lehman 1994). They breed in old-growth coniferous forests along the north coast of California northward through coastal British Columbia and Alaska. The U.S. Fish and Wildlife Service (USFWS) designated critical habitat for this species, and a recovery plan is in effect. The breeding range in California is north of Monterey County. Like Xantus' murrelet, this species forages in near-shore waters around the islands, as well as more widely in the study area, which could bring them to Ellwood, but the species is expected to occur here in very low numbers.

Guadalupe Fur Seal (*Arctocephalus townsendi)* – Federal Threatened: Guadalupe fur seals breed primarily on Isla de Guadalupe off the coast of Baja California, Mexico (Carretta et al. 2004). In 1997, a second rookery was discovered at Isla Benito del Este, Baja California. Individual animals appear regularly at the Channel Islands, and a single pup was born on San Miguel Island in 1997 (Aspen 2005).

Steller Sea Lion (*Eumetopias jubatus*) – Federal Threatened: Steller sea lions occur from the Bering Strait in Alaska to Southern California. Their southernmost breeding ground is Año Nuevo Island in Central California (Aspen 2005). Steller sea lions are uncommon in the study area (Bonnell and Dailey 1993). A few adult or subadult males are sometimes seen during the summer around the west end of San Miguel Island, but no breeding has occurred in Southern California since 1980. Steller sea lions would be very unlikely to occur in the Project area off Ellwood.

Southern Sea Otter (*Enhydra lutris nereis*) – Federal Threatened: The southern sea otter ranges from north of Año Nuevo Island in to Point Conception (USGS 2004). Although the sea otter population is concentrated in central California, otters are frequently sighted south of Point Conception. In January 1999, more than 150 otters were counted south of Point Conception (Aspen 2005). In the spring 2004 sea otter survey, 8 sea otters were observed southeast of Point Conception and in spring 2006,

93 sea otters were counted east of the Point (USGS 2004, 2006). Sea otters are relatively rare in the vicinity of Ellwood but they would be expected to occur in the Project area. A sea otter was sighted off More Mesa (Howarth 2006) and in September of 2006, one was seen in Goleta Bay (N. Davis, personal observation 2006). Sea otters usually inhabit shallow near-shore waters with rocky or sandy bottoms that support large populations of their benthic invertebrate prey (Aspen 2005). In California, otters generally live in waters less than 60 feet deep and less than 1.2 miles offshore.

Blue Whale (*Balaenoptera musculus*) – Federal Endangered: In the eastern north Pacific, blue whales are found from the Gulf of Alaska south to at least Costa Rica (Aspen 2005). In Southern California, blue whales tend to aggregate in the Santa Barbara Channel along the shelf break at about the 650 feet isobath (Aspen 2005). Blue whale occurrence in Southern California is strongly seasonal. Blue whales tend to be present in California waters in June through October with peak numbers in August through October (Larkman and Veit 1998). They are almost never seen in winter. Blue whale sightings are most frequent west of San Miguel Island and along the north sides of San Miguel, Santa Rosa, and the western half of Santa Cruz Island. All blue whales observed in the study area during CalCOFI cruises between 1987 and 1995 were offshore of the Channel Islands (Larkman and Veit 1998). The largest aggregations were seen off San Miguel Island and southwest of the south end of San Clemente Island. The stock estimate was 1,480 whales in 2004 (Carretta et al. 2004).

Sei Whale (*Balaenoptera borealis*) – Federal Endangered: Sei whales migrate northward from wintering grounds in temperate and subtropical waters to feeding grounds that extend from west of the Channel Islands as far north as Alaska in the summer (Aspen 2005). Sei whales are rare in California waters. The population off California is believed to be very low (i.e., tens to several hundred).

Fin Whale (*Blaenoptera physalus*) – Federal Endangered: Fin whales occur year-round off central and Southern California with peak numbers in summer and fall (Aspen 2005). In the study area, summer distribution is generally offshore and south of the northern Channel Island chain, particularly over the Santa Rosa-San Nicolas Ridge. Estimates place the fin whale population between California and Washington at about 3,279 animals (Carretta et al. 2004). Fin whales may occasionally occur within the Project area, but they would be expected to be rare.

Humpback Whale (*Megaptera novaeangliae*) – Federal Endangered: Humpback whales occur in California in summer through fall. In the study area, humpback whales tend to concentrate along the shelf break off the Channel Islands (Aspen 2005). Humpbacks often migrate along submarine ridges and occasionally enter the coastal waters of the San Pedro and Santa Barbara channels (Lagomarsino and Price 2001). The total humpback whale population in the North Pacific is now believed to number

more than 6,000 animals with the 2004 estimate for the California/Mexico stock at 681 (Carretta et al. 2004).

North Pacific Right Whale (*Eubalaena japonica)* – Federal Endangered: Since 1955, only five sightings of right whales have been recorded in waters off Southern California (Aspen 2005). All of these sightings were recorded between February and May.

Sperm Whale (*Physeter macrocephalus*) – Federal Endangered: Sperm whales are the largest of the toothed whales. Off California, sperm whales are present in offshore waters year-round, with peak abundance from April to mid-June and again from late August through November as they pass by during migration (Aspen 2005). Sperm whales are a pelagic species and usually are found in water depths greater than 3,300 feet. A 2004 abundance estimate for the sperm whale population along the west coast of the U.S. between Washington and California was 1,233 whales (Carretta et al. 2004).

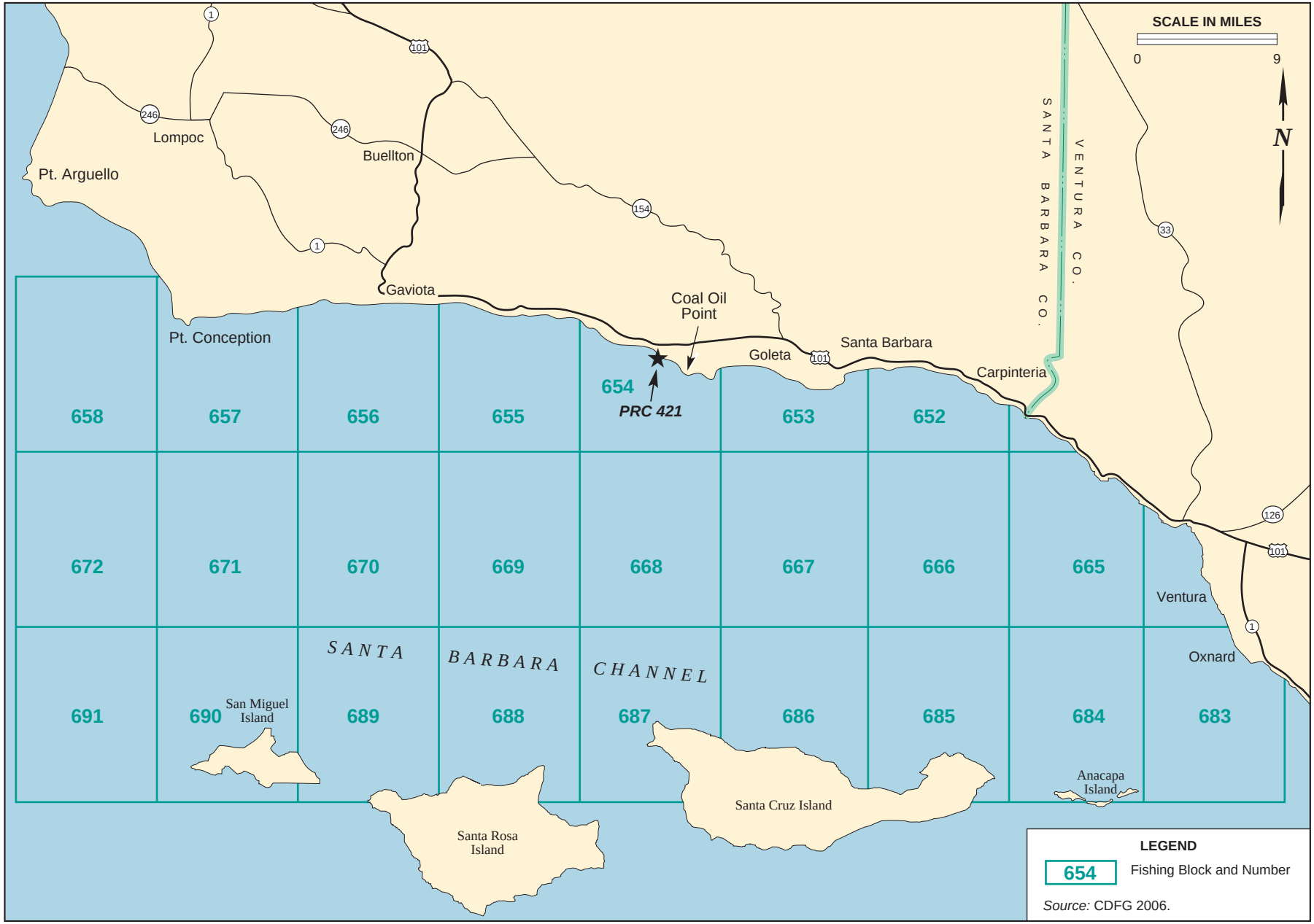
In addition to the aforementioned Federal and State threatened and endangered marine species, several species of special concern to the State are known to frequent the Project area. These include, but are not limited to, great egret (*Ardea alba*), great blue heron (*Ardea herodias*), and long-billed curlew (*Numenius americanus*).

Commercial and Recreational Fishing

Fisheries in the Santa Barbara Channel

A wide variety of finfish and shellfish species are harvested in the Santa Barbara Channel. Commercial and recreational fish harvests are tracked by the California Department of Fish and Wildlife (CDFW) and monthly catch data are reported within rectangular blocks, covering 100 square miles (mile^2) each. A total of 179 different fish taxa were harvested commercially in the 27 fish blocks within the Santa Barbara Channel from 1999 to 2005 (CDFW 2006). From 1999 to 2005, the 199,000-ton harvest was valued at $92.1 million.

A few major taxonomic groups represented the bulk of the commercial catch in the Santa Barbara Channel. In particular, market squid (*Loligo opalescens*) represented almost 70 percent of the biomass and 44 percent of the dollar value of the catch. Urchins (*Strongylocentrotus franciscanus*), California spiny lobster (*Panulirus interruptus*), California halibut, crab (*Cancer* spp.), prawns (*Sicyonia ingentis* and *Pandalus platyceros*), sardines (*Sardinops sagax*), and anchovies (*Engraulis mordax*) made up most of the remaining biomass. Together with the market squid, these groups made up nearly 92 percent of the catch value and 98 percent of the catch biomass within the Channel between 1999 and 2005.



California Department of Fish and Wildlife
Fish Blocks within the Santa Barbara Channel

FIGURE 4.6-3

The commercial fishery within the Santa Barbara Channel may fluctuate dramatically during El Niño events, and landings differ substantially among ports. In addition, the catch is not uniformly distributed across the Channel. Instead, it is heavily weighted toward the Channel Island area (catch blocks 684 through 690 in Figure 4.6-3), which encompass only 12.8 percent of the Santa Barbara Channel area, yet accounted for 50 percent of the value and 44 percent of the total biomass of the commercial fisheries within the Channel between 1999 and 2005. Comparatively, the Project area (catch block 654) accounted for 2 percent of the total value and 0.31 percent of the total biomass caught within the Santa Barbara Channel between 1999 and 2005. The total value for catch landed from block 654 was $1.8M, which consisted primarily of lobster, prawns, urchin, halibut, and sea cucumber.

Recreational Fishing

Recreational fishing in the Santa Barbara Channel is conducted from private or charter vessels, piers, or from the shoreline (e.g., beaches, jetties, breakwaters). Other than fishing logs maintained by the commercial passenger fishing vessel (CPFV) fleet, reliable recreational fish-landing data are not available. Fish landed (numbers of fish) by the CPFV fleet that fished in the Santa Barbara Channel area from 1997 through 2003 are provided in Table 4.6-2. The numbers are conservative estimates of CPFV catch because not all CPFV operators participate in the logbook program (CSLC 2009).

Table 4.6-2. Ranking of Fish Recreationally Harvested in the Santa Barbara Channel from 1997 to 2003

Common Name	Scientific Name	SB Channel Total [1]	Island Fraction [2]	Mainland/Open Fraction
Rockfish	*Sebastes* sp.	724,782	64.3%	35.7%
Kelp Bass	*Paralabrax clathratus*	251,840	40.9%	59.1%
Barred Sand Bass	*Paralabrix nebulifer*	249,997	8.5%	91.5%
Ocean Whitefish	*Caulolatilus princeps*	168,015	84.6%	15.4%
Barracuda	*Sphyraena* sp.	119,611	48.6%	51.4%
Rock Scallop	*Crassedoma giganteum*	67,804	98.3%	1.3%
Scorpionfish	*Scorpaena guttata*	53,964	70.4%	29.6%
Sheephead	*Semicossyphus pulcher*	30,157	87.2%	12.8%
Halfmoon	*Sebastes chrysomelas*	29,798	87.0%	13.0%
Mackerel	*Trachurus symmetricus* and *Scomber japonicus*	26,157	8.3%	91.7%
Yellowtail	*Seriola lanandi*	24,397	86.1%	13.9%
Lobster	*Panulirus interruptus*	23,124	99.6%	0.4%
Other Fish		88,911	69.7%	30.3%
Taxa Total		**1,858,557**	**56.8%**	**43.2%**

[1] Total fish count over five years based on CPFV logs.
[2] Fraction of the Santa Barbara Channel fish caught in the seven blocks (684 through 690) that encompass the Channel Islands and cover 12.8 percent of the Channel area.
Source: CSLC 2009.

Over half (56.8 percent) of the total CPFV catch in the Santa Barbara Channel occurred near the Channel Islands. The CPFV catch fraction around the islands significantly exceeded the fractional area for all but two major taxa (barred sand bass and mackerel).

Abalone (*Haliotis* sp.) were once common in the rocky coastal habitat of the Santa Barbara Channel, but currently all five major species of abalone in central and Southern California are depleted, a result of cumulative impacts from commercial harvest, increased market demand, sport fishery expansion, depredation by sea otters, pollution of mainland habitat, disease, loss of kelp populations associated with El Niño events, substantial poaching losses, and inadequate wild stock management. The California Fish and Game Commission closed the commercial and recreational abalone fishery in southern and central California under emergency action in May 1997. By legislative action in January 1998, the closure was extended indefinitely (CSLC 2009). The Cultured Abalone, a local abalone mariculture company, operates near Dos Pueblos Canyon.

Kelp Beds and Mariculture

In addition to providing habitat as described above, kelp is harvested commercially within the Santa Barbara Channel for various uses. Algin is extracted from a large proportion of the harvest and used as a thickening, stabilizing, suspending, and gelling agent in a wide variety of food, paper, pharmaceutical, cosmetic, and dental products. Mariculture companies are also increasingly using giant kelp as food for their abalone stock. Kelp beds along the coast can produce as much as 1,000 tons of kelp per year, much of which is harvested for use by abalone farming operations.

4.6.2 Regulatory Setting

Federal and State laws that may be relevant to the Project are identified in Table 4.0-1. Local laws, regulations, and policies are discussed below.

Local

Santa Barbara County

The coastal reaches adjacent to PRC 421 fall under the local jurisdictions of the City of Goleta and Santa Barbara County. Santa Barbara County's LCP (Santa Barbara County 1982) identifies ESHAs in the Project vicinity, which include the rocky intertidal habitat at Coal Oil Point and between Point Conception and Ellwood, harbor seal hauling grounds east of Naples, Naples Reef and kelp beds from Jalama to Carpinteria.

City of Goleta General Plan/Coastal Land Use Plan (GP/CLUP)

City of Goleta GP/CLUP policies that are relevant to the Project in regard to marine biological resources are:

- Policy CE 1 – To identify, preserve, and protect the city's natural heritage by preventing disturbance of ESHAs.
- Policy CE 6 – Preserve and protect the biological integrity of marine habitats and resources within and adjacent to Goleta.
- Policy 8 – To preserve and protect habitats for threatened, endangered, or other special-status species of plants and animals to maintain biodiversity.

4.6.3 Significance Criteria

An impact on biological resources would be considered significant if any of the following apply:

- There is a potential for any part of the population of a threatened, endangered, or candidate species to be directly affected or if its habitat is lost or disturbed;
- If a net loss occurs in the functional habitat value of: a sensitive biological habitat, including salt, freshwater, or brackish marsh; marine mammal haul-out or breeding area; eelgrass; river mouth; coastal lagoons or estuaries; seabird rookery; ESHA or Area of Special Biological Significance;
- Permanent change in the community composition or ecosystem relationships among species recognized for scientific, recreational, ecological, or commercial importance;
- Prolonged disturbance to or destruction of habitat (or functional habitat value) of a species recognized as biologically or economically significant in local, State, or Federal policies, statutes, or regulations;
- There is a potential for the movement or migration of fish or wildlife to be impeded; or
- If a substantial loss occurs in the population or habitat of any native fish, wildlife, or vegetation or if there is an overall loss of biological diversity. Substantial is defined as any change that could be detected over natural variability.

An impact to commercial or recreational fishing would be considered significant if the Project would:

- Temporarily reduce any fishery in the vicinity by 10 percent or more during a season, or reduce any fishery by 5 percent or more for more than one season;
- Affect kelp and aquaculture harvest areas by 5 percent or more;

- Result in loss or damage to commercial fishing or kelp harvesting equipment; or
- Harvesting time lost due to harbor closures, impacts on living marine resources and habitat, and equipment or vessel loss, damage, or subsequent replacement.

4.6.4 Impact Analysis and Mitigation

Potential construction- and operations-related impacts to marine biological resources are evaluated below. Table 4.6-3, located at the end of Section 4.6.4, provides a summary of such impacts and recommended MMs to address these impacts.

Impact MBIO-1: Disturbance to Intertidal Organisms during Construction

Construction activities during recommissioning activities at Pier 421-2 and following decommissioning and removal of Pier 421-1 would disturb and kill intertidal invertebrates and might dislodge grunion eggs (Less than Significant with Mitigation).

Impact Discussion

Disturbance of sediment during construction activities associated with caisson repairs on Pier 421-2 and recommissioning of Well 421-2 have the potential to impact marine resources due to excavation and jetting of sand around the piles. Additionally, decommissioning and removal of Pier 421-1, estimated to occur 1 year following Project completion, would produce similar potential impacts.

The Project would require operation of heavy construction equipment on the beach to improve all three non-seaward-facing walls on the caisson at Pier 421-2 as well as to perform repairs to the 25-foot section of 6-inch pipeline near the 12th tee of the Sandpiper Golf Course. ~~These~~ Caisson reinforcements would include construction of walls similar to the one built on the seaward-facing side of Pier 421-2 in 2011. This would include installation of steel piles in 25-foot-deep holes drilled around the caisson and concrete panels between the steel piles. Concrete slurry will then be poured between the new panels and the old caisson walls. To perform this work, an excavator would be located on the beach to scrape sand from between the piles and cut into the bedrock to key the concrete panels in the Monterey shale base. As the bottom panel of each section is being set, a sand jet unit on top of the caisson would clear the sand so that the panel would sit directly on or near the Monterey shale base. The excavation of sand at the base of the caisson would kill intertidal invertebrates living in the sand. The amount of sandy intertidal habitat affected by these construction activities would be small (less than 0.5 acre). Additionally, repair of the 25-foot section of 6-inch pipeline along the access road would also require that construction equipment access the beach adjacent to this section of pipeline. Intertidal invertebrate communities are adapted to the seasonal shifting of sand off and on the beach and repopulate rapidly. Because of the small amount of intertidal habitat that would be affected and the fact that the

intertidal invertebrate community would be expected to re-establish within a year, these impacts would be less than significant.

Decommissioning and removal of Pier 421-1, including the well, pier, and caisson, would disturb the sand at the base of the pier and the surrounding area. Removal of Pier 421-1 would require operation of heavy construction equipment on the beach to decommission the well and deconstruct and remove the caisson and the pier. This activity would include excavating around the piles to perform thermal cuts below the existing ground surface so that the piles can be removed from the beach. This activity would kill intertidal invertebrates living in the sand; however, the construction area would be small and the invertebrate community would be expected to re-establish within a year. This construction activity would be located approximately 250 feet west of the construction activity associated with improvements to Pier 421-2, which is anticipated to occur 1 year earlier. Therefore, it would not interfere with recently recovered or recovering invertebrate populations at Pier 421-2. Because of the small amount of intertidal habitat that would be affected and the fact that the intertidal invertebrate community would be expected to re-establish within a year, these impacts would be less than significant.

If caisson repair on Pier 421-2 or decommissioning and removal of Pier 421-1 occurs between March and September, excavation or jetting of sand would potentially expose grunion eggs deposited in the high intertidal zone. Because grunion populations are declining and the beaches where they spawn are limited, destruction of grunion eggs would result in a loss of the functional value of the beach as grunion spawning habitat. The deposition of grunion eggs on a beach is patchy and even a small area can contain a significant number of grunion eggs (Martin 2006). The destruction of grunion eggs is considered less than significant with mitigation.

Mitigation Measures

MM MBIO-1. Avoid Caisson Repair on Pier 421-2 and Removal of Pier 421-1 during Grunion Spawning Season. Project activities that require equipment access on the beach shall be scheduled to avoid, to the extent possible, anticipated California grunion runs. In the event that construction will occur during the seasonally predicted run period and egg incubation period for California grunion as identified by the California Department of Fish and Wildlife, a Project Biological Monitor, hired by the City of Goleta and paid by Venoco, shall be present on the Project site each night, for the entire night, from one night before the beginning of each seasonally predicted grunion run until one night after the end of each run to monitor the presence of grunion on the site. If any adult grunion are observed at the Project site, no construction activities requiring equipment access within the area of the observed grunion will be allowed until after the next predicted grunion run (or two weeks after the last run in August) in which no adult grunion have been observed on the

Project site, unless otherwise approved by the California State Lands Commission staff.

Rationale for Mitigation

Avoiding caisson repair and pier removal activities during the grunion spawning season would ensure that no grunion eggs were killed or damaged by these activities. If pier removal or caisson repair must occur between March and September, monitoring of grunion spawning and avoiding disturbance to any areas where spawning occurred would also avoid impacts to grunion eggs. Full implementation of MM MBIO-1 would reduce Impact MBIO-1 to less than significant.

Impact MBIO-2: Impacts to Marine Organisms from Sediment Resuspension in the Near-Shore Zone due to Disturbance of Sediments during Construction

Activities during construction activities such as caisson repairs on non-seaward facing walls on Pier 421-2 and later decommissioning and removal of Pier 421-1 would have the potential to resuspend sediments in near-shore waters due to the disturbance of beach sediments. Resuspension of sediment, particularly contaminated sediments, could have adverse impacts on marine organisms (Less than Significant with Mitigation).

Impact Discussion

Caisson repairs of the non-seaward facing walls on Pier 421-2 would disturb sediments by excavation, jetting and the removal and placement of structures in the sand. Additionally, decommissioning and removal of Pier 421-1, expected to occur about 1 year following recommissioning of Pier 421-2, would disturb the sand at the base of the pier and the surrounding area during removal of the pier and caisson. Because the piers are located in the intertidal zone, some of this sediment may become suspended in near-shore waters. Suspended sediment may have a number of adverse effects on marine organisms. Sand can interfere with the appendages of filter feeding invertebrates and clog respiratory appendages of invertebrates. The gills of fishes may become abraded by sediments, but usually fishes move out of the area before they suffer harm. Suspended sediments may increase turbidity over the short term and interfere with the foraging activities of visual predators including fishes, marine mammals, and seabirds such as California brown pelicans and California least terns.

The proposed repair of the caisson at Pier 421-2 and future removal of the pier and caisson at Pier 421-1 would disturb sand in the surf zone. These sediments would be expected to settle rapidly and would not create extensive turbidity plumes. Marine macrophytes like surfgrass, eelgrass, and kelp require light and, therefore, can be affected adversely if turbidity reduces light levels for an extended period of time. No surfgrass occurs in the Project vicinity. Some eelgrass and kelp beds are found offshore. Because kelp and eelgrass are adapted to periods of natural turbidity,

temporary increases in turbidity during construction would not be expected to have an adverse impact on these habitats. Impacts to marine organisms from suspended sediments would be minimal because of the short duration and limited spatial extent of the impacts and because turbidity would occur in the intertidal and shallow subtidal zones that typically are subjected to sediment resuspension from wave action. Impacts would be less than significant.

As discussed in Section 4.5, Hydrology, Water Resources, and Water Quality, although no contaminants were discovered during recent repairs, subsurface soils and soil surrounding the piers have some potential to be contaminated. If these sediments are released into the marine environment during construction, contaminants may be at levels that could have an adverse impact on marine organisms. This impact would be less than significant with mitigation.

Mitigation Measures

Implement MMs WQ-1a through WQ-1b and MMs HAZ-1c through HAZ-1-d.

Rationale for Mitigation

Removal of contaminated sediments prior to in-water construction activities would prevent the release of existing petroleum hydrocarbons resulting from Project activities. Removal of contaminated sub-soil mobilized during drilling would prevent it reaching the surf zone. Erection of a silt curtain would reduce the dispersion of contaminated sediments from the soils surrounding the piers into the water column and would prevent resuspended sediments from dispersing beyond the immediate construction area. Full implementation of these measures would reduce Impact MBIO-2 to less than significant.

Impact MBIO-3: Noise Impacts to Marine Life During Caisson Repairs on Pier 421-2 and Decommissioning and Removal of Pier 421-1

Construction activities during caisson repairs on non-seaward facing walls on Pier 421-2 and decommissioning and removal of Pier 421-1 have the potential to generate noise from operation of heavy construction equipment and from excavation to install new piles and panels. Jetting of sand also can create high noise levels. Construction noise may disturb marine animals, especially marine mammals (Less than Significant).

Impact Discussion

Construction activities associated with the repair of the caisson on Pier 421-2, as well as to perform repairs to the 25-foot section of 6-inch pipeline near the 12th tee of the Sandpiper Golf Course have the potential to produce loud noises due to operation of heavy equipment on the beach, including excavation for the installation of new piles and panels. Additionally, decommissioning and removal of PRC 421, expected to occur 1

year following recommissioning of Pier 421-2, would also require operation of heavy equipment on the beach. The noise and activity of construction may alter the behavior of fishes in the immediate vicinity of the pier or cause them to avoid the construction area temporarily. Information on the sound levels to which fishes are sensitive is limited. Fish sensitivity to noise depends on whether they have any sort of auditory mechanisms for improving hearing sensitivity (Southall 2005). Most fishes do not have special auditory mechanisms and are hearing generalists with relatively poor hearing sensitivity over a narrow band of low sound frequencies (about 0.1 to 1.0 kilohertz [kHz]). Hearing specialists have unique anatomical features that afford them greater hearing sensitivity over a relatively wider range of low sound frequencies (about 0.1 to 3.0 kHz). Hastings et al. (1996) exposed fish (*Astronotus ocellatus*, the oscar) in the laboratory to sounds to determine the effects of sound at various levels typical of man-made sources on the sensory epithelia of the ear and the lateral line. Sounds varied in frequency (60 to 300 hertz [Hz]), duty cycle (20 percent or continuous) and intensity (100, 140, or 180 decibels standardized at 1 micropascal at 1 meter [dB//1uPa]). The only damage that was observed was in four of five fish stimulated with 300-Hz continuous tones at 180 dB//1uPa and allowed to survive for four days. Damage was limited to small regions of the ear. These data suggest that for at least some types of fish only limited physical damage will occur even at exposure to very high levels.

Loud noises may disturb California brown pelicans and cormorants roosting on the structures offshore from Piers 421-1 and 421-2. Varanus Biological Services monitored the behavior of brown pelicans roosting on the breakwater during dredging of the Marina del Rey entrance channel (Varanus 1999). Punctuated events including dredge start-up after periods of inactivity and the tugboat passing between the dredge and the breakwater to retrieve the haul barge caused disturbance to the colony including movements of occasionally large numbers of birds. However, these impacts were generally of short duration (a few minutes) and resulted in pelicans shifting positions along the breakwater. Unusual, sudden or infrequent events of a dramatic nature (fireworks, spotlighting the colony by a boat closely approaching the breakwater, illuminating the breakwater by the dredge after long periods of inactivity) displaced roosting pelicans from the breakwater for lengthy periods of time. The largest reaction to disturbance observed during the monitoring was to an earthquake. All the pelicans left the breakwater in reaction to the event and did not return for 45 minutes. The Bird Island structures are located over 800 feet offshore from the Project site. Noise from Project construction would be expected to attenuate to the 60 to 65 dBA range by this distance and it is unlikely the noise would disturb the roosting birds on the structure.

Noise associated with any potential excavation or drilling would not disturb marine mammals. Baleen whales are thought to be most sensitive to low frequency sounds (about 0.01 kHz to 5 kHz) based on characteristics of their auditory morphology and sound production (Southall 2005). Most odontocete cetaceans that have been directly tested have relatively good hearing sensitivity across a broader range of mid to high

frequencies (about 4 kHz to 100 kHz). Sea lions and fur seals have been shown to be sensitive to a fairly wide range of mid frequencies (about 1 kHz to 30 kHz). True seals are generally capable of hearing across a wide range of low to mid sound frequencies (about 0.2 kHz to 50 kHz). The dominant components of the "communication" calls of most marine mammals fall within the 20 Hz to 20 kHz range (CSLC 2009).

NMFS has adopted 160 decibels (dB) as an acceptable level of impulsive underwater sound. Based on available scientific evidence, acoustic harassment of marine mammals would not be expected to occur below this conservative level. No Project activities are expected to exceed 160 dB; therefore, pier removal and caisson repair operations would not have the potential to produce noises at a level high enough to have adverse impacts to marine mammals.

Marine mammal monitors were present during caisson repair on Pier 421-1 in 2004 and on Pier 421-2 in 2011 (City of Goleta 2006; J. Storrer pers. comm. 2011). A 500-foot safety zone was established for marine mammals and a vibrating pile driver was used, which generated greater noise levels than would occur under the Project. During pile driving activities, monitors neither observed any marine mammals within the 500-foot safety zone nor did they observe changes in the movement or behavior of more distant individuals that would indicate any reaction to pile driving noise.

Because no adverse impacts to marine mammals were noted during previous pile driving operations at PRC 421, and Project activities would generate less noise than occurred during those activities, the Project would have less than significant effects on marine life.

Mitigation Measures

None required.

Impact MBIO-4: Oil Spill Impacts to Marine Resources

Leaks and spills of petroleum hydrocarbons into the ocean could adversely affect marine organisms (Significant and Unavoidable).

Impact Discussion

Oil production on PRC 421 and transport of crude oil from the Project via onshore pipeline have the potential to result in the accidental release of limited quantities of petroleum hydrocarbons. Potential oil spill releases from the Project are discussed in Section 4.2, Safety. A release at Pier 421-2 or from PRC 421 pipelines under most conditions would immediately contact the shore. Oil released to marine waters from the PRC 421 Project area was assumed to be transported approximately 1 mile west of the site and 2 miles to the east, as shown in Figure 4.2-9. A number of sensitive marine habitats occur within the area most vulnerable to a Project-related oil spill such as those

within the Campus Point SMCA. The Bell Canyon Creek lagoon and the Devereux Slough estuary are estuarine habitats that would be highly likely to suffer impacts in the event of a Project-related oil spill if their mouths were open. Tecolote Creek estuary also is within the area most likely to be affected by an oil spill from the Project.

Significant rocky intertidal habitat that would be vulnerable to a Project oil spill occurs near Coal Oil Point east of PRC 421 and within the bend of "Ellwood Cove" approximately 0.5 mile east of the Project site. Rocky intertidal habitat, primarily boulders and cobble, also occurs west of the Project area up-coast from the Bacara Resort. These rocky intertidal areas are used for research by UCSB.

A sizable kelp bed is located approximately 500 feet offshore of the existing caissons and extends for over 1 mile southeast along the Ellwood Coast. Some eelgrass also occurs offshore the PRC 421 piers.

The Bird Island structures, constructed about 850 feet offshore Pier 421-1, support large numbers of roosting seabirds including the brown pelican and double-crested cormorant, a California Species of Special Concern. These birds would be vulnerable to an oil spill when they are foraging in the water. A Project-related spill could also impact beaches used as foraging and nesting habitat by the Federal threatened western snowy plover and waters used for foraging by the State and Federal endangered California least tern, which nests at Coal Oil Point. Although not common, the Federal threatened southern sea otter occurs in the Project area. This species is very vulnerable to oil.

Small spills from the Line 96 pipeline (less than 1 gallon) would be highly unlikely to reach the marine environment. Significant impacts to marine biological resources could result in the unlikely event that a large spill from the Line 96 pipeline (greater than 1 gallon) occurred during high winds or tides that would convey the spilled material towards the shoreline and to sensitive habitats such as Devereux Slough, Goleta Slough, Naples Reef, or Refugio Canyon.

Oil spills have been found to have varying effects on marine resources (Aspen 2005). Documented biological damage from an oil spill has ranged from little apparent damage in the Apex Galveston Bay spill (Greene 1991) to widespread and long-term damage, such as the 1969 West Falmouth spill (Sanders 1977). Some factors influencing the extent of damage caused by a spill are the dosage of oil, type of oil, local weather conditions, location of the spill, time of year, methods used for cleanup, and the affected area’s previous exposure to oil. Other levels of concern are the possibility of food chain contamination by petroleum products and the impact of an oil spill on the structure of biological communities as a whole. The effects of the 2010 spill in the Gulf of Mexico from the Deepwater Horizon are still under investigation, but research published to date on the short-term impacts indicates increased developmental abnormalities in fish (Dubansky et al. 2013; Whitehead 2012), substantial shifts in the composition of

microbial species in the water column (Rivers et al. 2013), and significant reductions in the abundance and diversity of benthic fauna (Montagna et al. 2013).

Oil spilled into the ocean gradually changes in chemical and physical makeup as it is dissipated by evaporation, dissolution and mixing, or dilution in the water column. Various fractions respond differently to these processes, and the weathered residue behaves differently from the material originally spilled. Toxicity usually tends to decrease as oil weathers. Depending on tidal stage and wave energy, oil can become deeply buried in sand and later re-exposed, causing recurrent releases, possibly spanning months or longer.

Laboratory tests have demonstrated the toxicity of petroleum hydrocarbons for many organisms. Soluble aromatic compounds in crude oil are generally toxic to marine organisms at concentrations of 0.1 to 100 ppm. Planktonic larval stages are usually the most sensitive. Very low levels of petroleum, below 0.01 mg/L, can affect such delicate organisms as fish larvae (National Response Center [NRC] 1985). Concentrations as low as 0.4 parts per billion (ppb) caused premature hatching and yolk-sac edema in Pacific herring eggs exposed to weathered Alaska crude oil (NRC 2003).

Biological impacts of oil spills include lethal and sublethal effects and indirect effects resulting from habitat alteration and/or destruction or contamination of a population's food supply. Directly lethal effects may be chemical (i.e., poisoning by contact or ingestion) or physical (i.e., coating or smothering with oil). A second level of interaction is sublethal effects, which are those which do not kill an individual but which render it less able to compete with individuals of the same and other species.

Impacts to plankton from oil pollution could range from direct lethal effects caused by high concentrations of oil in the surface layers of the water column after a major spill to a variety of sublethal effects such as decreased phytoplankton photosynthesis and abnormal feeding and behavioral patterns in zooplankton. Studies of oil spills have generally failed to document major damage to plankton, although lethal effects or severe oiling of individual zooplankton organisms in the immediate vicinity of a spill has been reported in a number of studies. Because plankton distribution and abundance are variable in time and space, any evidence of damage would be very difficult to document.

Plankton populations on the open coast are expected to have low vulnerability to a project-related oil spill. Even if a large number of individual organisms were oiled, rapid replacement by individuals from adjacent waters is expected. In addition, the regeneration time of phytoplankton cells is rapid (9 to 12 hours) and zooplankton organisms are characterized by wide distributions, large numbers, short generation times, and high fecundity (NRC 1985). The impacts to plankton of a spill from PRC 421 operations are expected to be adverse but less than significant.

Open coast sandy beaches, like those immediately adjacent to Piers 421-1 and 421-2 generally would not be expected to suffer long-term damage from a project-related oil spill. Once the oil has been removed, recolonization by sandy beach organisms tends to be rapid (Aspen 2005). However, if large amounts of oil coat the beach, substantial loss of intertidal organisms could occur. Sand and gravel beach habitat was adversely affected by the 1997 Torch/Platform Irene spill off the south-central coast of California (Torch/Platform Irene Trustee Council 2006). After the spill, invertebrates on the beach, particularly sand crabs, and Pismo clams, likely suffered significant mortality due to smothering under blankets of oil and sand compression caused by heavy equipment from cleanup operations. Therefore, in the event of a large spill, impacts to sandy beach habitat could be significant.

Most studies of oil spills have shown that rocky intertidal communities tend to suffer harmful impacts, although spills have occurred where no impacts to this habitat were observed (e.g., Chan 1987). Oil represents a physical and chemical hazard, and intertidal organisms are especially vulnerable to the physical effects of oil (Percy 1982). Sessile species, such as barnacles, may be smothered, while mobile animals, such as amphipods, may be immobilized and glued to the substrate or trapped in surface slicks in tidepools. It has been hypothesized (Hancock 1977) that organisms in the upper intertidal areas where the oil dries rapidly are more apt to be affected by physical effects of oil, such as smothering, whereas organisms in the lower intertidal areas are more exposed to the chemical toxic effect of the liquid petroleum.

The 1997 Torch/Platform Irene spill oiled rocky intertidal habitat in many places along the shoreline. Although levels of injury greater than 10 percent were not documented, the oil exposure was thought to cause low levels of injury to a variety of rocky intertidal species including crustacea, mollusks, arthropods, and algae (Torch/Platform Irene Trustee Council 2006). Black abalone (*Haliotis cracherodii*) and mussel beds were observed to be coated with oil along or near the shores of Vandenberg Air Force Base and at other nearby rocky shorelines.

If an intertidal area suffers severe damage from an oil spill, it may take years for complete recovery. A study of recovery of rocky intertidal communities of central and northern California (Foster et al. 1991) suggested that the high intertidal, algal-dominated *Endocladia/Mastocarpus* community would take one to six years to recover in places where a large area had been decimated, while the mid-intertidal mussel bed assemblage would be likely to take more than 10 years to recover from a disturbance that affected a large area. Mussel beds have been found to trap oil and under some circumstances may allow the oil to persist for years after a spill (NRC 2003). Documented recovery times of intertidal communities from actual oil spills have varied, but have been generally consistent with the above predictions. In contrast, McCall and Pennings (2012) found intertidal crabs and terrestrial arthropods (insects and spiders) to

be resilient to oil exposure; although populations were suppressed following the 2010 Deepwater Horizon spill in the Gulf of Mexico, they had largely recovered after 1 year.

Impacts to valuable intertidal habitat in the immediate Project area is of particular concern because oil spilled from the piers or pipelines could reach these areas rapidly. Rocky intertidal ESHAs occur at "Ellwood Cove" east of the site, Coal Oil Point, and areas along the Gaviota Coast. Impacts to rocky intertidal habitat from a Project-related petroleum spill could potentially be significant.

Compared to the readily observable impact on intertidal communities, impacts on benthic subtidal communities have been more difficult to document. This lack of documented impacts has been found both in the shallow (6 to 60 feet) and deep (>60 feet) subtidal areas. However, the studies that have shown impacts have generally been of shallow water benthic habitats. Often the lack of effects on subtidal communities appears to be because oil does not sink to the bottom. For example, in shallow subtidal SCUBA diving surveys following the 1988 Nestucca spill in Gray's Harbor, Washington, no evidence of subtidal oil deposits was found, and no sediment samples contained oil and grease above detection limits (Carney and Kvitek 1990).

Most studies have failed to document negative effects of oil spills on kelp beds. However, Thom et al. (1993) found that the tissues of bull kelp, *Nereocystis luetkeana*, were damaged following direct exposure to several oil types, including intermediate fuel oil, diesel fuel, and Prudhoe Bay crude oil. Furthermore, oil can cling to kelp and cause the surrounding shoreline to be repeatedly doused by oil as happened in the 1992 Avila spill (Togstad 1993). Kelp holdfasts also can retain oil for years after a spill (NRC 2003). Impacts to Project area kelp beds are unlikely to significantly affect the kelp itself but the oil could persist and affect the associated ecosystem.

Oil spills can affect seabirds directly through oil contamination and indirectly through degradation of important habitat. The direct effect of oiling on birds is predominantly contamination of feathers, removing insulative qualities and reducing buoyancy (Holmes and Cronshaw 1977; Moskoff 2000). Oiling of feathers leads to elevated metabolic rate and hypothermia (Hartung 1967). Oiled birds may also ingest oil through preening of feathers or feeding on contaminated prey. Effects of ingested oil can range from acute irritation and difficulties in water absorption to general pathologic changes in some organs (e.g., Crocker et al. 1974; Fry 1987; Nero and Associates 1983). Ingestion of oil can also result in changes in yolk structure, and reduction in number of eggs laid and egg hatchability (Hartung 1965; Grau et al. 1977). Oiled birds that are able to return to a nest can contaminate the exterior of eggs, reducing hatchability (e.g., Hartung 1965; Patten and Patten 1977). Indirect effects result principally from contamination of habitat where feeding occurs.

Marine birds are known to be conspicuous casualties of oil spills (Hope-Jones et al. 1970; Ford et al. 1991; Torch/Platform Irene Trustee Council 2006). For example, it has been estimated that between 100,000 and 435,000 birds died within three months of the Exxon Valdez spill (Moskoff 2000). Nearly 11 million gallons of oil, orders of magnitude more oil than could be spilled from the Project, were spilled in the 1989 Exxon Valdez spill, but the effects of the Exxon Valdez spill are mentioned to illustrate the extreme vulnerability of seabirds to spilled oil. Those species suffering greatest mortality from past spills along the outer coast have been alcids, cormorants, loons, grebes, and scoters (Smail et al. 1972; Dobbin et al. 1986; Page and Carter 1986). These groups are more vulnerable because they are found in large numbers on the water. Other birds (e.g., gulls and pelicans) typically spend less time on the water or will relocate from the area affected by a spill (Sowls et al. 1980). In the years since the Exxon Valdez spill several species of birds have demonstrated indirect or delayed responses to the spill (NRC 2003). These responses were found in sea ducks and shorebirds, species that forage primarily on intertidal and shallow subtidal invertebrates, as well as several species that forage on small fish found in inshore waters.

The Torch/Platform Irene spill is estimated to have adversely impacted between 635 and 815 seabirds and shorebirds (Torch/Platform Irene Trustee Council 2006). Seabird species impacted by the spill included Brandt's cormorants, common murres (*Uria aalgae)*, western grebe, rhinoceros auklet (*Cerorhinca monocerata*), pigeon guillemot (*Cepphus columba*), elegant tern (*Sterna elegans*), common loon (*Gavia immer*), California brown pelican and several species of shearwaters and gulls.

California brown pelicans and cormorants roosting on the Bird Island structures on PRC 421 are likely to suffer impacts from a Project-related oil spill at Pier 421-2. These birds would be expected to forage in Project area waters and are likely to be oiled. If a spill occurred during the least tern nesting season, California Least Terns from the colony at the Coal Oil Point Reserve might be impacted by the oil. Clearly, a Project-related oil spill has the potential to significantly impact seabirds.

Direct effects of oiling on pinnipeds and sea otters include both surface contamination of fur and possible ingestion of oil while grooming or during suckling of pups. Harbor seals, elephant seals, and sea lions rely predominantly on subcutaneous fat and a high metabolic rate to keep warm. In contrast, fur seals and sea otters depend on the integrity of an air layer trapped in clean fur to provide insulation and buoyancy. Harbor seal pups may be born with a lanugo coat of dense wooly fur to keep them warm until they have stored sufficient subcutaneous fat. These fur-bearing pinnipeds are at particular risk from an oil spill because oiling can reduce the heat-retaining properties of the fur and result in hypothermia and death.

Sea otters, fur seals, and very young harbor seal pups are at extreme risk of mortality from oil spills. Although the main sea otter population is north of Point Conception and

would only be vulnerable to a Project-related spill from the transportation of PRC 421 oil to the San Francisco area, sea otters do occur in the Ellwood area and one or more otters could be oiled from a spill at Pier 421-2 or the pipeline to the EOF. There is no evidence that sea otters are able to successfully avoid oiling if a spill reaches near-shore waters, and both adults and younger animals are equally susceptible to death from oiling. Fur seals, while sensitive to oiling, are typically found over the continental slope and waters farther offshore and are rare in Project area waters. Harbor seal pups with a lanugo coat are susceptible to impacts from oil spills in the first week of life. After molt of the natal fur, and when sufficient fat has been acquired, oil contamination is not likely to have adverse effects. If oil spilled in Project area waters reached the harbor seal rookery east of Naples when pups were present, their fur could become oiled. Impacts of an oil spill on sea otters or harbor seal pups would be significant.

Cetaceans have smooth skin to which oil does not readily adhere. Direct effects of oil spills are limited in large part to inhalation of volatile components and ingestion during feeding by baleen whales. Baleen whales feed opportunistically, but regularly visit specific feeding grounds where euphausiid crustaceans and other invertebrates or small fish form dense shoals. Gray whales, although abundant in winter and spring, feed infrequently and only opportunistically during migration.

The extent to which large whales will avoid oil spills is still unclear. Migrating gray whales have been noted making some attempt to avoid natural oil seeps, but the behavior is inconsistent (Kent et al. 1983). Humpback whales have been observed feeding in an area off Cape Cod where thin oil sheens were present from the Regal Sword spill (Goodale et al. 1979).

Toothed whales, which use echo-location to orient and find prey, may be able to avoid oil slicks. In studies with captive animals, bottlenose dolphins were found to reliably detect oil in a slick one millimeter thick and avoid contact (Geraci et al. 1983; Smith et al. 1983). However, a recent study in the Gulf of Mexico after the Deepwater Horizon spill found increased rates of lung disease and hypoadrenocorticism in bottlenose dolphins (Schwake 2013).

Mitigation Measures

In addition to the measures listed below, MM BIO-4a from the Line 96 Modification Project EIR required update of the OSCP to protect sensitive resources along the pipeline route, and reduces impacts to marine biological resources from oil spills that could reach the ocean through drainages.

MM MBIO-4a. Update South Ellwood Field Oil Spill Contingency Plan (OSCP) to Address a Spill from Lease PRC 421 Oil Production. Prior to beginning construction at PRC 421 and prior to the City of Goleta's issuance of the Land Use permit , Venoco shall update the South Ellwood Field OSCP to address

protection of sensitive biological resources disturbed during an oil spill or cleanup activities. The revised OSCP shall include specific measures to avoid impacts on Federal- and State-listed endangered and threatened species, and shall specifically identify training and procedures to contain oil spilled from production at Lease PRC 421. The OSCP shall identify sensitive resources, including the birds on the Bird Island platforms, kelp beds offshore the piers, intertidal and subtidal resources within the Campus Point SMCA such as those at Coal Oil Point, the harbor seal rookery at Burmah Beach and Naples Reef, and the Naples MPA that could be oiled rapidly from a spill on PRC 421. Rapid response procedures to protect those sensitive resources shall be identified. Venoco shall submit the updated South Ellwood Field and OSCP to the California State Lands Commission, Department of Fish and Wildlife Office of Spill Prevention and Response, California Coastal Commission, Santa Barbara County, and City of Goleta staffs for review and approval prior to operation of the recommissioned facilities.

MM MBIO-4b. Develop a Protection Plan to Keep Birds Roosting on Bird Island from Harm in the Event of an Oil Spill on Lease PRC 421. Prior to starting construction at PRC 421 and prior to the City of Goleta's issuance of a Land Use Permit, Venoco shall engage a biologist experienced with wildlife and bird rehabilitation to determine whether it is necessary to develop a plan specifically to protect pelicans and cormorants roosting on the Bird Island platforms from harm in the event of an oil spill. The biologist shall submit a memorandum explaining their position to the California State Lands Commission staff for review and approval. If the biologist deems plan preparation necessary, Venoco shall include this plan within the revised OSCP, potentially including methods to deter the birds from feeding or resting in oiled waters. The plan also shall include procedures to capture and rehabilitate oiled birds. If the plan is deemed necessary, Venoco shall submit the Plan to the California State Lands Commission, California Coastal Commission, Santa Barbara County, and City of Goleta staffs for review and approval prior to operation of the recommissioned facilities.

Rationale for Mitigation

The South Ellwood Field EAP refers to the beachfront leases of PRC 421 but no procedures specific to those leases are identified. With the resumption of oil production from PRC 421, the potential exists for oil to be spilled from Pier 421-2 and during transport by onshore pipeline. Procedures to protect sensitive marine resources in the immediate vicinity of Pier 421-2 would help to keep oil from reaching these resources. Pelicans and cormorants roosting on the Bird Island platforms in Lease PRC 421 are in immediate danger from a spill at the lease. The development of specific procedures to deter birds from oiled areas and rehabilitate oiled birds would help to reduce impacts on these species.

Residual Impacts

Even with specific procedures to protect sensitive marine resources in the Project vicinity, impacts of a major oil spill would be significant and unavoidable.

Impact MBIO-5: Oil Spill Impacts to Commercial and Recreational Fishing

Accidental discharge of petroleum hydrocarbons into marine waters would adversely affect commercial and recreational fishing (Significant and Unavoidable).

Impact Discussion

A wide variety of fish and shellfish species are commercially harvested in the Project area and biota residing in intertidal and shallow subtidal habitats are vulnerable to oil spills. Several species are commercially and recreationally harvested in the intertidal zone. Sea urchins, for example, ranked first in both pounds landed and dollar value over the six-year period from 1999 to 2005. Both sea urchins and lobsters are high-value species that are harvested commercially and recreationally in the immediate Project area. In addition, market squid alone accounted for over half (70 percent) of the dollar value of the commercial catch during the six years, and accounted for 44 percent of the total catch in biomass. Other intertidal or shallow subtidal organisms such as sea cucumbers and whelks are also harvested within the Santa Barbara Channel. Additionally, The Cultured Abalone relies on kelp harvest from lease 27 located near the Project area.

In the event of an oil spill, impacts could occur to the local commercial and recreational fishing industry. The degree of oiling and the oil spill impacts depend on several factors. These include location of spill, volume, type of oil, amount of weathering, evaporation, dispersion of oil into the water column or shoreline, weather conditions at the time of the spill and immediately following, and the amount of oil that is contained and cleaned immediately after a spill. Although large spills, e.g., greater than 2,000 barrels, are rare, the Santa Barbara oil spill of 1969 was estimated at 80,900 barrels (CSLC 2009). The 1997 spill from the rupture of the Torch Pedernales pipeline was estimated at 163 to 1,242+ barrels (CSLC 2009). While the probability for a spill that would cause oil to contact and foul the shoreline or shallow subtidal areas where commercial or recreational species are harvested is low, the potential for such a spill exists. While contaminated shorelines may be cleaned, in some instances, depending on substrate type, oil may persist in sediments for several years.

Since the Exxon Valdez spill in 1989 and the Deepwater Horizon spill in 2010 several studies have described the effects of oil spills in marine environments, the results of which are incorporated into this analysis by reference (Hayes and Michel 1998, Coats et al. 1999, Spies et al. 1996, and Brown et al. 1996; Dubansky et al. 2013; Rivers et al. 2013; Montagna et al. 2013). Adult fish, due to their mobility, may be able to avoid or

minimize exposure to spilled oil. However, there is no conclusive evidence that fish would avoid spilled oil. Egg and larval stages would also not be able to avoid exposure to spilled oil. The resultant potential losses to commercial and recreational fish resources and those losses due to closure of fishing areas for most or all of a fishing season is considered a potentially significant impact. In addition, fish harvested from contaminated areas may also be reduced in value, and fishing gear may be damaged due to oil fouling, causing additional significant impacts. This impact would be significant and unavoidable.

Mitigation Measures

Implementation of MMs identified in Sections 4.2, Safety; 4.5, Hydrology, Water Resources, and Water Quality; and 4.7, Terrestrial Biological Resources, for contingency planning and spill response would be required.

Rationale for Mitigation

The measures presented in the above-mentioned sections provide improved oil spill response capabilities, oil spill containment measures, and protection of resources. With implementation of those measures, the risk to the marine environment and impacts to commercial and recreational fishing may be reduced.

Residual Impacts

Because there are limitations to thorough containment and cleanup of an offshore oil spill, significant impacts would remain for commercial and recreational fisheries in the intertidal and shallow subtidal zones after mitigation.

Impact MBIO-6: Impacts to Kelp Harvesting

Oil spills could cause damage to kelp beds, which would subsequently affect kelp harvesting. Damage would likely be minor, and kelp would likely recover rapidly (Less than Significant).

Impact Discussion

The effects of oil spills from the Project on beds of giant kelp along the Pacific Coast have been examined several times. Oil spills have caused little damage to the giant kelp beds, even with considerable quantities of crude oil fouling the surface canopies (CSLC 2009). It appears crude oil stays on the surface of the water and does not tend to adhere to the fronds of the giant kelp. The literature indicates that an oil spill and its cleanup cause little damage to kelp beds. Should damage occur, recruitment and recolonization occur rapidly. Therefore, although impacts could occur to kelp canopies, which could affect commercial kelp harvesting, they are generally localized and

temporary in nature. Hence, impacts to kelp and commercial and recreational kelp harvesting operations are adverse but not significant.

Mitigation Measures

None required.

Table 4.6-3. Summary of Marine Biological Resources Impacts and Mitigation Measures

Impact	Mitigation Measures
MBIO-1: Disturbance to Intertidal Organisms during Construction	**MBIO-1~~a~~.** Avoid Caisson Repair or Pier Removal During the Grunion Spawning Season.
MBIO-2: Impacts to Marine Organisms from Sediment Resuspension in the Near-Shore Zone due to Disturbance of Sediments during Construction	**HAZ-1c.** Soil Sampling. **HAZ-1d.** Removal Action Plan. **WQ-1a.** Avoidance of High Tides and Silt Curtain. **WQ-1b.** Water Quality Certification.
MBIO-3: Noise Impacts to Marine Life during Removal of Pier 421-1 and Caisson Repairs on Pier 421-2	None required.
MBIO-4: Oil Spill Impacts to Marine Resources	**MBIO-4a.** Update the South Ellwood Field OSCP to Address a Spill from Lease PRC 421 Oil Production. **MBIO-4b.** Develop a Protection Plan to Keep Birds Roosting on Bird Island from Harm in the Event of an Oil Spill on Lease PRC 421. **MM BIO-4a** (update Emergency Action Plan and Oil Spill Contingency Plan) contained in the certified Line 96 Modification Project EIR.
MBIO-5: Oil Spill Impacts to Commercial and Recreational Fishing	Implementation of MMs identified in Sections 4.2, Safety; 4.5, Hydrology, Water Resources, and Water Quality; and 4.7, Terrestrial Biological Resources for contingency planning and spill response.
MBIO-6: Impacts to Kelp Harvesting	None required.

4.6.5 Cumulative Impacts Analysis

The proposed oil development on PRC 421 would add to the cumulative risk of impacts to marine resources from an oil spill.

Impact MBIO-7: Cumulative Impacts of an Oil Spill on Marine Resources

Oil development at PRC 421 would add to the cumulative risk that marine resources would be impacted by one or more oil spills (Significant and Unavoidable).

Impact Discussion

Oil development projects that would add to the risk of an oil spill in the study area include the Carpinteria Field Redevelopment Project, with the proposed drilling of up to 25 new wells from Platform Hogan, Venoco's Carpinteria Onshore Project, Venoco's

South Ellwood Field Project, and maintenance projects such as the Santa Ynez Unit Offshore Power System Reliability – B Project. The maintenance of the cooperative oil response company, Clean Seas, helps to address cumulative oil spill impacts by maintaining oil spill containment and clean-up equipment, vessels and trained personnel in the study area. The Project-specific contribution of the Project on PRC 421 to cumulative oil spill impacts would be addressed by its EAP for the South Ellwood Field and the SPCC Plan for PRC 421. Project specific MMs MBIO-4a and MBIO-4b would apply to the Project's share of the cumulative oil spill risk; however, potential cumulative impacts would remain significant and unavoidable.

Mitigation Measures

Implementation of MMs MBIO-4a and MBIO-4b would be required.

Rationale of Mitigation

Implementation of Project-specific MMs would help to reduce the impacts of a Project-related oil spill.

Residual Impact

Even with specific procedures to reduce the risk of a Project-related oil spill, the cumulative impacts of an oil spill would remain significant and unavoidable.

4.7 TERRESTRIAL BIOLOGICAL RESOURCES

This section describes terrestrial biological resources in the Project vicinity including local habitats, communities, and sensitive species and evaluates the impacts that implementation of the Project may have on these resources. This analysis focuses on terrestrial biological resources that could be affected by construction and operation as well as removal of primary Project components, including operation of Well 421-2 and decommissioning and removal of Well 421-1 and the associated pier. This analysis also briefly discusses area resources that could be affected by the operation of secondary Project components (existing facilities not proposed for modification) such as the Line 96 pipeline.

This analysis is based on reconnaissance level fields surveys, information from the California Natural Diversity Database (CNDDB) (California Department of Fish and Wildlife [CDFW] 2013), U.S. Fish and Wildlife Service (USFWS), City of Goleta 2006 Mitigated Negative Declaration (MND) (06-MND-001), and Santa Barbara County 2001 MND (01-ND-34) and an accompanying wetland delineation study prepared by URS Corporation, incorporates by reference the conclusions of the Ellwood Marine Terminal (EMT) Lease Renewal Environmental Impact Report (EIR) (California State Lands Commission [CSLC] 2009) and Line 96 Modification Project EIR (Santa Barbara County 2011) regarding area biological resources and the potential impacts on such resources associated with operation of the Line 96 pipeline, and summarizes these where appropriate.

4.7.1 Environmental Setting

Study Area Location and Description

The primary Project study area comprises the immediate onshore areas of the Ellwood Coast that could be subject to direct impacts as a result of Project implementation. This area includes existing PRC 421 facilities, access road, the flowline route along the access road, coastal bluff, golf course easement, and tie-in at the existing Ellwood Onshore Facility (EOF) and adjacent habitats such as Bell Canyon Creek. The secondary Project study area includes the Gaviota Coast and is only discussed in environmental issue areas where the potential exists for impacts that are different from those identified in the certified Line 96 Modification Project EIR.

The primary Project site is located west of the Ellwood-Devereux Open Space and Habitat area and is bordered to the north by the Sandpiper Golf Course. The undeveloped open space surrounding the Ellwood Mesa and Devereux Slough supports the largest complex of coastal ecosystems remaining in the urban area of the south coast of Santa Barbara County. To the west of the primary Project area is Bell Canyon, which drains northwestern Goleta and coastal slopes of the Transverse Range.

The secondary study area includes an 8.5-mile-long segment of the Gaviota Coast that is traversed by the Line 96 pipeline, particularly drainages such as Tecolote, Las Varas, Gato, Dos Pueblos, and Las Flores Creeks.

Sensitive area habitats in these areas include native grasslands, vernal pools, riparian areas, coastal salt marsh and freshwater wetlands, coastal dunes, strand, and sage scrub. These sensitive habitats support a variety of rare plant and animal species which are discussed below. For more details on these habitats and associated species, see the EMT Lease Renewal and Line 96 Modification Project EIRs. To the south of the Project study areas lies the Santa Barbara Channel, which supports a variety of marine species and habitats. Section 4.6, Marine Biological Resources, discusses area marine biological resources and impacts of the Project on such resources.

Historical Repairs of PRC 421 Access Road

As discussed further below, the PRC 421 access road crosses three wetland areas of concern. In 2001, Venoco was granted emergency permits by Santa Barbara County to conduct major repairs on the PRC 421 access road to permit access to PRC 421-1 and 421-2 for a major well stabilization project. According to the County's environmental document (Santa Barbara County 01-ND-34), the access road to PRC 421 had become "severely eroded and was in need of major repair." Based on 01-ND-34, Venoco used an "excavator, grading tractor, front end loader, backhoe, compactor, road grader, 10 wheeler trucks, and a 2,000 gallon water truck" to effectuate major repairs to the road. Approximately 200 tons of rip rap were installed within the gaps of the existent beachside rock revetment to enhance road stability and afford protection from wave erosion. The access road was graded and compacted and then topped with at least 3 inches of road base gravel. Float rock was installed beneath the road base in areas with poor subsurface drainage (e.g., wetland areas). One hundred tons of both road base and float rock were used to adequately secure the road for heavy equipment travel.

URS Corporation prepared a wetland delineation report for three wetlands along the PRC 421 access road, which totaled 6,125 square feet at that time and supported hydrophytic vegetation, wetland hydrology, and hydric soils. Two of the smaller wetland areas were filled in with float rock and road base as avoidance was deemed infeasible. The third (easternmost) wetland at the end of the access road at PRC 421-2 was more substantial, encompassing approximately 5,855 square feet, with wetland hydrology and vegetation. The County estimated that 19.8 percent (1,157 square feet) of that wetland would be impacted through installation of rock base in the area to provide an adequate road and load-bearing surface. In order to stabilize the road, topsoil and biomass in wetland areas, ranging between 6 inches and 2.5 feet deep were removed and three layers of rock were used to fill the excavated area, angular large rock (4- to 12-inch size rock), crushed rock (2-inch size rock), and a final 3-inch layer of road base to complete the surface construction of the area. The County required a 3:1 replacement ratio for the

first and second (westernmost) wetland areas, while a 5:1 ratio was used for the larger, more significant third (easternmost) wetland area. This information remains relevant to the remaining wetlands along this road with potential to be impacted by the Project.

Biological Communities

The following habitats occur in the Project vicinity and are considered in the City of Goleta General Plan to be ESHAs: marine resources, beach and shoreline resources, coastal dunes, coastal bluff scrub, foredune, oak woodlands/savannah, dense stands of native grasslands, all wetlands such as vernal pools, riparian habitats, butterfly roosts, raptor roosts and nests, and habitats that support special-status plant and wildlife species, including western snowy plover habitat.

Upland Habitats

Native upland habitat in the Project vicinity consists of southern coastal bluff scrub, which consists of dwarf shrubs, herbaceous perennials, and annuals; and may also include succulent species. It occurs on poor soils exposed to high salt- and moisture-content winds. Dominant species of this habitat in the area include Brewer's saltbush (*Atriplex lentiformis* ssp. *breweri*), lemonade berry (*Rhus integrifolia*), and seashore blite (*Suaeda taxifolia*) (CSLC 2009). Coyote bush (*Baccharis pilularis* ssp. *consanguinea*) and prickly pear cactus (*Opuntia* sp.) were also noted in the area during a field visit. Since the shoreline area of the Project is armored with a seawall, southern dune habitats are absent from the immediate area of the Project. Therefore, southern coastal bluff scrub habitat begins at the upper boundary of the beach and extends to the bluff crest. Within this habitat, particularly in the vicinity of the seawall, giant reed (*Arundo donax*) has begun to colonize the area just above the armoring structure.

The area north and northeast of the Project above the bluff crest consists of the Sandpiper Golf Course and can be characterized as a developed area; however, the golf course vegetation does include species which are used by wildlife, including eucalyptus, coyote bush, and coast live oaks (*Quercus agrifolia*).

Wetland Habitats

Wetlands and wetland buffers are protected habitat under the Goleta General Plan and the Coastal Act. Although no wetland delineation has been conducted for the Project, at least four wetlands are located in close proximity to the to the Project site. Three of these wetland areas are supported by seeps located along the toe of the bluff immediately adjacent to the project access road. As discussed above, this access road consists of 3 inches of road base gravel and overlies a layer of larger float rock. In addition, each of these wetland areas appears to have been at least partially or wholly excavated and backfilled with rock during past emergency repairs. The largest (approximately 5,440 square feet) and most diverse of the three seep-related wetlands

is located east of the access road terminus and Well 421-2. The dominant species in all of these seep-related wetland areas is saltgrass (*Distichlis spicata*). The larger seep-related fresh/brackish water marsh wetland also supports cattail (*Typha domingensis*), rabbitsfoot grass (*Polypogon monspeliensis*), African brassbuttons (*Cotula coronopifolia*), and saltmarsh sandspurry (*Spergularia marina*). The surface waters present in at least this larger wetland are sufficient to support breeding populations of Pacific tree frogs (*Pseudacris regilla*) and western toads (*Anaxyrus boreas*), and as habitat for avian species. These wetlands are generally located landward of the existing roadbed; however, wet un-vegetated soils exist within the roadbed.

The fourth wetland area is at Bell Canyon Creek, located approximately 100 feet west of the access road (Figure 4.7-1). Portions of the marsh nearest the beach outlet function as a saltmarsh and exhibit typical southern coastal salt marsh vegetation including saltgrass, pickleweed (*Salicornia virginica*), and the non-native giant reed. Limited areas of dune habitat are also present, especially along the western mouth of the canyon. Upper reaches of Bell Canyon in the Project area function as coastal freshwater marsh, riparian scrub, or riparian forest. In the immediate vicinity of the Project site, vegetation includes Brewer's saltbush and bush sunflower (*Encelia californica*). The eastern bank of the canyon has also been used as an oak woodland mitigation site for impacts due to the construction of the Bacara Resort, which is located west of the canyon.

Two other significant coastal estuaries exist in the Project vicinity. Tecolote Creek, located approximately 0.25 mile east of the Project site, is characterized by habitats and species similar to those found at Bell Canyon Creek. Tecolote Creek exhibits the same type of small coastal estuary fronted by a small dune area, with limited open water and salt marsh habitat, which transition into freshwater and riparian areas away from the beach. To the east, approximately 2 miles from the primary Project site, lies regionally significant Devereux Slough coastal salt marsh. The Devereux Slough and surrounding areas support a variety of wetland habitats and associated rare and endangered species and is fronted by the largest coastal dune complex on the south coast of Santa Barbara County. In recognition of its ecological significance, the Devereux Slough and portions of the surrounding habitats have been incorporated into the University of California Santa Barbara's (UCSB's) Natural Land and Water Reserve system as the Coal Oil Point Ecological Reserve. See the EMT Lease Renewal EIR (CSLC 2009) for a complete discussion of these habitats.

Special Status Species

Special status species data were collected from a variety of sources, including the CNDDB, California Native Plant Society's (CNPS's) Inventory of Rare and Endangered Plants of California (2013), and available literature for information on the presence and distribution of State or Federal endangered species.

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Terrestrial Biological Resources in the Project Vicinity

FIGURE 4.7-1

Special Status Plant Species

No Federal- or State-listed rare, threatened, or endangered plant species are known to occur within the Project area; however, several rare, threatened, or endangered plant species are reported or have been recorded to occur in the Project vicinity, and are listed in Table 4.7-1.

Table 4.7-1. Sensitive Plants that are Known or Have the Potential to Occur in the Project Vicinity

Species	Status[1]	Notes/Occurrence
Atriplex coulteri Coulter's saltbush	List 1B	Spreading perennial, occurs on coastal bluffs. Reported to occur on ocean bluffs near UCSB.
Atriplex serenana ssp. *davidsonii* Davidson's saltbush	List 1B	Annual herb, occurs in coastal bluff scrub. May be extirpated from Santa Barbara County, historical occurrence at UCSB.
Baccharis plummerae ssp. *plummerae* Plummer's baccharis	List 4	Shrub, may occur in coastal scrub. Reported to occur at UCSB lagoon and Coal Oil Point Reserve.
Calystegia sepium ssp. *binghamiae* Santa Barbara morning-glory	List 1A	Perennial herb, occurs in marshes and swamps. Presumed extinct, noted to have historically occurred in the Project area in a local lagoon.
Centromadia parryi ssp. *australis* Southern tarplant	List 1B	Annual herb, occurs in moist places such as margins of marshes and mesic grassland.
Horkelia cuneata ssp. *puberula* Mesa Horkelia	List 1B	Perennial herb, may occur in sandy/gravelly coastal shrub habitat; listed in the Dos Pueblos Canyon U.S. Geological Survey (USGS) grid (CNPS 2013); not known to occur at the Project site.
Lasthenia conjugens Contra Costa goldfields	List 1B	Annual herb, occurs in Isla Vista open space and vernal pool reserves; not known to occur in area
Lonicera subspicata ssp. *subspicata* Santa Barbara honeysuckle	List 1B	Shrub, occurs in chaparral and coastal scrub. Known to occur at scattered locations in the Project vicinity.
Malacothrix incana Dunedelion	List 4	Perennial herb, occurs in coastal dunes and coastal scrub. Reported from dunes near Goleta Slough. Not known to occur in Project area.
Malacothrix saxatilis var. *saxatilis* Cliff malacothrix	List 4	Perennial herb, occurs in coastal bluff scrub and coastal scrub. Known to occur in the Project vicinity.
Scrophularia atrata Black-flowered figwort	List 1B	Perennial herb, occurs in chaparral, coastal scrub, coastal dunes and riparian scrub. Reported from dunes near Devereux Slough and Coal Oil Point.
Suaeda esteroa Estuary seablite	List 1B	Perennial herb, occurs in coastal salt marshes. Historically reported from Goleta Slough near the beach.
Suaeda taxifolia Woolly seablite	List 4	Shrub, occurs on margins of salt marshes and in coastal scrub and coastal bluff scrub. Present on the Ellwood Mesa and West Campus Bluffs Nature Park.

[1] California Native Plant Society status codes:

List 1A Presumed extinct in California
List 1B Rare, threatened, or endangered in California and elsewhere
List 4 Plants of limited distribution

Sources: CSLC 2009; CNPS 2013.

Of the plant species listed in Table 4.7-1, only the southern tarplant (*Centromadia* [=*Hemizonia*] *parryi* ssp. *australis*) is known to occur in the immediate vicinity of the Project. Southern tarplant is an annual herb that geminates in the spring and blooms from June to November. It is a member of the sunflower family and has small, yellow flowers and green, bristly, spine-tipped leaves. The largest local population of this species is reported to occur within the EMT lease boundary, which would not be affected by the Project (CSLC 2009).

Avian Special Status Species

A number of avian special status species inhabit the Project area, including the Western snowy plover (*Charadrius alexandrinus nivosus*), Belding's savannah sparrow, and white-tailed kites (*Elanus leucurus*) (City of Goleta 2004). The CNDDB also lists the ferruginous hawk (*Buteo regalis*), a State watch list species, within the Dos Pueblos Canyon USGS grid. These individual species, as well as other potentially occurring special status species, are further discussed below.

Western Snowy Plover. The Western snowy plover was listed by the USFWS as threatened on March 5, 1993. Critical habitat was designated for this species in 1999 and a draft recovery plan for the Western snowy plover is available. A revised version of critical habitat has been proposed for the species which includes a series of beaches along the Pacific coastline from Washington to Southern California, and includes beach habitat along the western side of Coal Oil Point (USFWS 2011).

The Western snowy plover breeds on the Pacific coast from southern Washington to southern Baja California, Mexico, and in interior areas of Oregon, California, Nevada, Utah, New Mexico, Colorado, Kansas, Oklahoma, and north-central Texas, as well as coastal areas of Texas and possibly northeastern Mexico. The Pacific coast population of the Western snowy plover (defined as those individuals that nest adjacent to or near tidal waters, and includes all nesting colonies on the mainland coast, peninsulas, offshore islands, adjacent bays, and estuaries) is genetically isolated from Western snowy plovers breeding in the interior. The coastal population of the Western snowy plover consists of both resident and migratory birds; some birds winter in the same areas used for breeding (CSLC 2009). Migratory individuals of the coastal Western snowy plover travel either north or south within their coastal range.

The Western snowy plover forages primarily in wet sand at the beach-surf interface and feeds on marine worms, small crustaceans, and insects. This species is most likely to nest in shallow depressions on undisturbed, flat areas with loose substrate, such as sandy beaches and dried mudflats along the California coast. Normally, two to three eggs are laid and incubated by both sexes, and hatch in 25 to 30 days. Hatchlings fledge at about 31 days. The breeding season for this species can extend from mid-March through mid-September.

The decline in the Western snowy plover population is attributed primarily to human disturbance, predation, and loss of nesting habitat to encroachment of introduced European beachgrass (*Ammophila arenaria*), and urban development (CSLC 2009).

Devereux Beach is included as a critical habitat unit for 3.1 miles of beach along Coal Oil Point, to the east of the Project site. Beginning at the western limit of Isla Vista County Park, the critical habitat unit follows the beach around Coal Oil Point to the beach adjacent to the end of Santa Barbara Shores Drive and covers a total of 36 acres (CSLC 2009). Within Coal Oil Point Reserve, the mouth of the Devereux Slough is overwintering and breeding habitat for the Western snowy plover (City of Goleta 2004). The wintering plover population reached a maximum of 406 individuals in 2003. The number of breeding pairs reached a maximum of 26 in 2004 (CSLC 2009). Management efforts to protect these plovers include the installation of signage and fences delineating protected areas to limit impacts from beach use on this sensitive species.

Belding's Savannah Sparrow. Belding's savannah sparrows (*Passerculus sandwichensis beldingi*) are non-migratory, year-round residents of coastal salt marshes from Santa Barbara County south into Baja California, Mexico. Their wintering habitat may also include upland habitats. As with other coastal marsh species, development along Southern California's coastline has eliminated much of the sparrow's habitat. Many of the high tidal marsh areas used by this species for nesting have been diked or filled for houses, roads, and other uses. In response to a decline in populations and habitat fragmentation, the Belding's savannah sparrow was listed as endangered under the California Environmental Species Act (CESA) on January 10, 1974; in 1986, a survey of 27 California marsh areas found approximately 2,274 pairs of Belding's savannah sparrows. Approximately 45 percent of the individuals are located on U.S. Navy lands and in the Tijuana Estuary National Wildlife Refuge (CSLC 2009).

Belding's Savannah sparrows feed on sand flies and insects found on mudflats, beaches and coastal vegetation. The breeding season ranges from February through September, with nesting usually occurring from mid-March through early July. Pairs may have multiple clutches in a breeding season. They nest in pickleweed, just above the high tide line, and have also been observed to nest in salt grass. A concealed cup nest is constructed, usually with its rim flush to the ground. Belding's savannah sparrows have been observed on the Ellwood Mesa and within the Goleta Slough (CSLC 2009). Territorial pairs and adults with fledglings have been observed in salt marsh vegetation around Devereux Slough since the spring of 1990 (City of Goleta 2004). There is potential for Belding's savannah sparrows to occur in the Bell Canyon Creek habitat.

Raptors. Due to the presence of grassland habitat at Ellwood Mesa and open space at the Sandpiper Golf Course, numerous raptor species have been observed in the Project vicinity. Cooper's hawk (*Accipiter cooperi),* ferruginous hawk, loggerhead shrike, long-

eared owl, and northern harrier, all of which are California watch-listed species, and white-tailed kites (a California fully protected species) have been documented to occur in the Project vicinity (City of Goleta 2004, CNDDB 2013). Other raptors observed in the Project vicinity include sharp-shinned hawk, burrowing owls, and American prairie falcon.

Turkey vulture (*Cathartes aura*) roosting sites (which are listed as "an ecological community of great interest" in the Santa Barbara County (2002) Comprehensive Plan and nesting sites of other raptors have also been observed in the area. Nests and breeding sites of these species (and others) are protected under the Migratory Bird Treaty Act (MBTA). Lands near to the Project area include large eucalyptus trees which may be used by these species for reproduction. As such, trees would be protected from disruption if breeding or nesting activities occurred in them during the breeding season.

Light-footed Clapper Rail. With fewer than 400 breeding pairs left in the wild, the Federal- and State-endangered light-footed Clapper Rail (*Rallus longirostris levipes*) is one of the most endangered birds in California. The decline of the light-footed clapper rail is believed to be directly related to the degradation and destruction of coastal salt marsh habitat. The light-footed clapper rail was last documented in the Goleta Slough marshes in the 1960s and in Devereux Slough during the 1940s (Lehman 1994). It is considered a rare migrant and unlikely to occur in the Project area due to lack of suitable habitat and extreme rarity.

California Least Tern. Information on the California least tern (*Sterna antillarum browni*), which was federally listed as endangered in 1970 and State-listed in 1971, is provided in Section 4.6.1, Environmental Setting (Marine Biological Resources).

Invertebrate Special Status Species

Two local beetle species are included on the CDFW Special Animals list, but are not formally protected. They inhabit foredune habitat, and are therefore unlikely to reside in the immediate vicinity of the Project site (due to the armoring present at the base of the bluff); however, suitable habitat for these species is present in the Project vicinity.

Globose Dune Beetle. The globose dune beetle (*Coelus globosus*) is one of four species of dune beetles restricted to coastal sand dunes and beaches along the Pacific Coast. This species, similar to the other three, is strongly fossorial (burrowing). The globose dune beetle's distribution covers coastal dunes from northwestern Baja California Norte in Mexico to British Columbia (City of Goleta 2004). It is further restricted to foredunes immediately adjacent to the ocean and can tolerate frequent inundation from ocean tides. Globose dune beetles occur in foredunes around Bell Canyon and Tecolote creeks (City of Goleta 2004). The globose dune beetle has not been recorded within the primary Project area; the nearest observation was within the dune system at Haskell's Beach, approximately 1,800 feet west of the EOF (CDFW

2013). With the exception of a limited dune field at Bell Canyon Creek mouth, existing intertidal ephemeral beach habitats adjacent to Pier 421-1 and 421-2 do not provide high quality habitat for this species which generally requires foredunes or at least persistent beach berms.

Sandy Beach Tiger Beetle. The sandy beach tiger beetle (*Cicindela hirticollis gravida*) occupies sandy beaches and coastal scrub habitats near estuaries in central and Southern California. The larvae use the moist margin of estuaries for burrowing. The adult beetles are carnivorous and feed on flies and other insects common to the tidal zone. The sandy beach tiger beetle has been observed around the mouth of Devereux Slough on the Coal Oil Point Reserve and at Goleta Beach. Suitable habitat also occurs in foredunes at the base of the bluffs along the Ellwood Mesa (City of Goleta 2004). The sandy beach tiger beetle has not been recorded within the primary project area; the closest known observation is within the dune system in the Coal Oil Point Reserve, approximately one mile east of the site (CDFW 2013). With the exception of a limited dune field at Bell Canyon Creek mouth, existing intertidal ephemeral beach habitats adjacent to Pier 421-1 and 421-2 do not provide high quality habitat for this species which generally requires foredunes or at least persistent beach berms.

Monarch Butterfly. The monarch butterfly (*Danaus plexippus*) is a common winter migrant in Santa Barbara County known to occur within 1 mile of the Project site. Monarchs are included in the CDFW's Special Animals List, and overwintering sites are protected under the Santa Barbara County Local Coastal Program (LCP) and City of Goleta (2006) General Plan/Coastal Land Use Plan (GP/CLUP) as environmentally sensitive habitat (ESH). Butterfly aggregation sites within the City of Goleta's portion of Open Space Plan Area are referred to as the Ellwood Complex (CSLC 2009; City of Goleta 2004). The Ellwood Complex consists of six localized sites. All of these sites consist of large clusters or windrows of eucalyptus trees. Roosting monarch butterflies have not been observed at the Project site.

Estuarine and Riparian Special Status Species

Bell Canyon to the west of the Project site contains marsh habitats which qualify both as estuarine (due to the influence of the adjacent ocean) and freshwater (further upstream). Two special status species have been documented to reside in the area and are discussed below:

Southwestern Pond Turtle. The southwestern pond turtle (*Clemmys marmorata pallida*) is a California Species of Special Concern and is currently listed as a candidate for Federal protection. Historically, the southwestern pond turtle had a relatively continuous range along the Pacific slope drainages from southern Washington to Baja California. Habitat requirements for this species include still or slow-moving water and the availability of aerial and aquatic basking sites. The southwestern pond turtle is

known to occur in Devereux Slough, Goleta Slough, and the Campus Lagoon at UCSB. There is potential for this species to occur in the middle and upper portions of Ellwood Canyon, Bell Canyon Creek, and Tecolote Creek (City of Goleta 2004).

Tidewater Goby. The tidewater goby (*Eucylogobius newberryi*) was federally listed as endangered in 1994 by the USFWS. It is a small estuarine fish reaching only 2 inches in length. Preferred habitat for this species includes lagoons, marshes, and tributaries with tidal influence between Del Norte County and San Diego County, California. The goby resides in coastal streams within 2 miles of the ocean and slow, shallow, brackish water. They usually inhabit water with salinities less than 10 parts per thousand (ppt) (City of Goleta 2004); however, they can tolerate salinities up to 60 ppt. This species feeds on small aquatic invertebrates and insect larvae. The majority of tidewater gobies live only one year, making this species highly sensitive to adverse environmental conditions during the breeding season. In the spring and summer of 1998, 1999, and 2002, dense populations of juvenile and adult tidewater gobies were present in the terminal lagoons and lower reaches of Tecolote Creek and Bell Canyon Creek (City of Goleta 2004).

California Red-Legged Frog. The California red-legged frog is listed as threatened by the USFWS, and is considered a Species of Special Concern (CDFW 2009). Its preferred habitats are freshwater marshes and streams with thick growths of emergent vegetation in association with “plunge pools” of moderately deep water. According to the City of Goleta General Plan Conservation Element, California red-legged frogs have been recorded in Bell Canyon and Tecolote creeks (City of Goleta 2006).

Invasive and Non-Native Species

The giant reed, an invasive species native to the Middle East, is apparent in some areas of the Project site and is believed to have been introduced to the area from upstream sources or via rafting. In particular, loosely distributed clumps of the reed are present in the vegetated areas just upslope from the shoreline armoring structures. The California Invasive Plant Council (CIPC) has ranked the giant reed as a species with “severe ecological impacts on physical processes, plant and animal communities, and vegetation structure” (CIPC 2006).

Overview of Biological Resources in the Secondary Study Area

The 8.5-mile-long Line 96 oil pipeline traverses a range of habitat types which support a variety of sensitive species. Most of the reach of this pipeline crosses agricultural lands, disturbed or ruderal habitats along roadways and road corridors, and non-native annual grasslands that do not typically support sensitive species. However, the pipeline also crosses known environmentally sensitive habitats, particularly those found within and on the slopes above drainages including Tecolote, Las Varas, Gato, Dos Pueblos, and Las Flores Creeks. These coastal streams typically support coastal sage scrub and oak

woodland habitats on the slopes that are traversed by the Line 96 pipeline as well as sensitive riparian woodlands along much of the pipeline's route. Where these creeks drain to the Pacific Ocean, small estuaries and wetlands are present.

A variety of sensitive species that could be affected by operation of the Line 96 pipeline can be found within these drainages. Of particular concern are sensitive in-stream fauna that could be affected by a potential future oil spill from this pipeline, including the federally endangered southern steelhead trout (*Oncorhyncus mykiss iridius*), the federally threatened California red-legged frog (*Rana draytonii*), and the southwestern pond turtle, a California species of special concern.

The habitats and sensitive species found along the Line 96 pipeline alignment that could potentially be affected by pipeline operation are discussed in detail in the Line 96 Modification Project EIR (Santa Barbara County 2011).

4.7.2 Regulatory Setting

Terrestrial biological resources in and around the Project area are governed by a variety of Federal, State, and local laws and regulations. Quantitative guidelines, standards, limits, and restrictions promulgated in the regulations form the basis for many for the criteria used to evaluate the significance of the Project's impacts to biological resources. Federal and State laws that may be relevant to the Project, including the California and Federal Endangered Species Acts, are identified in Table 4.0-1. Local laws, regulations, and policies are discussed below.

Local

The City of Goleta GP/CLUP

The City of Goleta GP/CLUP has established policies relating to protecting biological resources in the city limits in the Open Space and Conservation Elements. These policies focus on the preservation and protection of Goleta's environmental resources, including valuable habitat areas, to the maximum extent feasible, while allowing reasonable development in conformance with the provisions of the Land Use Element.

The Santa Barbara County Comprehensive Plan

The Santa Barbara County Comprehensive Plan has established policies related to protecting biological resources in the County. The Environmental Thresholds and Guidelines Manual (1995), including Appendix A of the Manual, established significance criteria and thresholds that supplement those provided in the State CEQA Guidelines for determination of significant environmental effects. For the purpose of this analysis, the Project is subject to Comprehensive Plan policies.

4.7.3 Significance Criteria

Impacts to terrestrial biological resources would be considered significant if the Project results in:

- The potential for any part of the population of a threatened, endangered, or candidate species to be directly affected or if its habitat is lost or disturbed;
- Any "take" of a Federal- or State-listed endangered, threatened, regulated, fully protected, or sensitive species;
- Prolonged disturbance to, or destruction of, the habitat (or its functional habitat value) of a species that is recognized as biologically or economically significant in local, State, or Federal policies, statutes, or regulations;
- A net loss in the functional habitat value of any Environmentally Sensitive Habitat Area (ESHA), including but not limited to salt, freshwater, or brackish marsh; marine mammal haul-out or breeding area; eelgrass; river mouth; coastal lagoon or estuary; seabird rookery; or Area of Special Biological Significance;
- Permanent change in the community composition or ecosystem relationships among species that are recognized for scientific, recreational, ecological, or commercial importance;
- Permanent alteration or destruction of habitat that precludes reestablishment of native biological populations;
- Potential for the movement or migration of fish or wildlife to be impeded; or
- A substantial loss in the population or habitat of any native fish, wildlife, or vegetation or if there is an overall loss of biological diversity. Substantial is defined as any change that could be detected over natural variability.

4.7.4 Impact Analysis and Mitigation

Potential construction- and operations-related impacts to terrestrial biological resources are evaluated below. Table 4.7-2, located at the end of this section, provides a summary of these impacts and recommended MMs to address these impacts.

Impact TBIO-1: Short-Term Construction Impacts to Biological Resources

Construction activities associated with installation of underground cables, repair of pipelines, recommissioning of Pier 421-2, and decommissioning and removal of Pier 421-1 and related infrastructure may impact existing wetlands along the project access road and nearby ESHAs (Less than Significant with Mitigation).

Impact Discussion

Project construction in the area involves the following components: (1) extending and upgrading the existing 6-inch line to accommodate one internal 3-inch flowline from Pier 421-2 to the tie-in at the EOF; (2) installing subsurface cables for power and system control between the EOF and Pier 421-2; ~~and~~ (3) installing an ESP and other equipment to facilitate recommissioning of Pier 421-2; and (4) installing support equipment within the already developed areas of the EOF, including the programmable logic controller cabinet, variable speed drive package, transformer, and various pressure sensors and gauges. This equipment would be located approximately 25 to 50 feet from the western fenceline of the EOF and Bell Canyon Creek beyond, immediately adjacent to existing industrial equipment. Additionally, within 90 days of recommissioning of Pier 421-2 Venoco would apply for decommissioning and removal of Pier 421-1 and its associated well and caisson; this latter activity is expected to occur approximately 1 year following Project construction, and is considered in this analysis. Designated Environmental Sensitive Habitat Areas (ESHAs) of sage scrub/dune/bluff scrub are located on the bluff behind the PRC 421 piers and Bell Canyon Creek and Sperling Preserve are located less than 300 feet from the area that would be impacted by construction activities related to the Project, including the subsequent decommissioning and removal of Pier 421-1.

Excavation for the new subsurface cables would occur in the vicinity of the 12th tee of Sandpiper Golf Course, a highly disturbed area of limited habitat value, with the exception of possible use by raptors for foraging. Use of this area would be expected to include golfing and recreation, and the habitat value is therefore judged to be of similar negligible value. ~~Further, only a~~ Areas near the ends of the 6-inch line would be affected as construction procedures entail opening both ends of the line and sliding the internal 3-inch flowline inside. Additionally, the 6-inch pipeline extensions at both ends, including the approximately 50-foot section by the EOF and 450-foot section along Pier 421-2 and between Piers 421-1 and 421-2, as well as the repair of the 25-foot section near the 12th tee of the Sandpiper Golf Course, would involve some excavation along and adjacent to the access road. No excavation would occur within Bell Canyon Creek and no native riparian vegetation would be removed in this area. Excavation of cable trenches and installation of power and system control lines would take place along the PRC 421 access road right of way, an area which borders three small known wetlands. Impacts to native species and habitats could occur through disturbance to fresh-/brackish-water marsh wetland habitats and associated plant and wildlife species by trenching, deposition of spoils, and operation of heavy equipment resulting in ground disturbance and increased noise levels. Installation of support equipment at the EOF would occur within the existing developed area of the EOF, adjacent and east of the access road, removed by 25 to 50 feet from the ESHA within Bell Canyon Creek. Impacts to special status species potentially including California red-legged frogs are not expected as a result of these construction activities; however, incidental disturbance by equipment,

indirect construction effects, and impacts from accidental fuel or oil releases are possible. If nesting birds are present near the Project, these animals could be disturbed by construction activities. This impact would be less than significant with mitigation.

Mitigation Measures

In addition to mitigation listed below, MM WQ-2 would apply and would require wetland avoidance and minimization measures be in place before construction commences.

MM TBIO-1a. Locate Power Cables and Pipeline Outside ESHA. To the maximum extent feasible, Venoco shall locate new power cables and pipeline repair activities outside existing wetland areas ~~and wetland buffers (defined as undeveloped lands surrounding wetlands)~~ along the access road. A wetland delineation shall be performed in accordance with MM WQ-2. The delineation report and related restoration plan, if required, will establish construction avoidance techniques and restoration where impacts cannot be avoided. The City of Goleta requires a minimum 3 to 1 ratio for wetland or wetland buffer impacts. The wetland delineation, wetland protection plan, and related restoration plan shall be prepared by Venoco for the City of Goleta and Coastal Commission comment and final approval prior to issuance of the City's Land Use Permit. To protect adjacent small wetlands from disturbance, the inland edge of the access road shall be fenced prior to commencement of construction activities. Any unavoidable intrusion of construction activities into this area shall only be performed under the supervision of a City of Goleta-approved biologist. Venoco shall also engage a qualified biologist to prepare a Native Habitat and Special Status Species Survey and Protection Plan (Protection Plan) to be submitted to the City of Goleta and the California Coastal Commission for review and approval prior to the issuance of the City's Land Use Permit. The Protection Plan will map and describe accurate locations of resources in the City's jurisdiction, from the mean high tide line north to Hollister Avenue, in the context of the Project features and all construction staging, laydown, stockpile, and parking areas and shall identify methods to avoid or reduce related impacts to sensitive biological resources and resource buffers. Protection measures will include, at a minimum, a requirement for pre-construction surveys, worker training, the presence of the Project Biological Monitor during all construction activities, and authorization of the Project Biological Monitor to stop work if threats to any sensitive species or habitats are identified during monitoring.

MM TBIO-1b. Project Biological Monitors. The City of Goleta shall hire a Project Biological Monitor, paid for by Venoco, to supervise pipeline and cable installation, and oversee all construction activities that cross sensitive biological areas and habitat restoration and enhancement activities. The Project Biological Monitor shall ensure that damage to any sensitive wetland habitat within or adjacent to construction zones is minimized. The Project Biological Monitor and the project engineer shall clearly designate "sensitive resource zones" on the project maps and construction plans, which would include the mouth of Bell Canyon Creek. Sensitive resource zones shall be defined in the

Native Habitat and Special Status Species Survey and Protection Plan (required under MM TBIO-1a), to avoid impacts to special status biological resources. If the Project Biological Monitor determines that birds are nesting and/or breeding in the Project vicinity, Venoco shall cease Project activities that may affect these birds during the breeding season.

MM TBIO-1c. Restoration Plan/Restoration. Venoco shall submit a Restoration Plan prepared by a consultant specializing in restoration ecology to the City, California State Lands Commission, California Coastal Commission, and California Department of Fish and Wildlife staffs for review and approval prior to the issuance of the City's Land Use Permit. The Restoration Plan shall include at least the following elements and shall be consistent with the wetland-specific guidance and Native Habitat and Special Status Species Survey and Protection Plan associated with implementation of MM WQ-2a and TBIO-1a.

- Venoco shall restore any plant communities disturbed by Project construction activities within 90 days of completion of Project construction in conformance with the City-approved Restoration Plan.
- The Plan shall include criteria for evaluating success of restoration efforts and contingencies in the event efforts and not successful.
- Any salvaging and replanting of existing native vegetation shall be undertaken as much as feasible at the direction of the Project Biological Monitor.
- Only native vegetation and locally derived seeds shall be planted in project restoration areas.
- Monitoring and reporting of restored sites by the Project Biological Monitor shall occur for a minimum of 5 years after Project completion, with changes made as necessary based on annual monitoring reports.

MM TBIO-1d. Protect Stockpiles of Excavated Material. In addition to Best Management Practices identified in the State Water Resource Control Board 401 certification, materials excavated to install the underground cables shall be stockpiled in such a way that they will not inadvertently spill into or be washed into wetland areas. Stockpile areas shall be located at least 100 feet from delineated wetlands. Drainages and any riparian areas shall be prohibited from use for disposal or temporary placement of excess fill. The Project Biological Monitor shall ensure compliance with this mitigation measure during construction monitoring activities.

MM TBIO-1e. Equipment Use, Storage, and Maintenance. Prior to issuance of the Project Land Use Permit, Venoco shall submit an equipment use, storage, and maintenance work plan to the City of Goleta and California State Lands Commission staffs for review and approval. The work plan shall include at least the following elements.

- Heavy equipment and construction activities shall be restricted to the defined construction right-of-way. Vehicles and personnel shall only use existing access roads to the maximum degree feasible.

- Emergency provisions shall be in place at all drainage crossings prior to the onset of construction to deal with accidental spills.
- All equipment used on site and in or near drainages shall be maintained such that no leaks of oil, fuel, or vehicle residues will take place.
- Provisions shall be in place to remediate any accidental spills.
- All machinery shall be stored and fueled in designated locations, such as the equipment laydown areas next to the Ellwood Onshore Facility, as specified in previous sections.

MM TBIO-1f. Biological Enhancement Activities. Where possible (e.g., not including steep slopes adjacent to the roadway), existing native habitats within 100 feet of the proposed trenching activities shall be enhanced in terms of their biological value through removal of invasive, non-native species and the planting of appropriate native species. Enhancement activities are to include removal of the non-native giant reed (*Arundo donax*) and other invasive species identified by the Project Biological Monitor. Hand-removal of above-ground stalk and rhizome biomass shall be undertaken to prevent damage to adjacent native plants. Monitoring and reporting of restored sites by the Project Biological Monitor shall occur for a minimum of 5 years after Project completion, with changes made as necessary based on annual monitoring reports.

Rationale for Mitigation

Implementation of MMs TBIO-1a through TBIO-1f would reduce short-term construction related impacts to onshore biological resources by protecting sensitive resources in the immediate Project area, providing for construction supervision, and requiring restoration-enhancement of impacted habitats.

After implementation of MMs TBIO-1a through TBIO-1f, impacts to terrestrial biological resources from short-term construction activities would be mitigated to a less than significant level.

Impact TBIO-2: Oil Spill Impacts to Terrestrial Biological Resources

An accidental oil spill and subsequent cleanup efforts during operation of the Project would potentially result in the loss or injury of threatened, endangered, or candidate species such as the Western snowy plover; the loss or degradation of functional habitat value of sensitive biological habitats such as coastal wetlands; or cause a substantial loss of a population or habitat of native fish, wildlife, or vegetation (Significant and Unavoidable).

Impact Discussion

An oil spill could occur from Project components including the wells or caisson at Pier 421-2 the pipeline from Pier 421-2 to the EOF, or the Line 96 pipeline; an oil spill would

cause a potentially significant impact to biological resources. Spills in the primary study area would likely be limited to a maximum of 1.7 barrels and those within the secondary study area to a maximum of 60 barrels along the Line 96 pipeline for Llagas Creek and 52 barrels from Corral Canyon. While these spills are relatively small, the threshold for such spills is zero and impacts would be considered potentially significant.

These impacts could include (1) the loss or injury of Federal- or State-listed wildlife species, (2) the loss or degradation of upland, wetland, aquatic, or sensitive biological habitat (including salt, freshwater, or brackish marsh; river mouth; coastal lagoons, estuaries, and breeding habitat designated as critical for the Western snowy plover), or (3) injury to plants and terrestrial and aquatic wildlife (potentially including California red-legged frogs) through direct toxicity, smothering, or entrapment from cleanup efforts. Small leaks or spills that would be contained and remediated quickly could have minor or negligible impacts on biological resources while large spills have the potential to spread onto larger surface areas and may increase the potential for long-term impacts on biological resources. Any large spill from the onshore pipeline would require subsequent cleanup. The cleanup operations and repair would result in impacts on habitat in the Project vicinity, with the extent of disturbance determined by the magnitude of the spill.

Spills from activities from the wells, caissons, pipelines near or on the beach, or disturbances resulting from cleanup efforts within the sandy beach and foredune habitats could affect Western snowy plover and California least tern, especially if a spill were to occur during the breeding seasons for these species. Western snowy plovers use Devereux Slough and the adjacent beaches to the west as wintering and nesting sites. Proposed critical habitat for the Western snowy plover would include Devereux Beach. Effects of an oil spill in this area during the breeding season would potentially increase mortality of nesting plovers, chicks, and fledglings depending on the timing of the spill. A spill would also contaminate or increase mortality of invertebrates that are forage material for the plover, therefore resulting in indirect impacts on individual plovers and/or breeding success. Western snowy plover populations have been decreasing throughout California; however, the population at Coal Oil Point Reserve has increased since 2001 due to successful management efforts by the reserve's staff and volunteer docents (Coal Oil Point Reserve 2008). An accidental oil spill and cleanup activities would interfere with restoration efforts intended to improve the status of the species and would degrade critical habitat. Other sensitive beach area species potentially affected by a spill include the globose dune beetle, the sandy tiger beetle, California red-legged frog, and the tidewater goby in the Bell Canyon and Tecolote Creek marshes, or to steelhead or steelhead Critical Habitat in Tecolote Creek.

Similarly, spills from activities from the wells, caissons, pipelines near or on the beach, or disturbances resulting from cleanup efforts within areas coastal estuaries such as Tecolote Creek and the Devereux Slough could impact sensitive coastal wetland

habitats and dependent species. See the EMT Lease Renewal EIR (CSLC 2009) and Line 96 Expansion Project EIR (Santa Barbara County 2011) for more discussions of potential impacts to regional wetland habitat areas from an oil spill.

A rupture in the proposed 3-inch flowline connecting Well 421-2 to the EOF would likely be contained within the 6-inch line and detected at the control facility where a proper response would be initiated. However, if a spill was not contained, it would likely flow downhill through the coastal bluff scrub habitat and potentially onto the upper intertidal and/or into marsh areas adjacent to the site (either at the terminus of the access road or Bell Canyon). Alternatively, if the spill occurred along the western portion of the pipeline, oil would flow into Bell Canyon Creek. Due to the area's topography, most spills from this portion of the pipeline with sufficient volume to have overland flow would potentially affect the coastal bluff scrub, marsh, dune, and marine habitats.

Spills that enter drainages or riparian corridors along the Line 96 pipeline route to the Plains All American Pipeline L.P. (PAAPLP) Coastal Pipeline tie-in could affect federally listed species, including southern steelhead trout, California red-legged frog, and tidewater goby, especially if a spill occurred during these species' breeding season. Line 96 is designed with numerous safety systems to prevent spills and minimize the potential amount of oil that can be spilled into sensitive areas. These include regular pipeline monitoring and inspection, block valves and flow controls. However, the Project would result in an incremental increase in oil transport operations associated with the Line 96 pipeline, which would incrementally increase the potential for a pipeline failure. Small leaks or spills that could be contained and remediated quickly would potentially have minor or negligible impacts on onshore biological resources. In contrast, large spills or pipeline ruptures that have the potential to spread onto larger surface areas would have significant impacts to terrestrial biological resources. The new pipeline crosses several major streams and tributaries that flow to the Pacific Ocean.

The effects of spilled oil on terrestrial biological resources would depend on factors such as the physical and chemical properties of the oil, specific environmental conditions at the time of the spill, and the species present. Certain types of communities would be more severely affected by an oil spill than others. Salt or fresh water marshes would be most sensitive because the biological activity is concentrated near the soil or water surface where oil would be stranded. Oil could also be potentially widely dispersed by stream or tidal flow, depending on season and meteorological conditions.

An oil spill would impact vegetation both directly and indirectly. Direct effects include smothering of plants that would reduce the availability of water, nutrients, and oxygen to the plant root system. This would potentially result in reduced growth or death. Vegetation recovery would potentially be slow in areas of oiled soils because of lingering toxicity or altered soil characteristics. Impacts of cleanup might be more substantial than the effect of the spilled oil, depending on the remediation method.

Clearing or grading would potentially be required to provide access to ruptured pipelines and oiled vegetation; soils would likely need to be removed and disposed.

Direct impacts on wildlife from oil spills include physical contact with oil, ingestion of oil, and loss of food and critical nesting and foraging habitats. Aquatic reptiles, amphibians, and birds would be the most vulnerable to oil spills. For any impacted sensitive wildlife species, the level of impact would depend on the size and location of the spill, the amount of habitat affected, and the number of individuals and species affected. Impacts on sensitive wildlife species could be short to long term depending on the amount of oil spilled, environmental conditions at the time, containment and cleanup measures taken, and length of time for habitat and sensitive species recovery. This impact would be significant and unavoidable.

Mitigation Measures

Venoco currently maintains an oil spill contingency ~~play~~ plan (OSCP) that addresses spill response actions to be completed in the event of a "significant event" (Venoco 2011a; 2011b). Where a spill or cleanup has the potential to result in impacts on sensitive biological resources or the loss of native vegetation, implementing the following updates to the Venoco OSCP would reduce impacts to onshore biological resources.

MM TBIO-2a. Oil Spill Contingency Plan (OSCP) Measures Regarding Protection of Biological Resources. Before re-starting production at PRC 421, Venoco shall revise and update the OSCP to address protection of sensitive biological resources disturbed during an oil spill or cleanup activities. The revised OSCP shall, at a minimum, include: (1) specific measures to avoid impacts on Federal- and State-listed endangered and threatened species and Environmentally Sensitive Habitat Areas (ESHAs) during response and cleanup operations; (2) identify, feasible, low-impact, site-specific, and species-specific techniques; (3) identify standards of a spill response personnel training program; (4) funding (up to $5,000 each) for City and Coal Oil Point Reserve updates to multi-hazard response plans and other emergency response documents (e.g., those for Coal Oil Point Reserve) to ensure clear internal and inter-agency communication in the event of an accident and for spill clean-up/restoration; and (5) provide one-time training and a brief checklist regarding the OSCP and the Emergency Action Plan for Neighborhood Services and Public Safety Department and Planning and Environmental Review Department, and the staff of the Coal Oil Point Reserve. Venoco shall submit the updated OSCP to the California State Lands Commission, Department of Fish and Wildlife Office of Spill Prevention and Response, California Coastal Commission, Santa Barbara County, and City of Goleta staffs for review and approval prior to operation of the recommissioned facilities.

MM TBIO-2b. Oil Spill Contingency Plan (OSCP) Measures Regarding Habitat Protection and Restoration. Before re-starting production at PRC 421,

Venoco shall revise and update the OSCP to address revegetation of any areas disturbed during an oil spill or cleanup activities. The revised OSCP shall include: (1) preemptive identification of access and egress points, staging areas, and material stockpile areas that avoid sensitive habitat areas; (2) stipulations for development and implementation of site-specific habitat restoration plans and other site-specific and species-specific measures; (3) identification of sources for restoration project implementation (e.g., restoration contractors, seed vendors, native plant nursery facilities, academic institution support); (4) procedures for timely re-establishment of vegetation; (5) monitoring procedures and minimum success criteria to be satisfied for restoration areas; (6) funding (up to $5,000 each) for City and Coal Oil Point Reserve updates to multi-hazard response plans and other emergency response documents to ensure clear internal and inter-agency communication in the event of an accident and for spill clean-up/restoration; and (7) provide one-time training a brief checklist regarding the OSCP and the Emergency Action Plan for Neighborhood Services and Public Safety Department and Planning and Environmental Review Department. Venoco shall submit the updated OSCP to the California State Lands Commission, Department of Fish and Wildlife Office of Spill Prevention and Response, California Coastal Commission, Santa Barbara County, and City of Goleta staffs for review and approval prior to operation of the recommissioned facilities.

The certified Line 96 Modification Project EIR (Santa Barbara County 2011) also included MM BIO-4a that required an update to the OSCP to protect sensitive biological resources in the vicinity of the pipeline route; that MM has been implemented.

Rationale for Mitigation

MM TBIO-2a would provide greater specificity to the OSCP by planning for targeted efforts to minimize remediation impacts on special status species and their habitats, identifying methodologies to reduce impacts from an oil spill, and minimizing the use of procedures that have the potential to cause more damage to a sensitive habitat than the oil spill itself. This measure would also permit training and provide funding for related revisions to plans by the two understaffed agencies most responsible for oversight of the sensitive biological resources potentially affected by a Project-related oil spill.

MM TBIO-2b would ensure that restoration efforts after an impacting event are undertaken efficiently and effectively by establishing plans for mitigating impacts on local populations of sensitive wildlife species and to restore native plant and animal communities to pre-spill conditions. It would include preemptive identification of access and egress points, staging areas, and material stockpile areas that avoid sensitive habitat areas. Assistance and training would be provided to the two agencies with management authority for wetlands and beaches potentially affected by such a spill.

Residual Impacts

An oil spill that potentially results in impacts on Federal- or State-listed wildlife species, such as the Western snowy plover and California least tern, cannot be reduced below significance criteria. Although implementation of MMs TBIO-2a and TBIO-2b would reduce impacts on plant communities and common wildlife species, and could reduce impacts on Federal- and State-listed species and other sensitive plant and wildlife species and their habitats, it would not entirely eliminate the risk of spill impacts to these and other biological resources.

MM TBIO-2a would require Venoco to undertake a planning effort addressing contingencies for an oil response. Contingencies would be targeted and focused on preserving species of concern and their habitat and other plant and wildlife communities to the maximum extent practicable. MM TBIO-2b would provide greater information and capabilities on how to develop and implement habitat restoration plans needed to effectively restore native plant and animal communities to pre-spill conditions and provide monitoring effectiveness criteria. These would help minimize potential oil spill-induced impacts on biological resources including sensitive species, sensitive species habitat, the nearby dune swale pond, surrounding wetland areas, and Devereux Slough. Revegetating with native species in areas where vegetation is removed or otherwise impacted by a spill or cleanup activities would potentially reduce significant impacts on native vegetation and wildlife habitats to below significance criteria; however, large spills that result in impacts to designated (or proposed) critical habitat, wetland and aquatic habitats, and biota, including Federal- and State-listed species would remain significant even after mitigation.

MM BIO-4a from the Line 96 Modification Project EIR required update of the OSCP to ensure protection of sensitive resources, and ensures that response capabilities are in place to address potential future oil spills from this pipeline as required to ensure spill cleanup and protection of sensitive habitats and species.

Table 4.7-2. Summary of Terrestrial Biological Resources Impacts and Mitigation Measures

Impact	Mitigation Measures
TBIO-1: Short-Term Construction Impacts to Biological Resources	**TBIO-1a.** Locate Power Cables and Pipeline Outside ESHA. **TBIO-1b**. Project and Biological Monitors. **TBIO-1c**. Restoration Plan/Restoration. **TBIO-1d**. Protect Stockpiles of Excavated Material. **TBIO-1e.** Equipment Use, Storage, and Maintenance. **TBIO-1f.** Biological Enhancement Activities. **WQ-2.** Wetland Delineation, Avoidance and Impact Minimization
TBIO-2: Oil Spill Impacts to Biological Resources	**TBIO-2a.** OSCP Measures Regarding Protection of Biological Resources. **TBIO-2b.** OSCP Measures Regarding Habitat Protection and Restoration. **MM BIO-4a** (update Emergency Action Plan and Oil Spill Contingency Plan) contained in the certified Line 96 Modification Project EIR.

4.7.5 Cumulative Impacts Analysis

Impact TBIO-3: Cumulative Impacts to Terrestrial Biological Resources

Potential oil spills occurring as a result of recommissioning Pier 421-2 could result in contributions to cumulative terrestrial biological resource impacts (Significant and Unavoidable).

Impact Discussion

Potential Project-related oil spills could contribute to cumulative impacts to terrestrial biological resources in the Project vicinity. Section 3, Cumulative Impacts Methodology, details projects in the surrounding area that could produce impacts to terrestrial biological resources similar to those anticipated by the Project. Several residential, commercial, institutional, and recreational projects are under environmental review, pending approval, or approved in the Project vicinity and Line 96 pipeline. All of these projects would involve ground disturbance that may impact onshore biological resources in the Project area, as may other approved and probable future projects. The region of influence for onshore biological resource impacts includes Devereux, Bell, Tecolote, Eagle, Dos Pueblos, Las Varas, Gato, Las Llagas, El Capitan, and Corral/Las Flores creeks. Much of the past, present and foreseeable onshore development activity is concentrated within the Devereux Creek area. Potential oil spills from production at PRC 421 and transport through the Line 96 pipeline, when combined with the potential for spills from on-going operations at the LFC processing facility and the PAAPLP Coastal Pipeline could result in adverse biological impacts to Corral/Las Flores Creek. Potential oil spills occurring as a result of Project completion could cumulatively contribute to those impacts. Because of the severity of impacts associated with potential large oil spills from the EOF or Line 96 pipeline, the Project's contribution to the cumulative degradation of Devereux Slough and other waterways and habitat along the pipeline route would be significant and unavoidable.

Mitigation Measures

MMs TBIO-2a and -2b would apply to this impact. MM BIO-4a from the Line 96 Modification Project EIR required update of the OSCP to protect sensitive resources, which further protects sensitive terrestrial biological resources.

Residual Impacts

Each of these projects must meet regulatory requirements designed to reduce the probability and consequences of accidental releases to the environment. However, even the best designed and implemented MMs, such as safe design of the facilities, oil spill contingency plans, training and drills, and availability of oil spill cleanup means, cannot eliminate all risk of an oil spill. The Project's contribution to cumulative impacts would remain significant and unavoidable.

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4.8 LAND USE, PLANNING, AND RECREATION

This section details the existing land use, planning, and recreation conditions in the Project vicinity, outlines applicable land use plans and policies, and summarizes potential land use, planning, or recreation impacts and mitigation measures (MMs) associated with the Project. Information in this section is primarily based on the:

- City of Goleta General Plan/Coastal Land Use Plan (GP/CLUP) Land Use, Open Space, and Conservation Elements;
- City of Goleta Coastal Zoning Ordinance;
- City of Goleta GP/CLUP Environmental Impact Report (EIR); and
- Santa Barbara County Comprehensive and Coastal Plans.

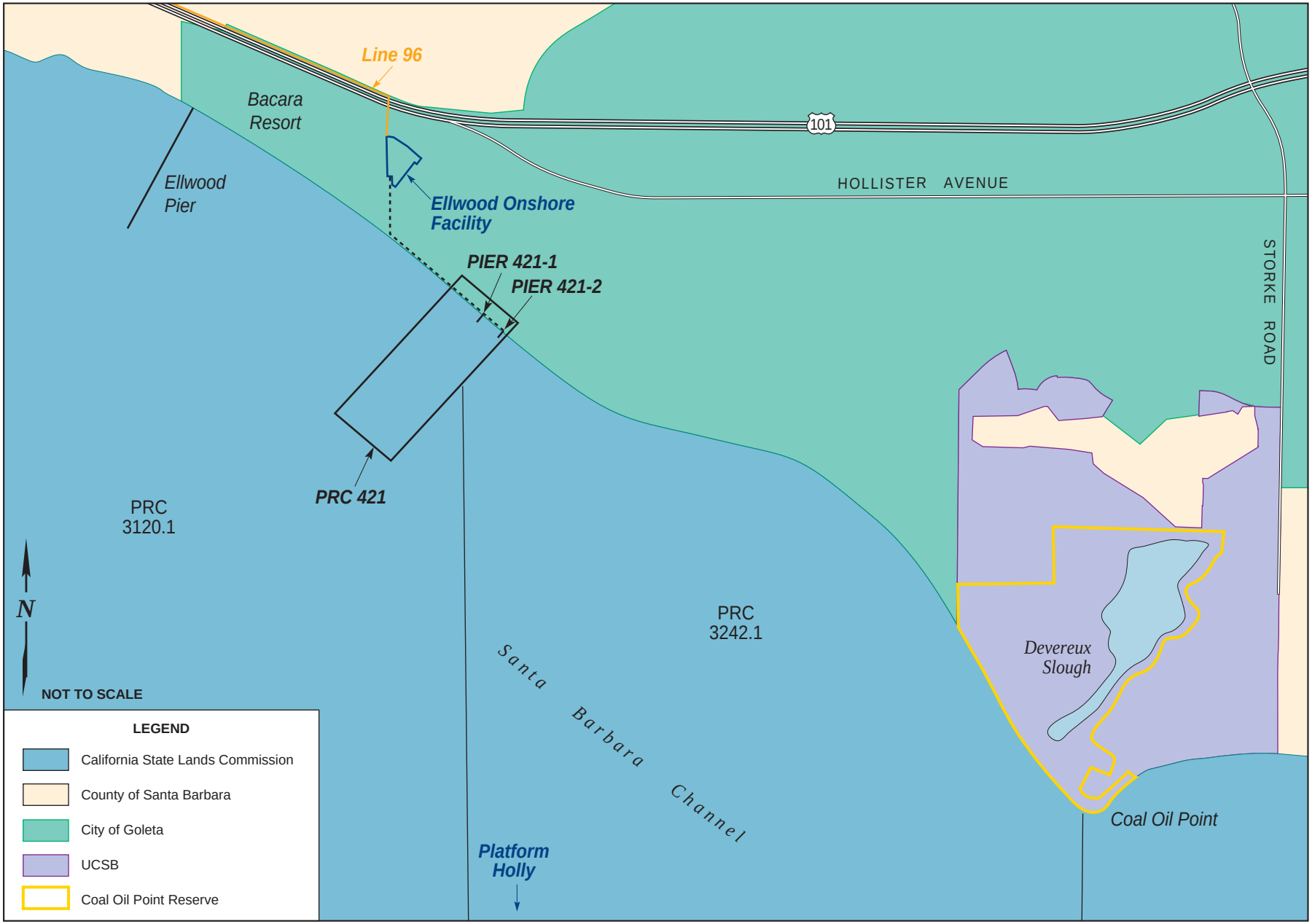
This section also summarizes and incorporates by reference the conclusions of the Ellwood Marine Terminal (EMT) Lease Renewal EIR (California State Lands Commission [CSLC] 2009) and Line 96 Modification Project EIR (Santa Barbara County 2011) regarding potential land use impacts, including agriculture resources, associated with operation of the Line 96 pipeline. This document also incorporates data from Santa Barbara County 01-ND-34 and City of Goleta 06-MND-001.

4.8.1 Environmental Setting

Study Area Location and Description

The primary Project study area comprises the areas of the Ellwood coast that surround the Project site and would be subject to land use or recreational impacts or potential policy inconsistencies as a result of Project implementation. The secondary Project study area includes the Gaviota Coast as discussed in the certified Line 96 Modification Project EIR.

The Project site is located in Santa Barbara County in the City of Goleta, just south of the Sandpiper Golf Course, east of the Bacara Resort north of the Pacific Ocean, and west of the Ellwood Mesa Open Space. As shown in Figure 4.8-1, jurisdiction over the primary Project elements is shared by the CSLC, California Coastal Commission (CCC), and City of Goleta. Santa Barbara County would also have permit authority over changes to facilities under its jurisdiction that may be required as mitigation for this Project, as well as operation and maintenance of the Line 96 pipeline. The majority of the Project located below the mean high tide line (i.e., caissons, wells, electric submersible pump (ESP), and associated construction activities) is under the jurisdiction of the CSLC and CCC, while portions of the Project located above the mean high tide line (including the piers, pipelines, and access road are under the jurisdiction of the City of Goleta and the CCC.



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Jurisdictional Land Use

FIGURE 4.8-1

4.8.2 Land Use and Zoning Designations

State Oil and Gas Lease PRC 421 (PRC 421)

As stated above, the PRC 421 wells and caissons are primarily under the jurisdiction of the CSLC and the CCC, as all or most of these facilities are located below the mean high tide line.[10] Land surrounding the piers that is above the mean high tide line is within the City of Goleta and is designated as a Open Space/Active Recreation area by the City's Land Use Element and is zoned as Recreation by the City's Coastal Zoning Ordinance (City of Goleta 2006b, 2006c). Figure 4.8-2 summarizes land use in the Project vicinity. While the PRC 421 piers are not used for recreational purposes, the site is surrounded by recreational uses including the Sandpiper Golf Course, the Bacara Resort, and by Ellwood and Haskell's beaches, which serve as major public coastal access points and are frequented by beach goers, joggers, surfers and walkers (City of Goleta 2006c). The Ellwood Onshore Facility (EOF) and Sandpiper Golf Course are designated as Open Space/Active Recreation and zoned Coastal Recreation. The Bacara Resort is designated as Commercial Visitor-Serving by the Goleta GP/CLUP and is zoned C-V, Resort/Visitor Serving Commercial (City of Goleta 2006b, 2006c).

Other Ellwood Area Facilities Related to the Project

Ellwood Onshore Facility: The Project would transport oil/gas/water pumped at Pier 421-2 to existing facilities at the EOF for processing, along with Platform Holly production, and subsequent delivery into the Line 96 pipeline. The Project would also modify and depend upon control facilities located at the EOF. The EOF is zoned Recreation and has been a legal nonconforming use since implementation of this designation in 1991 (City of Goleta 2006b, 2006c). The change in land-use and zoning designations in 1991 converted the EOF to a legal nonconforming use that allows the facility to continue to operate under the rights of its current permit, but not to expand, extend, enlarge, or exceed the current rights. The existing EOF is an oil and gas treating facility with the capability to treat 20,000 barrels of oil per day (BOPD) of wet oil and 20,000 million standard cubic feet per day of gas. Currently, Santa Barbara County APCD Permit 7904-R7 limits throughput at the EOF to 13,000 BOPD dry basis (excluding water content), based on permit emissions limits of dry crude oil tanks TK-202 and TK-203.

[10] The mean high tide demarcates the jurisdiction boundary between local governments such as the City of Goleta and the inter-tidal or offshore waters under jurisdiction of the CSLC. Determination of the mean high tide line requires a survey which has not been performed to date. For that reason, the precise boundary between State and local jurisdiction is not determined.

Source: City of Goleta 2006.

Land Use Designations in the Project Vicinity

FIGURE 4.8-2

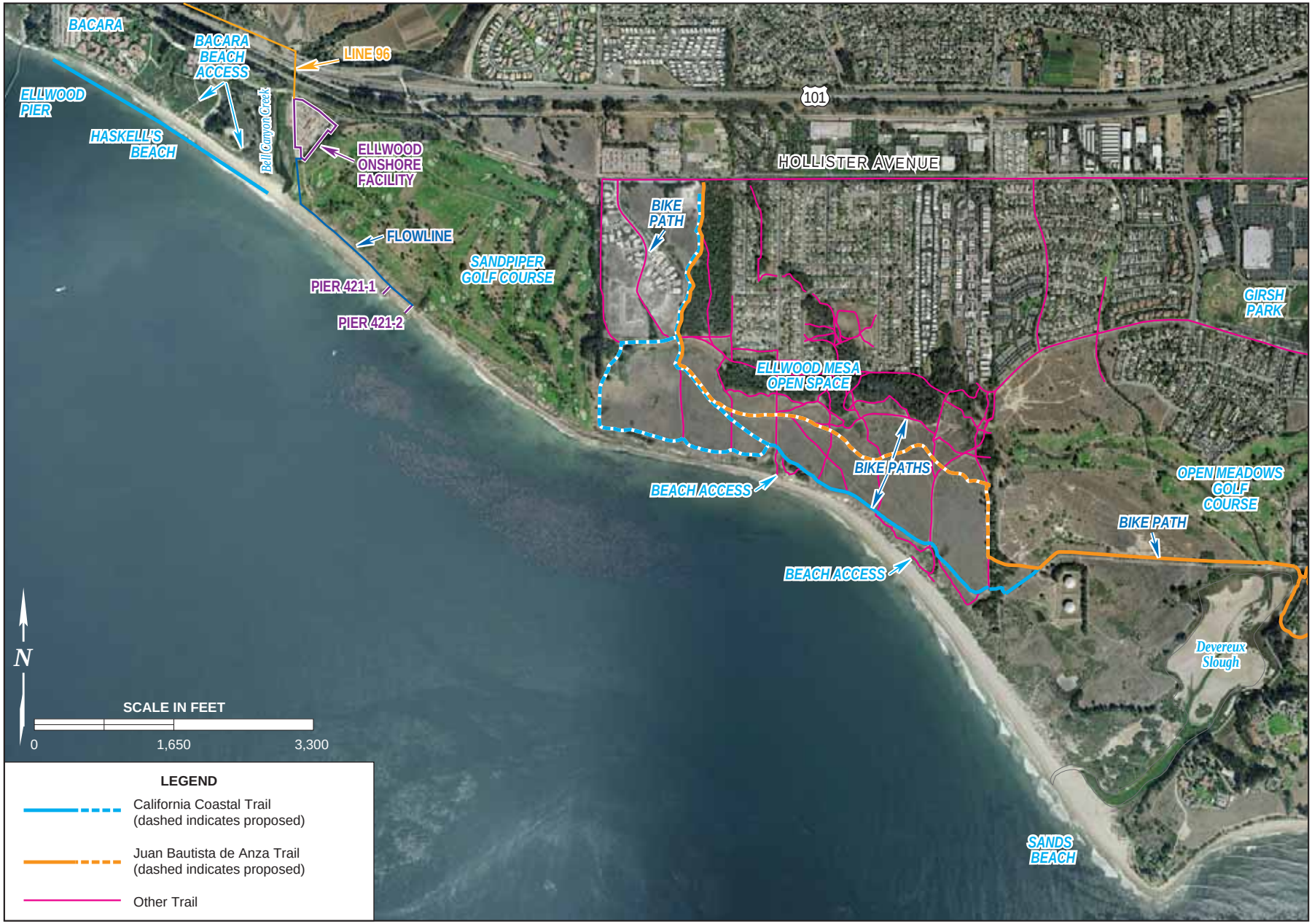
Line 96 Pipeline: The Project would use the 8.5-mile-long Line 96 pipeline to transport oil produced at PRC 421. This pipeline connects to the Plains All American Pipeline L.P. (PAAPLP) Coastal Pipeline west of Las Flores Canyon (LFC). This pipeline is mostly located in areas under County jurisdiction, with a limited portion located under City of Goleta jurisdiction (see Figure 4.8-1). The lands under County jurisdiction are primarily zoned for agricultural use. Impacts to agricultural resources were fully analyzed and mitigated for the construction and operation of the new pipeline in the Line 96 Modification Project EIR (Santa Barbara County 2011).

4.8.3 Recreation

The Project site is located in a region that offers a wealth of recreational opportunities, due to its natural beauty, undeveloped beaches and open space, topography, and climate (Figure 4.8-3). PRC 421 is located on the beach, just east of the Bacara Resort, the only beachfront resort in the City of Goleta, and due south of Sandpiper Golf Course, which is open to the public. Sands Beach, the University of California Santa Barbara's (UCSB's) Coal Oil Point Reserve and open lands, and the Ellwood Mesa Open Space and associated five coastal access points are all located east of and within 2 miles of the site. These undeveloped open spaces and beaches are major coastal recreational areas used by thousands of beach goers annually. The combination of the miles of beach front, varied ecological habitats, and scenic ocean and mountain vistas attracts many visitors to the area. This is a heavily used, passive recreation area that provides high quality recreational opportunities to the inhabitants of the surrounding areas, as well as of the greater Santa Barbara area and beyond. Passive recreational activities currently take place over most of the area that is accessible to the public.

The primary recreational activities that currently take place in the Project vicinity include walking, jogging, picnicking, wildlife viewing, mountain biking, horseback riding, sun bathing, swimming, surfing, surf fishing, dog walking, bird-watching, and photography. One public golf course is in the immediate vicinity of the Project area: the 200-acre, 18-hole Sandpiper Golf Course, located due north of and adjacent to the Project area (CSLC 2009). Additional recreational resources are maintained and operated by a number of entities, including Santa Barbara County, City of Goleta, and private providers.

The City of Goleta has six park types including one community center, three mini parks, five community parks, seven regional open spaces, eight neighborhood parks, and 14 neighborhood open spaces, totaling approximately 526 acres. The three larger City-owned regional open space preserves—the Sperling Preserve, Santa Barbara Shores Open Space (which together comprise the Ellwood Mesa), and Lake Los Carneros Natural and Historical Preserve—collectively account for 363 acres.



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Recreational Uses in the Project Vicinity

FIGURE 4.8-3

Approximately 40 percent of the city's 2.0 miles of Pacific shoreline is in city ownership (City of Goleta 2006c). The Santa Barbara Shores Park is located due east of Sandpiper Golf Course and the Sperling Preserve adjacent to the eastern boundary of the park, approximately 0.8 mile east of the Project site (City of Goleta 2006c). The Santa Barbara Shores Park currently provides an entry point for equestrian use for the system of interconnected trails in the Ellwood-Devereux open space area (CSLC 2009).

4.8.4 Regulatory Setting

No Federal regulations, authorities, or administering agencies that regulate land use are specifically applicable to recreational resources with respect to the Project; State laws, regulations, and policies, including those of the California Coastal Act, are discussed in Table 4.0-1, while the local regulatory setting is discussed below.

The Coastal Commission (CCC) was established by voter initiative in 1972 (Proposition 20) and later made permanent by the Legislature through adoption of the California Coastal Act of 1976. The CCC, in partnership with coastal cities and counties, plans and regulates the use of land and water in the coastal zone. Development activities, which are broadly defined by the Coastal Act to include (among others) construction of buildings, divisions of land, and activities that change the intensity of use of land or public access to coastal waters, generally require a coastal permit from either the CCC or the local government. Implementation of Coastal Act policies is accomplished primarily through the preparation of local coastal programs (LCPs) that are required to be completed by each of the counties and cities located in whole or in part in the coastal zone. Completed LCPs must be submitted to the CCC for review and approval. Following certification of an LCP, coastal permit authority is delegated to the local jurisdiction, but the CCC retains original permit jurisdiction over certain specified lands (such as tidelands and public trust lands). The CCC also has appellate authority over development approved by local governments in specified geographic areas as well as certain other developments (e.g., oil and gas projects). The City of Goleta has not yet submitted their LCP to the CCC for certification and as such, Project components within the coastal zone of the City will require a coastal development permit from the CCC. The standard of the review for the CCC is the Chapter 3 policies of the Coastal Act. Table 4.8-2, located at the end of Section 4.8, summarizes some of the Coastal Act policies as they relate to the Project.

The CSLC has jurisdiction and management authority over all ungranted tidelands, submerged lands, and the beds of navigable lakes and waterways. All tidelands and submerged lands, granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the Common Law Public Trust.

As general background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable lakes and waterways upon its

admission to the United States in 1850. The State holds these lands for the benefit of all people of the State for statewide Public Trust purposes, which include but are not limited to waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space.

Local

Santa Barbara County Goleta Community Plan

The Goleta Community Plan provides development policies, including the general type and location of land uses, specifically tailored for the unincorporated Goleta area and identifies measures to implement those policies. All development within the unincorporated Goleta area must comply with the policies set forth in the Goleta Community Plan. In addition, those portions of the Goleta Community Plan located within the coastal zone have also been incorporated into Santa Barbara County's LCP.

Santa Barbara County LCP

The LCP contains principal land use policies for development within the coastal zone in Santa Barbara County. The project component that lies in the jurisdictional authority of the County's LCP is the Line 96 pipeline that extends west from the City of Goleta. The County's LCP, pursuant to requirements of the Coastal Act (section 30108.5), contains the relevant portion of a local government's general plan, or local coastal element, which indicates the kinds, location, and intensity of land uses, the applicable resource protection and development policies, and a listing of implementing actions. The LCP first came into effect in 1982, and has been revised periodically to update policies. The CLUP represents one component of the LCP, which also includes the Land Use Maps of the Coastal Zone, the Coastal Zoning Ordinance (codified as Article II of Chapter 35 in the Santa Barbara County Code), and the Coastal Zoning Maps (CSLC 2009).

The County has incorporated numerous goals and policies into the LCP to ensure conformance with Coastal Act policies. These include multiple policies intended to protect environmentally sensitive habitats and associated species. Some recent amendments to these policies are intended to update the county's oil transportation policies to bring the policies and ordinances into accordance with present-day circumstances and into consistency with current California law, including amendments to the Coastal Act contained in Assembly Bill (AB) 16, which was adopted in 2003. These amendments would revise several sections of the Coastal Plan and Land Use Element of Santa Barbara's County's Comprehensive Plan, and sections of the Coastal and Inland Zoning Ordinances (Articles II and III, Chapter 35, Santa Barbara County Code); however, these amendments have not been certified by the CCC (CSLC 2009).

Santa Barbara County Land Use Development Code

The Santa Barbara County Land Use and Development Code, adopted January 2007, constitutes a portion of Chapter 35 of the Santa Barbara County Code. This Code carries out the policies of the Santa Barbara County Comprehensive Plan and LCP by classifying and regulating the uses of land and structures within the County. The Land Use Development Code describes numerous land use zones, including Coastal Zone, Oil and Gas Facilities, and describes allowed uses and permitting provisions. However, the Coastal Zone portions of the Land Use Development Code must be certified by the CCC, and there is currently no estimated time when that will occur. Until the Coastal Zone portions are certified, Article II (Coastal Zoning Ordinance) is still in effect.

City of Goleta GP/CLUP

The Goleta GP/CLUP, which was adopted on October 2, 2006, governs land use and physical development within the city limits. The Coastal Zone portions of this GP/CLUP have not yet been certified by the CCC; until these portions of the GP/CLUP are certified, the CCC retains jurisdiction over the Coastal Zone.

The Goleta GP/CLUP includes elements that contain policies to guide development while protecting the natural resources within and integrity of the city (City of Goleta 2006c). Because the GP/CLUP has not been certified by the CCC, the City's policies do not apply to the issuance of a CDP for the Project; the standard of review for issuance of a CDP for the Project is Chapter 3 of the Coastal Act. City policies apply to other required City permits and approvals. The standard of review for any Project components within the City of Goleta will be the following elements of the Goleta GP/CLUP governing land use at the Project site:

- *Land Use Element* – The Land Use Element consists of a policy statement and a land use plan map showing the spatial distribution, location, and extent of lands designated for housing, business, industry, open space, agriculture, and other categories of public and private uses of land.
- *Open Space Element* – The Open Space Element ensures that Goleta recognizes that open space land is a limited and valuable resource that must be conserved wherever possible and establishes policies to protect open space in the city.
- *Conservation Element* – The Conservation Element addresses conservation, development, and use of natural resources, including water, creeks, soils, wildlife, and other natural resources. Population growth and development generally require the consumption of both renewable and nonrenewable natural resources. One role of the Conservation Element is to establish policies that reconcile conflicting demands placed on natural resources and define the balance sought between managed use and preservation of resources

- *Visual and Historic Resources Element* – This element establishes policies and development standards to protect scenic resources and viewsheds.
- *Safety Element* – The Safety Element addresses general safety policies, as well as bluff erosion and retreat, beach erosion and shoreline hazards, soil and slope stability hazards, flood hazards, urban and wildland fire hazards, oil and gas industry hazards, airport-related hazards, hazardous materials and facilities, and emergency preparedness. The Safety Element contains policies that prevent development or land use activities in hazardous areas, and/or require appropriate mitigation to minimize hazards.
- *Noise Element* – The Noise Element identifies and evaluates noise problems in the surrounding community and includes current and projected noise contour maps showing the intensities of noise associated with various sources such as highways, freeways, railroads, airports, industrial plants, etc. Noise contours are considered in establishing the pattern of land uses in a manner that minimizes the exposure of residents to excessive noise.
- *Public Facilities Element* – The Public Facilities Element addresses the nature of existing infrastructure facilities and services, available service capacities, generalized long-term policies to meet future needs, and financing options. This element discusses acceptable levels of service, funding priorities, timing of facility or service availability, and the location of future facilities and improvements to ensure that facilities and services are provided to existing and future development in an efficient and cost-effective manner.
- *Transportation Element* – The Transportation Element guides the continued development and improvement of the transportation system to support land uses. This element contains policies and plans that integrate the transportation and circulation system with planned land uses, promotes the safe and efficient transport of goods and the safe and effective mobility of all segments of the population, and protects environmental quality and promotes the wise and equitable use of economic and natural resources.

Key policies from these elements of the Goleta GP/CLUP and their relationship to the Project are summarized in Table 4.8-3 at the end of Section 4.8. Although the Project is in the Coastal Zone, which is currently governed by the Coastal Act, a policy consistency analysis is included in Table 4.8-3 for information purposes and to address consistency with the GP/CLUP when these policies become active.

City of Goleta Coastal Zoning Ordinance

The City of Goleta Coastal Zoning Ordinance is the tool used to implement the policies of the GP/CLUP. This ordinance largely mirrors County Coastal Zoning Ordinance,

Article II, which restricts the location and type of development permissible within the city. The following provisions are most applicable to the Project (City of Goleta 2006b):

- **Section 35-61: Beach Development.** Prohibits permanent above-ground structures on the dry sandy beach except facilities necessary for public health and safety, such as lifeguard towers, or where such restriction would cause the inverse condemnation of the lot by the county. This section also requires all new development between the first public road and the ocean to grant lateral easements to allow for public access along the shoreline. In coastal areas, where the bluffs exceed 5 feet in height, the lateral easement shall include all beach seaward of the base of the bluff.
- **Section 35-89: Recreation District.** This district provides open space for various forms of outdoor recreation of either a public or private nature. The intent is to encourage outdoor recreational uses which will protect and enhance areas which have both active and passive recreation potential because of their beauty and natural features. No permits for development including grading shall be issued except in conformance with an approved Final Development Plan, as provided in Sec. 35-174 (Development Plans), and with Sec. 35-169 (Coastal Development Permits).
- **Section 35-160, Nonconforming Structures and Uses, Purpose and Intent.** This section permits nonconformities until they are removed, but does not encourage their survival.
- **Section 35-174: Development Plans.** No permit shall be issued for any development, including grading, for any property subject to the provisions of this section until a Preliminary and/or Final Development Plan has been approved.

4.8.5 Significance Criteria

Land use and recreational impacts will be considered significant if the Project would result in:

- Conflicts with adopted land use plans, policies, or ordinances, including the Coastal Act and Goleta GP/CLUP and zoning ordinance;
- Conflicts with planning efforts to protect recreational resources of the Project area;
- Incompatible adjacent land uses as defined by planning documentation; or
- Residual impacts on sensitive shoreline lands, and/or water and non-water recreation due to a release of oil.

4.8.6 Impact Analysis and Mitigation

The Project could create short-term episodic impacts to public recreation due to disruption of ongoing recreational activities during Project construction. These would be considered insignificant due to their short-term nature (3 months) and because the project contains best management practices (BMPs) (e.g., roping off construction areas, directing beach users around the site, removal of equipment from the beach) which would ensure that recreation activities are not unduly disrupted during construction. Table 4.8-1, located at the end of this section, provides a summary of these impacts and recommended MMs to address these impacts.

Impact LU-1: Conflicts with Goleta General Plan/Coastal Land Use Plan and underlying Coastal Act Policies

Production of oil and gas at PRC 421 would increase the potential for accidental releases of oil into the environment and conflict with policies contained within the Goleta General Plan/Coastal Land Use Plan (GP/CLUP) Land Use, Open Space, or Conservation Elements and relevant underlying Coastal Act policies (Significant and Unavoidable).

Impact Discussion

Implementation of the Project, particularly the potential for impacts resulting from the accidental release of oil into the environment, would conflict with the City of Goleta Coastal Zoning Ordinance, several policies of the Goleta GP/CLUP, and with the Coastal Act upon which the Goleta GP/CLUP is based. Direct releases of oil onto Goleta area beaches are projected to be limited to approximately 1.7 barrels of oil; however, the Project would incrementally contribute to larger spills upcoast into Gaviota area streams, with a low potential for spills as large as 60 barrels of oil, a portion of which could find its way to the shoreline and potentially onto downcoast Goleta area beaches. However, the Project has been designed to minimize potential for an accidental release of oil and to be generally consistent with the policies included in the Goleta GP/CLUP and the Coastal Act.

Coastal Zoning Ordinance Section 35-160, Nonconforming Structures and Uses, Purpose and Intent. This ordinance directs that the City shall not encourage the survival of nonconforming uses such as the EOF by permitting modifications that may increase its utility or extend its useful life. The Project is potentially inconsistent with this ordinance, though it is not clear that the proposed minor changes to the EOF qualify as "modifications" under this ordinance.

The Goleta GP/CLUP is not yet certified by the CCC, so it does not currently act as the standard of review for issuance of a CDP for the Project. However, the city has adopted the program and, following certification these policies, the Goleta GP/CLUP will become the governing policy document for the primary Project study area. Therefore, the

following policy consistency analysis is currently informational, but addresses consistency with the GP/CLUP when these policies become active.

Policy LU 10.1: Oil and Gas Processing Facilities. This policy details City support for the County's policies that emphasize consolidation of oil and gas processing in the South Coast Consolidation Planning Area[11], located at LFC in the unincorporated area west of Goleta, and emphasizes that the EOF is currently operating as a nonconforming use of the Project site. The new or upgraded support facilities proposed to be added to the EOF to accommodate production of the PRC 421 product may be considered an enlargement, expansion or extension of the EOF's nonconforming use that is prohibited by the Goleta Municipal Code, section 35-160 et seq. The Goleta Municipal Code also requires the City to approve a Development Permit and Major Conditional Use Permit (CUP) for Venoco to process the PRC 421 product at the EOF. Therefore, the Project would potentially be inconsistent with Policy LU 10.1 and impacts would be significant and unavoidable.

Policy LU 10.4: CSLC Lease PRC 421. This policy documents the city's intention not to support recommissioning oil production at PRC 421 due to the environmental hazards posed by the resumption of oil production and processing over coastal waters and the impacts to visual resources and recreation at the beach. The policy states:

> *Unless it is determined that there is a vested right to resume production at PRC 421, the city supports termination of the lease by the CSLC and/or a quitclaim of the lease by the owner/operator…. If resumption of production is considered for approval, on pier processing…shall not be approved unless it is demonstrated that there is no feasible and less damaging alternative….*

Recommissioning of oil production at Pier 421-2 would incrementally increase the potential for oil spills from the Project site; however, the Project has been designed to minimize the potential for spills in the tidal zone by moving all processing of oil/gas/water to the EOF. This would eliminate the need for processing on Pier 421-2 demonstrating a feasible and less environmentally damaging alternative, consistent with Policy LU 10.4. Additionally, the Project calls for decommissioning Pier 421-1

[11] The Santa Barbara County's consolidation policy (Zoning Code, Art. II, § 35-154) provides that all "new production" must be processed at designated consolidated oil and gas processing sites on the South Coast. New production is defined as:

- "The development of any oil and/or gas after the adoption of these policies which requires new discretionary local, state, or federal permits unless it's from an existing well or platform; or
- The development of any oil and/or gas which, after the adoption of these policies, requires approval of a new platform, or a new subsea or onshore well completion."

Because the PRC 421 wells were in existence (producing and operating) as of the date of the adopted policies and there is an existing lease with existing wells, production from PRC 421 is not considered new production under the above definition; therefore, the production is not subject to the consolidation policy. Processing PRC 421 oil at the EOF, however, could be in conflict with other policies due to the nonconforming use of the EOF.

immediately and proper abandonment of all PRC 421 facilities at the end of the Project life, including restoration of the site to its natural conditions. Nonetheless, because oil production would be resumed at PRC 421, the Project would be inconsistent with the intent of Policy 10.4 and impacts to land use from the Project are would be significant and unavoidable.

Mitigation Measures/Rationale for Mitigation

Implementation of MMs identified in Sections 4.1, Geological Resources; 4.2, Safety, 4.3 Hazardous Materials; 4.5, Hydrology, Water Resources, and Water Quality; 4.6, Marine Biological Resources, and 4.7, Terrestrial Biological Resources for properly engineered reinforcement of caisson containment walls and contingency planning and spill response would reduce oil spill impacts (see cited Sections for rationale).

MM LU-1a. Obtain Property Owner Authorizations. Prior to issuance of any Land Use Permit, Venoco shall secure all required property owner authorizations or other documentation, including encroachment permits or easements to the satisfaction of the City allowing the project on or within property not owned by the permittee, including, but not limited to property owned by Sandpiper Golf Trust and the City.

MM LU-1b. Obtain Permits Required by Title 15 of Goleta Municipal Code. Venoco shall obtain from the City's Planning and Environmental Review Department all Building, Electrical, Well or other Permits required by Title 15 of the Goleta Municipal Code prior to the construction, erection, moving, alteration, enlarging, rebuilding of any building, structure, or improvement, or any other action(s) requiring a Building Permit pursuant to Title 15 of the Goleta Municipal Code.

MM LU-1c. Obtain City Land Use Permit Prior to Development. The permittee shall obtain from the City's Planning and Environmental Review Department a Land Use Permit prior to commencement of any uses and/or development authorized by this permit.

Residual Impacts

With implementation of MMs for oil spill impacts, land- and water-related land use and recreational uses may be impacted from oil spills from primary Project components. Implementation of MM LU-1a through -1c would reduce but not eliminate the conflict with Goleta GP/CLUP Policies, inconsistency with GP Land Use designations, or inconsistency with City zoning; therefore, this impact would remain significant and unavoidable.

Impact LU-2: Oil Releases Could Affect Recreational Activities

High-quality recreational resources are located within the area and could be impacted by the spread of oil from an accidental release from surf zone production activities at Pier 421-2, associated pipelines, and transportation by the Line 96 pipeline. Shoreline and water-related uses would be disrupted by oil on the shoreline and in the water, resulting in significant impacts to on- and off-shore public recreation (Significant and Unavoidable).

Impact Discussion

Impacts from accidental oil releases could preclude the use of beach areas and associated recreational activities. The degree of impact is influenced by many factors including, but not limited to, spill location, spill size, type of material spilled, prevailing wind and current conditions, the vulnerability and sensitivity of the resource, and response capability.

Spill risk is addressed in Section 4.2, Safety. The greatest risk of spills occurs at Pier 421-2, where small spills could occur during normal operations, as well as from leaks at pipe fittings and valves. Direct releases of oil onto Goleta area beaches are projected to be limited to approximately 1.7 barrels of oil; however, the Project would incrementally contribute to larger spills upcoast into Gaviota area streams, with a low potential for spills as large as 60 barrels of oil, a portion of which could find its way to the shoreline and potentially onto downcoast Goleta area beaches. The capability to immediately respond and deploy appropriate containment booming would also influence the extent of affected area. Response capability is analyzed in Section 4.2, Safety.

As discussed above, the Project area provides high quality recreational opportunities for local residents and tourists. Shoreline and water-related uses would be disrupted by oil on the beach and in the water. While not readily quantifiable, a coastal spill could significantly affect coastal recreation and tourism, resulting in lost commercial recreation and tourism revenues. Several sections of this EIR (e.g., Sections 4.1, 4.3, 4.4, 4.5, 4.6, 4.7, 4.12, and 4.13) discuss in detail the effects of a spill on the local environmental resources. Because it is impossible to predict with any certainty the potential consequences of spills, impacts are considered to be significant and unavoidable, because large spills could have residual impacts that could affect the beach and recreational uses.

Mitigation Measures/Rationale for Mitigation

Implementation of MMs identified in Sections 4.1, Geological Resources; 4.2, Safety; 4.3 Hazardous Materials; 4.5, Hydrology, Water Resources, and Water Quality; 4.6, Marine Biological Resources; and 4.7, Terrestrial Biological Resources, for protection of the proposed oil separator, reinforcement of caisson containment walls, and

contingency planning and spill response would reduce impacts to recreational activities associated with oil releases (see cited Sections for rationale).

Residual Impacts

Even with implementation of MMs for oil spill impacts, land- and water-related recreational uses may be impacted from large spills and impacts would remain significant and unavoidable.

Impact LU-3: Oil Releases from Pier 421-2 or Pipelines Could Affect Sensitive Area Resources and Raise Consistency Issues with Adopted Policies.

Spills that reach the shore along sensitive land use areas or heavily used areas, including recreational areas, would limit or preclude such uses and result in significant adverse impacts (Significant and Unavoidable).

Impact Discussion

Depending on spill size and location, a spill could affect sensitive resources in the area including Environmentally Sensitive Habitat Areas (ESHAs) and sensitive species. Direct releases of oil onto Goleta area beaches are projected to be limited to approximately 1.7 barrels of oil, a relatively modest amount; however, the Project would incrementally contribute to larger spills upcoast into Gaviota area streams, with a low potential for spills as large as 60 barrels of oil, a portion of which could find its way to the shoreline and potentially onto downcoast Goleta area beaches. Although spills from Project facilities are anticipated to be limited, even spills of limited magnitude would exceed adopted thresholds. Conflicts with the Goleta GP/CLUP Conservation Element Policy would result from an oil spill impacting such resources. Specific to the Project, Policy CE 1.2 designates all marine areas offshore from Goleta extending from the mean high tide line seaward to the outer limit of State waters and all areas extending from the mean high tide line landward to the top of the ocean bluffs as ESHAs, as well as Tecolote Creek and Lagoon, Bell Canyon Creek and Lagoon, Sandpiper Golf Course pond, and Devereux Creek. Therefore, the vast majority of the immediate Project area and several key nearby resources are designated as ESHAs. An oil spill from the Project could impact these resources and violate the intentions of several Conservation Element policies including CE 1.6, Protection of ESHAs, CE 6.2, Protection of Marine ESHAs, and CE 7.3, Protection of Beach Areas.

Spills on the shore would damage existing resources and would result in significant adverse impacts (see Sections 4.1, Geological Resources; 4.4, Air Quality; 4.5, Hydrology, Water Resources, and Water Quality; 4.6, Marine Biological Resources; 4.7, Terrestrial Biological Resources; 4.12, Aesthetic/Visual Resources; and 4.13, Cultural, Historical, and Paleontological Resources).

Transportation of oil through the Line 96 pipeline from the EOF to the PAAPLP Coastal Pipeline west of LFC could create potential impacts through an increased potential for spills from the pipeline, potentially inconsistent with City of Goleta policies (e.g., LU 10.1 and 10.3) as well as with County LCP policies regarding protection of ESHAs, certain other creeks, associated riparian and wetland habitats, and agricultural areas. Although the possibility of a spill or release exists, pipelines are the safest method available for the transportation of crude oil. Further, the new 8.5-mile-long pipeline is equipped with state-of-the-industry safety measures, including cathodic protection against corrosion, check valves and shut off valves to limit accidental releases both up and downstream of major creek crossings and "smart pigging" capabilities. These new state-of-the-industry construction and safety features, when combined with the Project's operating horizon would substantially reduce the potential for pipeline spills (see Impact S-6).

Because it is impossible to predict with any certainty the potential consequences of spills, impacts are considered to be significant and unavoidable since severe spills could have residual impacts that could affect the beach and/or recreational uses.

Mitigation Measures/Rationale for Mitigation

Implementation of MMs identified in Sections 4.2, Safety; 4.5, Hydrology, Water Resources, and Water Quality; 4.6, Marine Biological Resources; and 4.7, Terrestrial Biological Resources, for reinforcement of caisson containment walls and contingency planning and spill response (see cited Sections for rationale.) The certified Line 96 Modification Project EIR (Santa Barbara County 2011) provides MM AG-2 that is incorporated by reference into this document (see Appendix H). This MM requires all agricultural areas contaminated as a result of an oil leak or spill along the pipeline route be restored to their prior state with equivalent soils and agricultural resources resulting in a less than significant impact.

Residual Impacts

Even with implementation of MMs for oil spill impacts, sensitive biological and water resources may be impacted from large spills and impacts would remain significant and unavoidable.

Table 4.8-1. Summary of Land Use and Recreation Impacts and Mitigation Measures

Impact	Mitigation Measures
LU-1: Conflicts with Goleta GP/CLUP Policies	MMs identified in Sections 4.1, Geological Resources; 4.2, Safety, 4.3 Hazardous Materials; 4.5, Hydrology, Water Resources, and Water Quality; 4.6, Marine Biological Resources, and 4.7, Terrestrial Biological Resources. **MM LU-1a.** Obtain Property Owner Authorizations. **MM LU-1b.** Obtain Permits Required by Title 15 of Goleta Municipal Code. **MM LU-1c.** Obtain City Land Use Permit Prior to Development.
LU-2: Oil Releases Could Affect Recreational Activities	Implementation of those measures identified in Sections 4.1, Geological Resources; 4.2, Safety, 4.3 Hazardous Materials; 4.5, Hydrology, Water Resources, and Water Quality; 4.6, Marine Biological Resources; and 4.7, Terrestrial Biological Resources. MM AG-2 contained in the certified Line 96 Modification Project EIR would also apply to LU-3.
LU-3: Oil Releases from Pier 421-2 or Pipelines Could Affect Sensitive Area Resources and Raise Consistency Issues with Adopted Policies	

4.8.7 Cumulative Impacts Analysis

Project impacts were assessed in conjunction with the projects identified in Table 3-2.

Impact LU-4: Cumulative Impacts of Potential Project-Related Oil Spills on Area Land Use and Recreational Uses

Impacts to sensitive shoreline lands, and/or water and non-water recreation due to a release of oil would result in potentially significant impacts. When the cumulative environment is considered, the contribution from the Project could be significant (Significant and Unavoidable).

Impact Discussion

The risk of an oil release associated with Project operation would contribute to impacts to the cumulative environment given increased demand for the transportation of oil. Over the lifetime of the Project, this would represent an incremental increase in spill risk and oil spill risks to land uses and recreational uses would be associated with that increase. Other projects would contribute to the spill risk, exacerbating an already significant impact. When the cumulative environment is considered, the contribution from the Project adds to the cumulative risks of an oil spill. Impacts to sensitive shoreline lands, and/or water and non-water recreation due to a release of oil would remain significant and unavoidable.

Mitigation Measures/Rationale for Mitigation

Implementation of those measures identified in Sections 4.2, Safety; 4.5, Hydrology, Water Resources, and Water Quality; 4.6, Marine Biological Resources; and 4.7, Terrestrial Biological Resources, for properly engineered reinforcement of caisson containment walls and contingency planning and spill response would be required (see cited Sections for rationale.)

Residual Impacts

Impacts would remain significant and unavoidable.

Table 4.8-2. California Coastal Act Policy Summary

Policy	Relationship to Project
Section 30230: Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.	Potentially inconsistent. The Project is located in an area of special biological importance with identified marine resources including kelp beds, rocky intertidal habitat, and three coastal estuaries. Primary issues of concern affecting these resources include potential for oil spills from the caisson and pipelines. Direct releases from PRC 421 and the flow line are projected to be limited to 1.75 barrels of oil; releases from Line 96 would be limited to 60 barrels, only portions of which would reach the shoreline. Project construction could also affect marine water quality through mobilization of sediments and potential release of contaminated materials.
Section 30240: (a) Environmentally sensitive habitat areas (ESHAs) be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas. (b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.	Potentially inconsistent. There are several ESHAs in the Project vicinity, including the Devereux Slough, Bell and Tecolote Creeks, two small wetlands adjacent to the access road, snowy plover habitat near Coal Oil Point, and rocky intertidal areas. Primary issues of concern affecting these resources include the potential for oil spills from the caisson and pipelines in the volumes listed above. Project construction could also affect the two small wetlands.
Section 30232: Oil and hazardous substance spills Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.	Potentially consistent. The Project site is located in an area prized for public recreation and that also supports numerous ESHAs. Implementation of the Project would increase the likelihood of a release of oil from PRC 421 as well as one related to pipeline operations which could adversely impact recreational activities and biological resources. However, production from PRC 421 could reduce the potential for small incremental oil releases from old, improperly abandoned sub-sea oil wells as the pressure in the reservoir appears to be rising since production was shut terminated in 1994
Section 30250: Location; existing developed area. (a) New residential, commercial, or industrial development, except as otherwise provided in this division, shall be located within, contiguous with, or in close proximity to, existing developed areas able to accommodate it or, where such areas are not able to accommodate it, in other areas with adequate public services and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources.	Potentially consistent. The Project is located in an area that was historically developed and is located on a site where oil and gas development has taken place since 1928.
Section 30251: Scenic and visual qualities. The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the	Potentially consistent. The proposed development would consist of minor alternations to the existing development on Pier 421-2, which would be generally compatible with the character of the area. Additionally, the Project would include the decommissioning and removal of Pier 421-1, which
alteration of natural land forms, to be visually	would generate beneficial impacts to the aesthetic

Table 4.8-2. California Coastal Act Policy Summary

Policy	Relationship to Project
compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas.	resources of the Project area.
Section 30101: Coastal-dependent development. "Coastal-dependent development or use" means any development or use which requires a site on, or adjacent to, the sea to be able to function at all.	Consistent. The Project requires a site on, or adjacent to, the sea in order for its use to function.
Section 30260: Coastal-dependent industrial facilities. Coastal-dependent industrial facilities shall be encouraged to locate or expand within existing sites and shall be permitted reasonable long-term growth where consistent with this division. However, where new or expanded coastal-dependent industrial facilities cannot feasibly be accommodated consistent with other policies of this division, they may nonetheless be permitted in accordance with this section and Sections 30261 and 30262 if (1) alternative locations are infeasible or more environmentally damaging; (2) to do otherwise would adversely affect the public welfare; and (3) adverse environmental effects are mitigated to the maximum extent feasible.	Consistent. The Project includes no new coastal industrial facilities – only repairs and modifications to existing facilities and decommissioning and removal of Pier 421-1 and the associated well. In the unlikely event that Project design is altered to include new facilities, the Project would qualify for consideration of override approval under the three tests of this policy.
Section 30211: Development not to interfere with access. Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.	Potentially inconsistent. The Project is located in an area of moderate to heavy public beach use. This public beach access could be intermittently impacted during construction activities if the public was not allowed to pass under or in front of the structure for public safety reasons. The resulting development would not interfere with the public's right of access to the ocean or beach area.
Section 30262: Oil and gas development. a) Oil and gas development shall be permitted in accordance with Section 30260, if the following conditions are met: (1) The development is performed safely and consistent with the geologic conditions of the well site. (2) New or expanded facilities related to that development are consolidated, to the maximum extent feasible and legally permissible. (5) The development will not cause or contribute to subsidence hazards unless it is determined that adequate measures will be undertaken to prevent damage from such subsidence.	Potentially consistent. The recommissioning of PRC 421 would return oil and gas production to the immediate project area. This development would be subject to regulation to ensure safety and consistent with geologic conditions of the site, and would not contribute to a subsidence hazard.

Table 4.8-3. Goleta GP/CLUP Policy Summary

Policy	Relationship to Project
LAND USE ELEMENT (LU)	
LU 1.7 New Developments and Protection of Environmental Resources. Approvals of all new development shall require adherence to high environmental standards and the preservation and protection of environmental resources, such as environmentally sensitive habitats, consistent with the standards set forth in the Conservation Element and the City's Zoning Code.	Potentially inconsistent. ESHAs near the Project site include Bell Creek, Tecolote Creek, two wetland areas adjacent to Sandpiper Golf Course, snowy plover habitat, and all areas located below the mean high tide line. Although direct releases from PRC 421 are projected to be limited to 1.75 barrels of oil, accidental oil releases could adversely affect these environmental resources. Project implementation would incrementally increase the potential for accidental releases.
LU 1.3 Adequate Infrastructure and Services. For health, safety, and general welfare reasons, approvals of new development shall be subject to a requirement that adequate infrastructure will be available, including the following: a. Project-specific and cumulative traffic volumes shall not cause the level of service standards established in Transportation Element Policy TE 4 to be exceeded. b. Any transportation improvements needed to maintain the level of service standard have been programmed and funding has been committed consistent with Transportation Element Sub-policies TE 13.3 and TE 13.4. c. Environmental review of needed circulation improvement projects has been completed. d. Sewer, water, and other infrastructure capacities are sufficient to serve the new development or will be available by the time the development is constructed.	Consistent. The Project would generate limited additional vehicular movement along roads in the Project vicinity, including Highway 101, Winchester Canyon and Storke Road interchanges, Hollister Avenue, and the Bacara Access Road. A traffic management plan has not yet been prepared by Venoco and precise estimates of construction-related traffic are unavailable. However, it is anticipated that construction- related traffic would be short-term and would not adversely affect long-term area roadway or intersection operations. Operation-generated traffic would be minimal. Sewer, water, and other infrastructure capacities are sufficient for the Project and Venoco will be required to contribute towards fire response improvements through an impact development fee payment.
LU 6.3 Open Space/Passive Recreation. This designation is intended to identify existing or planned areas for public parks and active recreational activities and facilities, such as playgrounds, picnic areas, tennis courts, ballparks, and sports fields. This use category is also intended to apply to significant private outdoor recreational facilities, such as golf courses and privately owned parks. Individual recreational areas may include a mix of passive and active recreational features or improvements. Appropriate caretaker facilities and residences may also be allowed if consistent with the character of the planned uses. The designation may also include storm drainage facilities.	Inconsistent. The industrial uses at PRC 421 are not compatible with the recreation land use designation. The portions of the Project within the City's jurisdiction comprise a legal nonconforming use. Expansion or extension of such use is prohibited.
LU 9.2 Site #2 – Coastal Recreation. This parcel, occupied as of 2005 by the Venoco EOF, is designated in the Open Space/Active Recreation use category. The requirements applicable to this site are as follows: a. Despite the Recreation designation, the nonconforming status of the existing use may continue as long as the project does not enlarge, expand or extend the nonconforming use. The use was nonconforming at the time of incorporation of the City of	Potentially inconsistent. The legal nonconforming status of the EOF allows it to continue to operate at this site, despite the inconsistent land use category, as long as the project does not enlarge, expand or extend the nonconforming use. a. The EOF would continue to operate as a nonconforming use for the site. b. Oil and gas processing would not expand beyond currently permitted quantities, however,

Table 4.8-3. Goleta GP/CLUP Policy Summary (continued)

Policy	Relationship to Project
Goleta. Its nonconforming status dates to the early 1990s when the property's zoning was changed by the County of Santa Barbara to the Recreation District as part of a plan to consolidate onshore oil and gas processing at the Las Flores Canyon site in the unincorporated area west of Goleta. b. The intent is that in the long-term use of the property for oil and gas processing shall be terminated. The processing of hazardous materials and the risks associated with air emissions make this location, which is adjacent to Bacara Resort and Sandpiper Golf Course and near Ellwood School and the residential neighborhoods of Santa Barbara Shores and Winchester Commons, unsuitable for oil and gas processing in the long term. c. Until such time as the oil and gas processing use is terminated, any modifications or alternations of the existing facilities must be in accordance with the provisions of LU 10.1 and the City of Goleta zoning ordinances and shall be limited to and designed to improve air quality, reduce environmental impacts and hazards, and improve safety for nearby lodging, recreational, and residential uses. d. Upon termination of the oil and gas processing use, the priority use for the site shall be coastal-dependent and coastal-related recreational uses that are conducted primarily outdoors or limited to small-scale structures. Adequate onsite parking shall be provided to serve all recreational uses (see related Policy OS 2).	improvements proposed to be added to the EOF to accommodate production of the PRC 421 product may be considered an enlargement, expansion or extension of the EOF's nonconforming use that is prohibited by the Goleta Municipal Code. c. The EOF would be decommissioned at the same time as Platform Holly, regardless of its use for processing PRC 421 oil. Project approval would not extend the life of the EOF. d. The Project requires some modifications to the EOF. e. Upon termination of the nonconforming use, the site would be redeveloped for recreational use following decommissioning of the EOF.
LU 10: Energy-Related On- and Off-Shore Uses Objective: To promote the discontinuation of onshore processing and transport facilities for oil and gas, the removal of unused or abandoned facilities, and the restoration of areas affected by existing or former oil and gas facilities within the city.	Inconsistent. The Project would restart production of PRC 421 facilities.
LU 10.1 Oil and Gas Processing Facilities. The following standards shall apply to oil and gas processing facilities: a. The City supports county policies regarding consolidation of oil and gas processing in the South Coast Consolidation Planning Area at Las Flores Canyon…. No new oil and gas processing facilities shall be permitted within Goleta. b. The Venoco EOF site is an inappropriate location for processing of oil and gas because of the public safety and environmental hazards associated with this type of use… . c. The EOF shall continue to be subject to the rights and limitations applicable to nonconforming uses under California law. No modifications or alterations of the facility or other actions shall be authorized that would result in the expansion of the permitted throughput capacity of the EOF or that would enlarge, expand or extend the nonconforming use of the EOF. d. Until the EOF use is terminated, the priority shall be to insure that the facility strictly meets or exceeds all applicable environmental and safety standards.	Potentially inconsistent. The Project would restore production at an existing well with oil/gas/water produced at this well processed at existing facilities at the EOF. a) The Project would not involve construction of new oil and gas processing facilities and would use existing facilities at the EOF and pipelines to LFC. b) The Project would not extend the life of the EOF. c) The Project would not result in modifications or alterations that would result in the expansion of the permitted throughput capacity of the EOF. However, the new or upgraded support facilities proposed to be added to the EOF to accommodate production of the PRC 421 product may be considered an enlargement, expansion or extension of the EOF's nonconforming use that is prohibited by the Goleta Municipal Code and could result in the use being terminated before the

Table 4.8-3. Goleta GP/CLUP Policy Summary (continued)

Policy	Relationship to Project
	completion of the Project. d) Measures are included to meet applicable environmental and safety standards.
LU 10.3 Oil and Gas Transport and Storage Facilities. The following shall apply to oil and gas transport and storage facilities within the city: a. New oil and gas pipelines and storage facilities, except for transmission and distribution facilities of a Public Utility Commission (PUC) regulated utility, shall not be approved within the city unless there is no feasible or less environmentally damaging alternative location for a proposed pipeline. b. In the event that extended field development from Platform Holly is approved, the City supports the processing of oil and gas production at the South Coast Consolidation Planning Area at Las Flores Canyon. c. Unused, inactive, or abandoned pipelines as of 2005, including the remnants of the Arco pipeline, shall be required to be decommissioned. d. Existing pipelines that were actively used as of 2005 shall be decommissioned as part of and concurrent with the decommissioning of the related oil and gas facilities. e. When onshore and offshore oil and gas pipelines are decommissioned…the pipeline and all related debris shall be removed. f. The existing owner/operator of a pipeline to be decommissioned shall be responsible for all costs related to the decommissioning.	Potentially inconsistent. Under the Project, the Line 96 pipeline connecting the EOF to the PAAPLP Coastal Pipeline west of LFC (Line 96 Pipeline EOF-PAAPLP Connection) would be used. It is an existing pipeline and has available capacity to support the Project. A new oil flowline would be constructed between Pier 421-2 and the EOF, but would be installed within an existing 6-inch line.
LU 10.4 State Lands Commission Lease 421. a. The City's intent is that oil production not be recommenced at PRC because of the environmental hazards posed by the resumption of oil production and processing over coastal waters and the impacts to visual resources and recreation at the beach. Unless it is determined that there is a vested right to resume production at PRC 421, the City supports termination of the lease by the CSLC and/or a quitclaim of the lease by the owner/operator. b. If resumption of production is considered for approval, on pier processing of the oil at a site within the tidal zone shall not be approved unless it is demonstrated that there is no feasible and less environmentally damaging alternative to processing on the pier. The development of new processing facilities over the sea would result in an increased and unacceptable level of risk of environmental damage. c. Decommissioning and proper abandonment of S.L. 421 facilities, including the piers and riprap seawall, shall be required concurrent with decommissioning of the EOF or immediately upon termination of S.L. 421. d. Decommissioning work shall include restoration of the site to its natural pre-Project conditions.	Potentially inconsistent. Under the Project, processing would occur at the EOF; however, a potential release could occur during production activities at Pier 421-2 or from the pipeline that carries oil/gas/water to the EOF. a) While the proposed recommissioning of PRC 421 may raise consistency issues with this policy, the use of the EOF for processing/ separation may be the option most in line with the intent of this policy. Processing of oil would not occur over coastal waters. Further, Venoco has a vested right to produce oil at this site as it has a valid State oil and gas lease. b) The Project would not include processing of oil at a site within the tidal zone; oil separation would occur at the EOF, a location determined to be the environmentally superior option. c) PRC 421 facilities are not required to be decommissioned at this time as the use of the EOF has not yet been terminated. If recommissioning PRC 421 is approved, Pier 421-1 would be decommissioned within 1 year; infrastructure and pipelines associated with Pier 421-2 would then be decommissioned at the end of the Project in 20 or more years.

Table 4.8-3. Goleta GP/CLUP Policy Summary (continued)

Policy	Relationship to Project
	d) Decommissioning of Pier 421-1 would occur within 1 year of project operation; decommissioning and restoration of the pier and caisson at 421-2 and the access road and seawall would occur at the end of the Project life.
LU 10.6 Oil and Gas Production Areas. a. The City shall oppose any new leases in the western Santa Barbara Channel for offshore oil and gas production within State waters and within the waters of the OCS. b. The City shall oppose the construction of any new oil and gas production or processing facilities in the waters offshore of Goleta. c. Upon cessation of production at Platform Holly, the City supports the timely quitclaim of all associated leases, permanent discontinuation of all oil and gas production, and inclusion of all former lease areas into the California Coastal Sanctuary offshore of Goleta and the Santa Barbara County. d. If oil and gas production from new offshore leases or facilities occurs, the new production shall not be processed at the EOF. Any such production shall be transported by pipeline to the nearest consolidated processing facility as defined by the Santa Barbara County's South Coast Consolidation Planning Area policies.	Potentially inconsistent. Existing oil production facilities at Pier 421-2 would be recommissioned. No new production facilities would be constructed with processing occurring at existing facilities located at the EOF. a) PRC 421 is an existing lease. b) No new oil and gas production or processing facilities would be constructed. c) Production at PRC 421 would be discontinued when production at Platform Holly is discontinued (if not already terminated). d) PRC 421 is an existing lease. The new or upgraded support facilities proposed to be added to the EOF to accommodate production of the PRC 421 product may be considered an enlargement, expansion or extension of the EOF's nonconforming use that is prohibited by the Goleta Municipal Code and could result in earlier termination of the use at the EOF.
OPEN SPACE ELEMENT (OS)	
OS 1.3 Preservation of existing coastal access and recreation. Goleta's limited Pacific shoreline of approximately 2 miles provides a treasured and scarce recreational resource for residents of the city, region, and State. Existing public beaches, shoreline, parklands, trails, and coastal access facilities shall be protected and preserved and shall be expanded or enhanced where feasible.	Potentially inconsistent. The Project may result in short-term disruption of lateral access during initial construction and future repair activities. Pier 421-2 and its caisson would continue to inhibit or block the public's view laterally along the coast. During high tide events, continuation of the Project pier and seawall would inhibit lateral access along this section of coast as higher tides, particularly during low sand conditions in fall, winter and spring can reach to the base of the seawall rendering lateral access along the beach infeasible.
OS 1.10 Management of Public Lateral Access Areas. The following criteria and standards shall apply to use and management of lateral shoreline access areas: a. Private commercial uses of public beach areas shall be limited to coastal dependent recreational uses, including but not limited to surfing schools, ocean kayaking, and similar uses. All commercial uses of beach areas and other lateral accessways shall be subject to approval of a permit by the City. The number, size, duration, and other characteristics of commercial uses of beach areas may be limited in order to preserve opportunities for use and enjoyment of the beach area by the general public. For-profit commercial uses at the City-owned Santa Barbara Shores Park and Sperling Preserve (the Ellwood-Devereux	Potentially inconsistent. The PRC 421 piers are surrounded by recreational uses including the Sandpiper Golf Course, the Bacara Resort, and by Ellwood and Haskell's beaches which serve as major public coastal access points and are frequented by beach goers, joggers, surfers, and walkers. This is a heavily used, passive recreation area that provides high quality recreational opportunities to the inhabitants of the surrounding areas and of greater Santa Barbara. Project construction activities could disrupt recreational activities along the Ellwood beach area in the vicinity of the PRC 421 piers, but impacts would be

Table 4.8-3. Goleta GP/CLUP Policy Summary (continued)

Policy	Relationship to Project
Open Space and Habitat Management Plan [OSHMP] area) are prohibited (see related Policy OS 5). b. Temporary special events shall minimize impacts to public access and recreation along the shoreline. Coastal Development Permits shall be required for any temporary event that proposes to use a sandy beach area and involves a charge for admission or participation. c. Where sensitive habitat resources are present, limited or controlled methods of access and/or mitigation designed to eliminate or reduce impacts to ESHAs shall be implemented. d. The hours during which coastal access areas are available for public use shall be the maximum feasible while maintaining compatibility with nearby neighborhoods and land uses. The hours for public use shall be set forth in each individual coastal development permit. Unless specific hours are described within a permit, the access shall be deemed to be 24 hours per day and 7 days per week. e. In order to maximize public use and enjoyment, user fees for access to lateral beach and shoreline areas shall be prohibited. Activities and/or uses that would deter or obstruct public lateral access shall be prohibited. f. Overnight camping and use of motorized vehicles, except for public safety vehicles and vehicles associated with construction of access improvements and maintenance and restoration or enhancement activities, shall be prohibited in lateral shoreline access areas.	short-term. However, oil releases could affect recreational activities and sensitive area resources. Despite MMs designed to prevent oil releases and impacts to the public and sensitive terrestrial and marine biological resources, should oil be released, potential conflicts with adopted policies could occur.
OS 1.4 Minimization of impacts to lateral coastal access. New development, including expansions and/or alterations of existing development, shall be sited and designed to avoid impacts to public access and recreation along the beach and shoreline. If there is no feasible alternative that can eliminate all access impacts, then the alternative that would result in the least significant adverse impact shall be required. Impacts shall be mitigated through the dedication of an access and/or trail easement where the Project site encompasses an existing or planned coastal access way.	Potentially inconsistent. The Project may result in short-term disruption of lateral access during initial construction and future repair activities. Pier 421-2 and its caisson would continue to inhibit or block the public's view laterally along the coast. During high tide events, continuation of the Project pier and seawall would inhibit lateral access along this section of coast as higher tides, particularly during low sand conditions in fall, winter and spring can reach to the base of the seawall rendering lateral access along the beach infeasible.
CONSERVATION ELEMENT (CE)	
CE 1.2 Designation of Environmentally Sensitive Habitat Areas. ESHAs include the following resources: a. Creek and riparian areas; b. Wetlands, such as vernal pools; c. Coastal dunes, lagoons or estuaries, and coastal bluffs; d. Beach and shoreline habitats; e. Marine habitats; f. Coastal sage scrub and chaparral; g. Native woodlands and savannahs; h. Native grassland; i. Monarch butterfly aggregation sites, including autumnal and winter roost sites, and related habitat areas; j. Beach and dune areas that are nesting and foraging	Consistent. This policy designates areas surrounding the Project as ESHAs, including Bell Canyon Creek and Lagoon, Tecolote Creek, and all areas seaward and landward of the mean high tide line up to the northern edge of the Venoco access road, the boundary of the project area.

Table 4.8-3. Goleta GP/CLUP Policy Summary (continued)

Policy	Relationship to Project
locations for the Western Snowy Plover; k. Nesting and roosting sites and related habitat areas for various species of raptors; l. Other habitat areas for species of wildlife or plants designated as rare, threatened, or endangered under State or Federal law; and m. Any other habitat areas that are rare or especially valuable from a local, regional, or statewide perspective.	
CE 1.6 Protection of ESHAs. ESHAs shall be protected against significant disruption of habitat values, and only uses or development dependent on and compatible with maintaining such resources shall be allowed within ESHAs or their buffers. The following shall apply: a. No development, except as otherwise allowed by this element, shall be allowed within ESHAs. b. A setback or buffer separating all permitted development from an adjacent ESHA shall be required and shall have a minimum width as set forth in subsequent policies of this element. The purpose of such setbacks shall be to prevent any degradation of the ecological functions provided by the habitat area.	Potentially inconsistent. Recommissioning PRC 421 would incrementally increase to the potential for oil spills from the Project site and Line 96 Pipeline EOF-PAAPLP Connection. Direct releases from PRC 421 and the flow line are projected to be limited to 1.75 barrels of oil; releases from Line 96 would be limited to 60 barrels, only portions of which would reach the shoreline. However, such spills have the potential to create unavoidable and significant impacts to ESHAs near the Project site.
CE 6.1 Designation of Marine ESHAs. All marine areas offshore from Goleta extending from the mean high tide line seaward to the outer limit of state waters are hereby designated ESHAs. These areas include Areas of Special Biological Significance and Marine Protected Areas (as designated by the California Department of Fish and Game), and shall be granted the protections provided for ESHAs in this plan.	Potentially inconsistent. The Project has the potential to affect marine ESHAs as it would incrementally increase the potential for oil spills from the Project site and Line 96 Pipeline EOF-PAAPLP Connection. Such spills have the potential to create unavoidable and significant impacts to ESHAs near the Project site, with resultant potential policy conflicts.
CE 6.2. Protection of Marine ESHAs. The following protections shall apply to marine ESHAs: a. Marine ESHAs shall be protected against significant disruption of habitat values, and only uses dependent on such resources, such as fishing, whale watching, ocean kayaking, and similar recreational activities, shall be allowed within the offshore area. b. All existing oil and gas production facilities, including platform Holly and the piers at PRC 421, shall be decommissioned immediately upon termination of production activities. All facilities and debris shall be completely removed and the sites restored to their prior natural condition as part of the decommissioning activities. No new oil and gas leases or facilities shall be allowed within State waters offshore from Goleta. c. Permitted uses or developments shall be compatible with marine and beach ESHAs. d. Any development on beach or ocean bluff areas adjacent to marine and beach habitats shall be sited and designed to prevent impacts that could significantly degrade the marine ESHAs. All uses shall be compatible with the maintenance of the biological productivity of such areas. Grading and landform alteration shall be limited to minimize impacts from erosion and sedimentation on	Potentially inconsistent. Recommissioning PRC 421 reduces impacts to marine ESHAs through MMs designed to reduce impacts to water quality and biological resources. However, recommissioning PRC 421 would incrementally increase the potential for oil spills from the project site and Line 96 Pipeline EOF-PAAPLP Connection. Direct releases from PRC 421 and the flow line are projected to be limited to 1.75 barrels of oil; releases from Line 96 would be limited to 60 barrels, only portions of which would reach the shoreline. Although limited, such spills have the potential to create unavoidable and significant impacts to ESHAs near the Project site.

Table 4.8-3. Goleta GP/CLUP Policy Summary (continued)

Policy	Relationship to Project
marine resources. e. Marine mammal habitats, including haul-out areas, shall not be altered or disturbed by development of recreational facilities or activities, or any other new land uses and development. f. Near-shore shallow fish habitats and shore fishing areas shall be preserved and, where appropriate and feasible, enhanced. g. Activities by the CDFG; Central Coast RWQCB; CSLC; and Division of Oil, Gas and Geothermal Resources to increase monitoring to assess the conditions of near-shore species, water quality, and kelp beds, and/or to rehabilitate areas that have been degraded by human activities, such as oil and gas production facilities, shall be encouraged and allowed.	
CE 7.1 Designation of Beach and Shoreline ESHAs. All marine areas offshore from Goleta extending from the mean high tide line seaward to the outer limit of state waters are hereby designated ESHAs. These areas include Areas of Special Biological Significance and Marine Protected Areas (as designated by the California Department of Fish and Game), and shall be granted the protections provided for ESHAs in this plan.	Potentially inconsistent. The Project has the potential to affect beach and shoreline ESHAs. Several MMs are designed to reduce impacts to these ESHAs. However, recommissioning PRC 421 would incrementally increase the potential for oil spills from the Project site and Line 96 Pipeline EOF-PAAPLP Connection. Although limited, such spills have the potential to create unavoidable and significant impacts to ESHAs near the Project site and associated potential conflicts with adopted policy.
CE 7.3 Protection of Beach Areas. Access to beach areas by motorized vehicles, including off-road vehicles, shall be prohibited, except for beach maintenance and emergency response vehicles of public agencies. Emergency services shall not include routine vehicular patrolling by private security forces. Any beach grooming activities shall employ hand-grooming methods, and mechanical beach grooming equipment and methods shall be prohibited. All vehicular uses on beach areas shall avoid ESHAs to the maximum extent feasible.	Potentially consistent. The Project would entail utilizing construction equipment in beach areas to perform construction activities associated with recommissioning Pier 421-2 and decommissioning and removing Pier 421-1. Such construction would be performed in a manner to minimize impacts to beach resources.
CE 12.2 Control of Air Emissions from New Development. The following shall apply to reduction of air emissions from new development: a. Any development proposal that has the potential to increase emissions of air pollutants shall be referred to the Santa Barbara County Air Pollution Control District for comments and recommended conditions prior to final action by the City. b. All new commercial and industrial sources shall be required to use the best available air pollution control technology. Emissions control equipment shall be properly maintained to ensure efficient and effective operation. c. Wood-burning fireplace installations in new residential development shall be limited to low-emitting state- and U.S. Environmental Protection Agency (EPA)-certified fireplace inserts and woodstoves, pellet stoves, or natural gas fireplaces. In locations near monarch butterfly ESHAs,	Potentially consistent. The Project would increase emissions through construction and operation. Both the APCD and the City of Goleta have been consulted and worst case scenarios for emissions were calculated and analyzed for impacts. MMs contained within the EIR are designed to reduce emissions from the Project through proper maintenance, the use of diesel emission reduction measures, etc.

Table 4.8-3. Goleta GP/CLUP Policy Summary (continued)

Policy	Relationship to Project
fireplaces shall be limited to natural gas. d. Adequate buffers between new sources and sensitive receptors shall be required. e. Any permit required by the Santa Barbara County Air Pollution Control District shall be obtained prior to issuance of final development clearance by the City.	
CE 12.3 Control of Emissions During Grading and Construction. Construction site emissions shall be controlled by using the following measures: a. Watering active construction areas to reduce windborne emissions. b. Covering trucks hauling soil, sand, and other loose materials. c. Paving or applying nontoxic solid stabilizers on unpaved access roads and temporary parking areas. d. Hydroseeding inactive construction areas. e. Enclosing or covering open material stockpiles. f. Revegetating graded areas immediately upon completion of work.	Potentially consistent. The EIR recommends several MMs to reduce the impact of increased emissions. Emissions from construction activities would be reduced by idling time restrictions, utilizing emission reduction technologies, properly maintaining equipment to ensure proper working order, using cleaner burning fuels, watering to control dust, and hydro-seeding of disturbed areas.
SAFETY ELEMENT (SE)	
SE 2.6 Prohibition of Structures on Bluff Faces. No permanent structures shall be permitted on a bluff face, except for engineered public beach access ways. Such structures shall be designed and constructed to prevent any further erosion of the bluff face and to be visually compatible with the surrounding area.	Potentially consistent. No new structures are proposed for the bluff face.
SE 3.10 Complete and Prompt Abandonment of Shoreline Structures. Upon decommissioning of the two shoreline oil wells (State Lease 421 wells), the complete demolition and removal of all associated structures shall be required. The timeframe for complete demolition shall be within 3 years of the ceasing of production operations in accordance with LU 10.4. Associated structures include but are not limited to the caisson walls, the piers, the revetment, and any inactive pipelines within 100 feet of the top of the revetment. Abandonment in place for inactive pipelines associated with State Lease 421 production shall not be permitted, as subsequent coastal erosion could expose these structures. Pier supports and pilings shall be cut below the surface as far as possible, and ideally down to bedrock to prevent subsequent exposure by winter beach scour.	Potentially consistent. Pier 421-1 would be abandoned within 1-2 after resumption of production at Pier 421-2. Pier 421-2 and remaining facilities such as the access road and seawall would be abandoned after cessation of production. CSLC standards require submittal of an abandonment application within 6 months of decommissioning. Activities under such an application would be required to adhere to this policy.
SE 8.6 Quantitative Risk Assessment. The City shall require a Quantitative Risk Assessment to be a component of any application for a new oil and gas production and processing facility or for any proposed substantial alterations of existing oil and gas production and processing facilities. The scope of the assessment should include any pipelines associated with or serving the facility. The Quantitative Risk Assessment should identify and quantify any new or substantially changed risks and show any substantial changes to hazard footprints, such that any potential impacts to surrounding development and uses can be assessed and mitigated. The Quantitative Risk	Consistent. MM S-4e requires a Quantitative Risk Assessment prior to issuance of a Land Use Permit for this Project.

Table 4.8-3. Goleta GP/CLUP Policy Summary (continued)

Policy	Relationship to Project
Assessment should also recommend any appropriate mitigation measures to limit exposure of new or expanded hazards to surrounding development and uses.	
SE 8.10 Safety, Inspection, and Maintenance of Oil and Gas Pipelines. The City shall condition discretionary land use approvals of new or substantially upgraded gas and oil pipelines to require a Safety Inspection, Maintenance, and Quality Assurance Program or similar mechanism to ensure adequate ongoing inspection, maintenance, and other operating procedures. Any such mechanism shall be subject to City approval prior to commencement of pipeline operations and provide for systematic updates as appropriate. Requirements shall be commensurate with the level and anticipated duration of the risk.	Consistent. This would apply to those areas of the Project within City jurisdiction. It is unclear whether the Project's pipeline upgrades would be considered "substantial" under this policy. Implementation of MM S-5c**.** Safety, Inspection, and Maintenance of Oil and Gas Pipelines would ensure that the Project would comply with this policy as required.
SE 8.14 Pipeline Burial Depth**s.** New oil and gas pipelines, or relocation of existing oil and gas pipelines, excluding gas distribution pipelines, shall be buried at an appropriate depth, one that safely accommodates potential of scouring, slope failure, and other forms of natural or human-caused erosion and earth movement. The calculation of initial burial depth should take into account depth reduction via erosion and other forms of earth movement (including grading and construction) unless other means of maintaining a safe minimum burial depth can be incorporated throughout the operating life of a pipeline. Pipeline operators should assess burial depths every five years, or at a more frequent interval when geologic characteristics, flooding, and other circumstances indicate a prudent need for special monitoring. These requirements shall apply to new and existing pipelines where burial depths are specified. It shall also apply to existing, buried pipelines where depths are not prescribed but maintenance of a minimum depth is warranted. A minimum burial depth shall be maintained for the entire operating life of the pipelines.	Consistent. Would require that any new or relocated pipelines associated with the Project be buried to a sufficient depth that they would not exceed the minimum burial depth during the Project lifetime. The Project would comply with this policy as required.
SE 8.15 Pipeline Marking and Warning. New oil and gas pipelines, or relocation of existing pipelines, shall include measures to clearly warn outside parties about the presence of the pipeline, including proper marking of the right-of-way (ROW) with signage and use of brightly colored warning tape approximately 1 foot above buried pipelines where feasible.	Consistent. Would require that any new or relocated pipelines be marked appropriately and be accompanied with adequate warning information. The Project would comply with this policy as required.
VISUAL AND HISTORIC RESOURCES ELEMENT (VH)	
VH 1.1 Scenic Resources. An essential aspect of Goleta's character is derived from the various scenic resources within and around the city. Views of these resources from public and private areas contribute to the overall attractive-ness of the city and the quality of life enjoyed by its residents, visitors, and workforce. The City shall support the protection and preservation of the following scenic resources: a. The open waters of the Pacific Ocean/Santa Barbara Channel, with the Channel Islands visible in the distance; b. Goleta's Pacific shoreline, including beaches, dunes,	Potentially consistent. The facilities have been on site for over 70 years and are part of the existing visual environment. Removal of Pier 421-1 and its associated caisson would be visually beneficial. Although visual changes to the long-existing facilities of Pier 421-2 would be minimal, the pier and associated caisson would remain in place, continuing to disrupt foreground lateral visual access along this section of coast by inhibiting or blocking portions of the public's view laterally along the

Table 4.8-3. Goleta GP/CLUP Policy Summary (continued)

Policy	Relationship to Project
lagoons, coastal bluffs, and open costal mesas; c. Goleta and Devereux Sloughs; and d. Creeks and the vegetation associated with their riparian corridors.	coast for several hundred feet.
VH 1.2 Scenic Resources Map. The *Scenic Resources Map* in Figure 6-1 [of the Goleta GP/CLUP] identifies locations on public roads, trails, parks, open spaces, and beaches that serve as public vantage points for viewing scenic resources. Views from these locations shall be protected by minimizing any impairment that could result from new development.	Potentially consistent. Accidental spills or road closures could temporarily prevent public access to portions of the beaches near PRC 421; however, the relatively short duration of project construction and applicable MMs would limit displacement of recreational uses.
VH 1.3 Protection of Ocean and Island Views. Ocean and island views from public viewing areas shall be preserved. View preservation associated with development shall be accomplished first through site selection and then by use of design alternatives that enhance rather than obstruct or degrade such views. To minimize impacts to these scenic resources and ensure visual compatibility, the following development practices shall be used, where appropriate: a. Limitations on the height and size of structures; b. Limitations on the height and use of reflective materials for exterior walls (including retaining walls) and fences; c. Clustering of building sites and structures; d. Shared vehicular access to minimize curb cuts; e. Downcast, fully shielded, full cut off lighting of the minimum intensity needed for the purpose; f. Use of landscaping for screening purposes and/or minimizing view blockage as applicable; and g. Selection of colors and materials that harmonize with the surrounding landscape.	Potentially consistent. Development of the Project would not degrade views of the ocean or islands. The existing facilities have been in place since 1928 and are part of the current visual setting. The Project would include removal of Pier 421-1 and the associated caisson, so these facilities would no longer be part of the visual environment. Pier 421-2 and the associated caisson would be repaired and remain in place, so there would be no significant change to these facilities.
PUBLIC FACILITIES (PF)	
PF 9.1 Integration of Land Use and Public Facilities Planning. The Land Use Plan and actions on individual development applications shall be consistent with the existing or planned capacities of necessary supporting public facilities and the fiscal capacity of the City to finance new facilities. a. The City shall integrate its land use and public works planning activities with an ongoing program of long-range financial planning to ensure that the City's Land Use Plan is supported by quality public facilities. b. Individual land use decisions, including but not limited to General Plan amendments, shall be based on a finding that any proposed development can be supported by adequate public facilities.	Potentially inconsistent. The project would create new demand for City public facilities at the PRC 421 facilities; demand for fire protection services would be offset by payment of a fee.

Source: City of Goleta 2006c.

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4.9 PUBLIC SERVICES

This section characterizes the fire protection and emergency response impacts generated by the Project, including the ability of locally provided and funded fire protection and emergency response services to respond to emergency situations at PRC 421 and the impacts of the Project on these services and capabilities. The Environmental Setting discusses the capacity of the Santa Barbara County Fire Department (SBCFD) and Santa Barbara County Office of Emergency Management (OEM) to respond to incidents at PRC 421. This section also describes Venoco's existing fire protection and emergency response systems and equipment at PRC 421.

The Project would not increase population in the area, and no employment increases would occur except for the temporary construction crews and thus there would be no impacts to police services or schools. Project construction would require some water use for dust control, equipment washing, and hydrotesting of pipelines. In addition, decommissioning of Pier 421-1 would generate waste requiring disposal. However, operation of the Project would not increase water consumption, solid waste generation, or discharges to sewers. Therefore, impacts to these public services are not examined further in this document.

A detailed analysis of risks from fires, explosions, and oil spills associated with the Project is presented in Section 4.2, Safety. Details regarding the emergency response capability for potential incidents (e.g., oil spills) are also discussed in Section 4.2, Safety. Crude oil generally has a relatively low potential for ignition or explosion, particularly the heavier oils such as that produced from Platform Holly. However, due to a higher percentage of light volatile compounds, the light "sweet" crude oil produced at PRC 421 may present a somewhat increased risk of fire or explosion than that associated with existing production from Platform Holly.

Information contained in this section was derived from the Goleta General Plan/Coastal Land Use Plan (GP/CLUP), and several Venoco emergency preparedness plans, including the South Ellwood Field Emergency Action Plan (EAP) and South Ellwood Facilities Fire Prevention and Preparedness Plan. This section also incorporates by reference and summarizes the conclusions of the Ellwood Marine Terminal (EMT) Lease Renewal Environmental Impact Report (EIR) (California State Lands Commission [CSLC] 2009) and Line 96 Modification Project EIR (Santa Barbara County 2011), as appropriate. Where this document relies upon mitigation measures (MMs) contained in these EIRs to address Project impacts, these measures are summarized to permit comprehension of their relationship to the Project.

4.9.1 Environmental Setting

Study Area Location and Description

The primary Project study area comprises the immediate areas of the Ellwood coast that surround PRC 421 and would be subject to direct impacts as a result of Project implementation. This area includes existing PRC 421 facilities, access road, and the flowline route along the access road, coastal bluff, golf course easement, and tie-in at the existing Ellwood Onshore Facility (EOF). The secondary Project study area includes the Gaviota Coast and is only discussed in environmental issue areas where potential exists for impacts that are different from those identified in the certified Line 96 Modification Project EIR.

Regional Fire Protection and Emergency Response

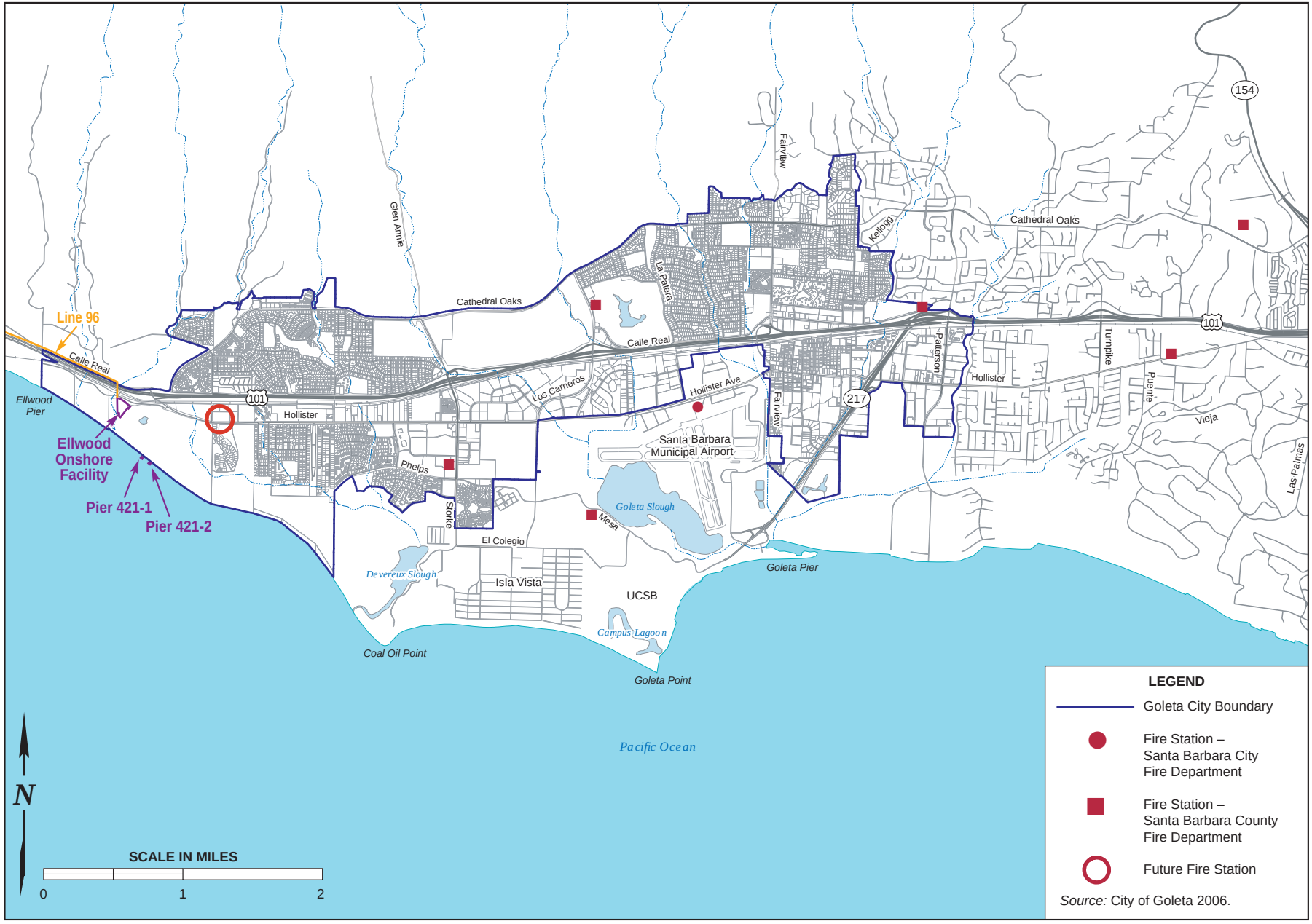
The SBCFD, which serves an area of approximately 1,441 square miles of unincorporated and incorporated areas of the county, provides fire protection services to the Project area. The SBCFD has 16 fire stations. Five fire stations are located in the Goleta valley and three (Fire Stations 11, 12, and 14) are located within Goleta's city limits. A sixth station, located on the Gaviota Coast (Station 18) assists in responding to calls in the rural Gaviota area. In general, all firefighters are trained as emergency medical technicians (City of Goleta 2006).The SBCFD employs the following three standards with respect to provision of fire protection services:

1. **Firefighter-to-population ratio of one firefighter on duty 24 hours a day for every 2,000 in population as the ideal goal, and one firefighter per 4,000 in population as the absolute maximum population that can be adequately served.** Fire stations 11, which services the Project area, and 12 fell short of this service standard as of 2005, as indicated in Table 4.9-1. The current ratio of firefighters-to-population is 1 per 4,909 citywide.

Table 4.9-1. Goleta Fire Station Service Characteristics, 2010

Station Number	Location/Address	Population Served[1]	Personnel[2]	Equipment[3]	Population per Firefighter
11[4]	6901 Frey Way (Storke Rd. south of Hollister Ave.)	21,594	6	P, T, RP, WR, US&R	3,599
12	5330 Calle Real	16,623	3	P, RP	5,541
14	320 Los Carneros	5,960	3	P, BT	1,987
	Total	**44,177**	**12**		**3,681**

[1] Population estimated as of 2010 U.S. Census.
[2] Personnel on duty for each shift, plus one chief officer not assigned to a particular station.
[3] P = pumper; T = ladder truck; RP = reserve pumper; WR = water rescue; US&R = urban search and rescue; BT = brush truck
[4] Truck 11 and 3 additional firefighters serve as countywide emergency response and are not dedicated to serve solely station 11's district.
Source: US Census 2010, City of Goleta 2006.



amec

Fire Protection Services in the Project Vicinity

FIGURE 4.9-1

2. **A ratio of one engine company with a four-person crew per 16,000 in population.** The National Fire Protection Association (NFPA) guidelines state that engine companies shall be staffed with a minimum of four on-duty personnel. Currently all three fire stations within the Goleta city limits are staffed with only three-person crews (refer to Table 4.9-1).

3. **A 5-minute response time in urban areas.** Most of Goleta falls within the 5-minute response time from existing fire stations; however, the western city edge and some northern neighborhoods may experience longer response times (City of Goleta 2006). Fire station response times to PRC 421 are shown in Table 4.9-2.

Table 4.9-2. Goleta Fire Station Response Times to PRC 421

Station Number	Location/Address	Distance to PRC 421 (miles)	Response Time to PRC 421
11	6901 Frey Way (Storke Rd. south of Hollister Ave.)	3.5	8-10 minutes
12	5330 Calle Real	4.0	12-14 minutes
14	320 Los Carneros	5.5	10-12 minutes

Source: SBCFD 2006.

The OEM was once a division of the SBCFD but currently acts under direction from the County Executive Offices.

In addition, a fire station at Santa Barbara Municipal Airport is staffed by Santa Barbara city firefighter personnel and responds only to fires in the Airport Operating Area (AOA), the area located within the security fence that surrounds the airport consisting primarily of runways and taxiways. These firefighters and their specialized equipment are prohibited by Federal Aviation Administration (FAA) regulations from leaving the AOA. County firefighters are called upon to supplement Santa Barbara city fire staff in the event of an airport emergency. Fire Station 17, located on the UCSB campus, provides service to University of California, Santa Barbara (UCSB) and most of Isla Vista. Engine 17 is a county fire engine and, if available, may be called upon for assistance when needed. The ambulance and station are owned and operated by UCSB. Fire Station 18, located on the Gaviota Coast west of Las Flores Canyon (LFC), provides service to this rural area and would respond to emergencies occurring along Line 96.

The SBCFD has determined that the most under-served area in the City of Goleta is the extreme western portion, which encompasses the Project location.

Fire Protection and Emergency Response at PRC 421

According to Venoco's South Ellwood Field EAP, Venoco will call 911 to notify the SBCFD, the Santa Barbara County Sheriff, Santa Barbara County OEM, Santa Barbara

County Energy Division, and the City of Goleta for all emergencies. In addition to Santa Barbara County's publicly provided fire protection and emergency response equipment, oil facilities are required by Federal and State regulations to have onsite firefighting equipment as well as materials to control oil spills or other hazardous materials releases. Venoco has fire fighting and emergency response capabilities for its South Ellwood Field facilities in accordance with these regulations. Table 4.9-3 lists fire protection and control equipment available at the EOF and Ellwood Pier.

Table 4.9-3. Venoco Fire Protection and Control Equipment

Facility	Equipment
EOF	Extinguishers, hoses, fire foam and fire monitors, hydrants, fire blankets, fire alarm, smoke detectors, and combustible gas detector
Ellwood Pier	Extinguishers, fire water tank, and fire hose reels

Source: Venoco 2011.

Venoco Emergency Management System

All emergency incidents that occur on Venoco property or facilities are managed using an Incident Command System (ICS) consistent with standard Federal and State emergency command structure guidelines. This system provides the capability and flexibility to respond to a wide range of emergency incidents, allows for complete integration with all government agency emergency response organizations, and ensures the proper and efficient response to all emergency incidents.

The Venoco Emergency Management System is a two-tier organization consisting of a corporate sustained incident response team (SIRT) and a facility-based initial incident response team (IIRT). Personnel assigned specific positions on the SIRT and IIRT are required to be thoroughly familiar with their roles and responsibilities and to participate in specified training programs and exercises simulating emergency events. Emergency response contractors and Oil Spill Response Organizations are also integrated into this emergency management system. The Venoco Emergency Management System is described in detail in the South Ellwood Field EAP (Venoco 2011).

Initial Incident Response Team

In the event of an emergency incident, the IIRT would be activated immediately and would provide Venoco's initial response. The IIRT consists of all facility personnel on site at the time of an incident and all other facility personnel who may be available for immediate return (Venoco 2003).

PRC 421 would not be staffed with on-site personnel, however all operational systems and safety systems from Well 421-2 would be monitored on a real-time basis at the EOF. Venoco's onsite response techniques, including those for PRC 421, are built upon the equipment and manpower resources available at the EOF, Platform Holly, and from

Clean Seas, an oil-spill-response cooperative to which Venoco is a member. Facility staff at the EOF, consisting of two to three people at night and as many as 10-12 people during the day, would be the first to be alerted of an incident at PRC 421, and would be the first in-time to respond to such an incident.

The IIRT Incident Commander, which would be the facility supervisor or the operator-in-charge, would work with local agency emergency response organization incident commanders within a unified command structure. The unified command formulates tactical and strategic decisions to ensure efficient and effective response to the emergency. Depending on the size and complexity of the incident, the IIRT Incident Commander may expand the response organization to include members of the SIRT as necessary. At any time during the incident, the IIRT Incident Commander may request transfer of command to the SIRT, or the SIRT Incident Commander may formally take command of the incident.

Sustained Incident Response Team

Venoco's SIRT is designed and organized to respond to a major onsite incident or major incident with onsite and offsite consequences. The SIRT is designed to augment and/or expand the capabilities of the IIRT as needed. The degree to which the SIRT is activated is dependent on the nature and size of the incident. The SIRT Command Post is designated as the Clean Seas Support Yard in Carpinteria, California (Venoco 2011a).

The SIRT is organized into five functional sections: Command, Operations, Planning, Logistics, and Finance. The Command Section is responsible for overall management of the response and includes certain staff functions required to support command function. The Operations Section is responsible for directing and coordinating all offshore, shoreline, and land operations responses to an incident. The Planning Section is responsible for the collection, evaluation, and dissemination of tactical information about the incident. The Logistics Section is responsible for providing all support needs to the response efforts. The Finance Section is responsible for providing financial services (Venoco 2003).

When activated by the SIRT Incident Commander, representatives from the five functional sections of the SIRT will respond to the Command Post within 12 hours of the onset of the event. Emergency response contractors and Oil Spill Response Organizations will respond in accordance with Federal and State requirements and Venoco emergency response plans (Venoco 2011a; 2011b).

Fire Prevention and Preparedness Plan

Venoco does not have a fire protection plan specific to PRC 421 facilities. Venoco has a South Ellwood Facilities Fire Prevention and Preparedness Plan (Venoco 2003) that

defines the measures to be implemented and maintained by Venoco personnel in the event of a fire. The plan contains safety and fire prevention, detection, and protection systems for the EMT and the EOF. This plan is designed to be implemented in conjunction with the South Ellwood Field EAP, Emergency Evacuation Plans, and hydrogen sulfide (H_2S) Contingency Plans; however, the plan does not contain measures specific to PRC 421.

4.9.2 Regulatory Setting

Fire protection systems detailed in fire protection plans must include systems and designs that ensure compliance with a range of codes and standards. A number of Federal, State, and local laws that regulate oil production and processing facilities, and oil and gas transport pipelines also have implications for fire protection and emergency response. Please refer to Section 4.2, Safety and Table 4.0-1, for a complete description of these requirements, while the local regulatory setting is discussed below.

Local

Santa Barbara County and the City of Goleta have a number of requirements governing fire protection and emergency response applicable to PRC 421.

- Santa Barbara County Code Chapter 15, Amendments to the 2001 California Fire Code (CFC);
- SBCFD Standard 1, Private Road and Driveway Standards;
- SBCFD Standard 2, Fire Hydrant Spacing and Flow Rates;
- SBCFD Standard 3, Stored Water Fire Protection Systems Serving One and Two Family Dwellings;
- SBCFD Standard 4, Automated Fire Sprinkling Systems;
- SBCFD Standard 5, Automatic Alarm System Standards.
- Santa Barbara County Permit Conditions, Various;
- Santa Barbara County Public Works Engineering Design Standards, Roadways;
- Santa Barbara County Ordinance 2919 [95-DP-024] (Venoco, Inc.'s Operating Permit for the EOF and the EMT);
- City of Goleta GP/CLUP, Policy SE 8.3 requires annual safety audits of all new and existing oil and gas production, processing, and storage facilities. The City, or its agent, shall participate in these safety audits. All deficiencies noted in each audit shall be addressed promptly, in timeframes as recommended by the audit's conclusions;

- City of Goleta GP/CLUP, Policy SE 8.6 requires a Quantitative Risk Assessment to be included as a component of any application for a new oil and gas production and processing facility or for any proposed substantial alterations of existing oil and gas production and processing facilities (required under MM S-4e);
- City of Goleta GP/CLUP Policy SE 8.10 requires a Safety Inspection, Maintenance, and Quality Assurance Program or similar mechanism to ensure adequate ongoing inspection, maintenance, and other operating procedures. This would apply to those areas of the Project within City jurisdiction;
- City of Goleta GP/CLUP Policy SE 8.14 requires that new or relocated oil and/or gas pipelines be buried at an appropriate depth. The calculation of burial depth should take into account depth reduction via erosion and other forms of earth movement; and
- City of Goleta GP/CLUP Policy SE 8.15 requires that new or relocated oil and/or gas pipelines be marked appropriately and be accompanied with adequate warning information.

Other Recognized Codes and Standards

Other codes and standards are specified by the American National Standards Institute (ANSI), American Petroleum Institute (API), Industrial Risk Insurers (IRI), NFPA, and CFC (see Table 4.9-4).

4.9.3 Significance Criteria

Impacts to fire protection and emergency response services would be considered significant if:

- Operation of the Project creates the need for one or more additional employees in order to maintain the current level of fire protection and emergency response services;
- The Project results in the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, to maintain the current level of fire protection and emergency response services;
- The Project is located more than 10 miles or 15 minutes from an emergency response location with fire fighting and spill response capabilities;
- Accessibility to the Project site is difficult or limited; or
- The Project does not have an approved fire protection or emergency response plan.

Table 4.9-4. Applicable Standards and Codes

Code/Standard	Description
ANSI B31.4	Liquid Petroleum Transportation Piping Systems
API RP 500	Classification of Hazardous Areas in Petroleum Pipeline Facilities
API Pub 2004	Inspection for Fire Protection
API 14C	Recommended Practice for Analysis, Design, Installation, and Testing of Basic Surface Safety Systems for Offshore Production Platforms
API 1104	Standard for Welding of Pipelines and Related Facilities
IRI IM.2.5.2	Plant Layout and Spacing for Oil and Chemical Plants
IRI IM 17.3.3	Guiding Principles For Loss Prevention and Protection of Crude Oil and Petroleum Products Pumping Stations
IRI IM 17.3.4	Guiding Principles For Loss Prevention and Protection of Crude Oil and Petroleum Products Storage Terminals
NFPA 11	Low Expansion Foam and Combined Agent Systems
NFPA 12	A&B Halogenated Extinguishing Agent Systems
NFPA 15	Water Spray Fixed Systems
NFPA 20	Centrifugal Fire Pumps;
NFPA 22	Water Tanks for Private Fire Protection
NFPA 24	Installation of Private Fire Service Mains and Their Appurtenances
NFPA 25	Inspection, Testing and Maintenance of Water-Based Fire Protection Systems
NFPA 30	Flammable and Combustible Liquids Code
NFPA 70	National Electric Code
CFC Article 02, Division II	Special Procedures
CFC Article 04	Permitting
CFC Article 09	Definitions and Abbreviations
CFC Article 10	Fire Protection
CFC Article 11	General Precautions Against Fire
CFC Article 12	Maintenance of Exits and Occupant Load Control
CFC Article 13	Smoking
CFC Article 14	Fire Alarm Systems
CFC Article 49	Welding and Cutting
CFC Article 79	Flammable and Combustible Liquids
CFC Article 80	Hazardous Materials
CFC Article 85	Electrical Systems

ANSI - American National Standards Institute
API - American Petroleum Institute
CFC - California Fire Code
IM - Instructional Memorandum
IRI - Industrial Risk Insurers
NFPA - National Fire Protection Association

4.9.4 Impact Analysis and Mitigation

Construction of the Project would not substantially increase ongoing demand for Public Services. However, PRC 421 is located in an area that is identified as being under-served by fire protection services available by the SBCFD. The EOF and PRC 421 piers and wells are outside of the standard safe response time of 5 minutes, but within the significance threshold of 15 minutes, and the firefighter ratio does not meet standard requirements. Recommissioning PRC 421 would not create the need for additional SBCFD firefighters or for a new fire station in Goleta, but would (1) incrementally contribute to demand for fire inspection and protection services in an area that is currently under-serviced; and (2) require additional fire inspection and protection services in an area on the beach that has difficult and limited accessibility.

Table 4.9-5, located at the end of this section, provides a summary of these impacts and recommended MMs to address these impacts

Impact PS-1: Adequacy of Fire Response

The incremental increase for fire protection services caused by reactivating oil production in an area which is currently under-serviced with difficult and limited accessibility contributes to the need for new and/or expanded fire inspection and protection services in western Goleta (Significant and Unavoidable).

Impact Discussion

The SBCFD has determined that the most under-served area in Goleta is the western part of the City, including the Project area, due to both response times and the population to firefighter ratio. Annual inspections, emergency response, and planning activities at the EOF and PRC 421 associated with the Project would incrementally add to the demand for fire protection services. The PRC 421 piers and associated pipelines are located along the beach in an area that is difficult to access with limited accessibility on a Sandpiper Golf Course gravel and dirt access road, making fire inspection and fire protection challenging. Because the Project area is currently underserved in terms of both an acceptable ratio of firefighter-to-population ratio and in terms of the fire service response time, potential impacts to fire protection and emergency response services would be considered significant for the Project, but can be partially mitigated with the implementation of MM PS-1a. The mitigation measure was developed in consultation with SBCFD (SBCFD letter to CSLC, dated March 18, 2014). However, because the mitigation measure does not directly increase the firefighter-to-population ratio nor does not improve the fire service response time, this impact would remain significant and unavoidable.

Mitigation Measure

MM PS-1. Impact Development Fee. Venoco shall provide an impact development fee payment to the City of Goleta that would be directed toward fire response improvements. The fee would be determined based on the County of Santa Barbara's Development Fee Ordinance (County Ordinance 4745), which assesses a fee of $1,007.00 per 1,000 sf for non-retail commercial development in Fiscal Year 2013-2014. For the purposes of determining the fee, the Project area would consist of the PRC 421 piers, pipeline corridor, and roadbed, which has a total cost of $26,168. Fire response upgrades, which may include maintenance of a 12-foot-wide all-weather access road and installation of portable fire extinguishers, shall be implemented per Santa Barbara County Fire Department (SBCFD) requirements. Venoco shall also obtain a hot-work permit from SBCFD before any hot-work.

Rationale for Mitigation

The City of Goleta currently charges fees to address fire service impacts in Goleta. MM PS-1 would provide a one-time fee of $26,168 to contribute towards a new fire facility. The mitigation measure will also provide fire response upgrades to the piers.

Residual Impact

Although providing the fire response upgrades and accepting a one-time payment fee would offset the costs of responding to potential emergencies at Project facilities, this impact remains significant due to the uncertainty of fire response adequacy in western Goleta.

Impact PS-2: Operation without an Approved Fire Prevention Plan

Operating PRC 421 without an approved fire protection plan could result in an unsafe situation if an emergency requiring response by Venoco or by the Santa Barbara County Fire Department (SBCFD) were to occur (Less than Significant with Mitigation).

Impact Discussion

As detailed above, PRC 421 must meet a number of Federal, State, and local requirements relating to fire protection and emergency response. The SBCFD and OEM, in addition to other agencies, conduct an annual operational and safety inspection of the PRC 421 facilities. Venoco has an emergency management system in place to facilitate management and response activities for emergency incidents occurring in the South Ellwood Field. However, Venoco does not have an approved fire protection plan for PRC 421. Operating PRC 421 without an approved fire protection plan could result in an unsafe situation if an emergency requiring response by Venoco or by the SBCFD

were to occur. With regard to fire protection and emergency response services, this impact would be less than significant with the implementation of MM PS-2.

Mitigation Measure

MM PS-2. Prepare Fire Prevention Plan for PRC 421. Prior to re-starting oil and gas production at PRC 421, Venoco shall prepare a fire prevention plan that includes fire prevention strategies for the Project area. The plan may either be in the form of a stand-alone plan for the PRC 421 facilities or included as an update to the South Ellwood Facilities Fire Prevention and Preparedness Plan. The Plan shall be submitted to the City of Goleta and the Santa Barbara County Fire Department (SBCFD) for review and approval prior to the issuance of the City's Land Use Permit.

Rationale for Mitigation

A fire prevention plan is required for the operation of PRC 421. Preparation of this plan will meet requirements and will reduce the significance of Impact PS-2. Full implementation of this measure would reduce Impact PS-2 to less than significant.

Table 4.9-5 Summary of Public Services Impacts and Mitigation Measures

Impact	Mitigation Measures
PS-1: Adequacy of Fire Response	**PS-1.** Impact Development Fee.
PS-2: Operation without an Approved Fire Prevention Plan	**PS-2.** Prepare Fire Prevention Plan for PRC 421.

4.9.5 Cumulative Impacts Analysis

Increased oil and gas, residential, and commercial development in the Project area has cumulatively affected the SBCFD. Currently the maximum acceptable ratio of firefighter-to-population is exceeded in the Goleta area. Additionally, the western Goleta area is underserved in terms of response time. As other regional projects are developed, the firefighters-to-population ratio will worsen as will fire response time. The Project would add incrementally to the demand for publicly provided fire protection and emergency response services in this under-serviced area. Therefore, the Project would cause a significant cumulative impact to publicly provided fire protection and emergency services.

4.10 TRANSPORTATION AND CIRCULATION

This section describes both onshore and offshore transportation systems in the Project vicinity and the impacts of the Project on both roadway and marine transportation and circulation. The analysis focuses on area roadways most likely to be affected by construction and operation of Project components, and transportation of oil via onshore pipeline. The analysis in this section is based on and incorporates by reference conclusions from the Ellwood Marine Terminal (EMT) Lease Renewal Environmental Impact Report (EIR) (California State Lands Commission [CSLC] 2009) and Line 96 Modification Project EIR (Santa Barbara County 2011). This analysis also includes a review of data from the City of Goleta's 2006 General Plan/Coastal Land Use Plan (GP/CLUP), associated EIR, and local and regional maps; incorporates data from Santa Barbara County (01-ND-34) on pier fortification and road stabilization activities that occurred in 2001; and includes information from contacts with appropriate agencies.

4.10.1 Environmental Setting

Study Area Location and Description

The primary Project study area comprises Ellwood and areas of west Goleta that could be impacted by Project-generated traffic, extending roughly from Storke Road to the western City limit. Because pipeline operations do not generate substantial traffic volume, there is no secondary Project study area for transportation-related issues.

Transportation

Roadway Classification

Roadway conditions are typically described in terms of Level of Service (LOS), with LOS A indicating free traffic flow conditions and LOS F indicating stop-and-go traffic. LOS A, B, and C are typically considered satisfactory with generally free flowing conditions, while LOS D, E, and F are often considered unacceptable because they represent increased congestion and delays. LOS D is typified by increasing congestion, stable flows, where speed and freedom to maneuver severely restricted, and the driver experiences a poor level of comfort. At LOS E, roadways are near capacity and operate with significant delays and low average speeds. LOS F is defined by forced or breakdown flow and roadways operate at extremely low speeds.

Existing Transportation System

Major transportation corridors in the Project vicinity include Highway 101, Hollister Avenue, and Storke Road. The Project is located at 7979 Hollister Avenue at the far west end of the urbanized area of the City of Goleta, California. Access to the Project site is provided off of Hollister Avenue via Bacara Access Road to the Ellwood Onshore

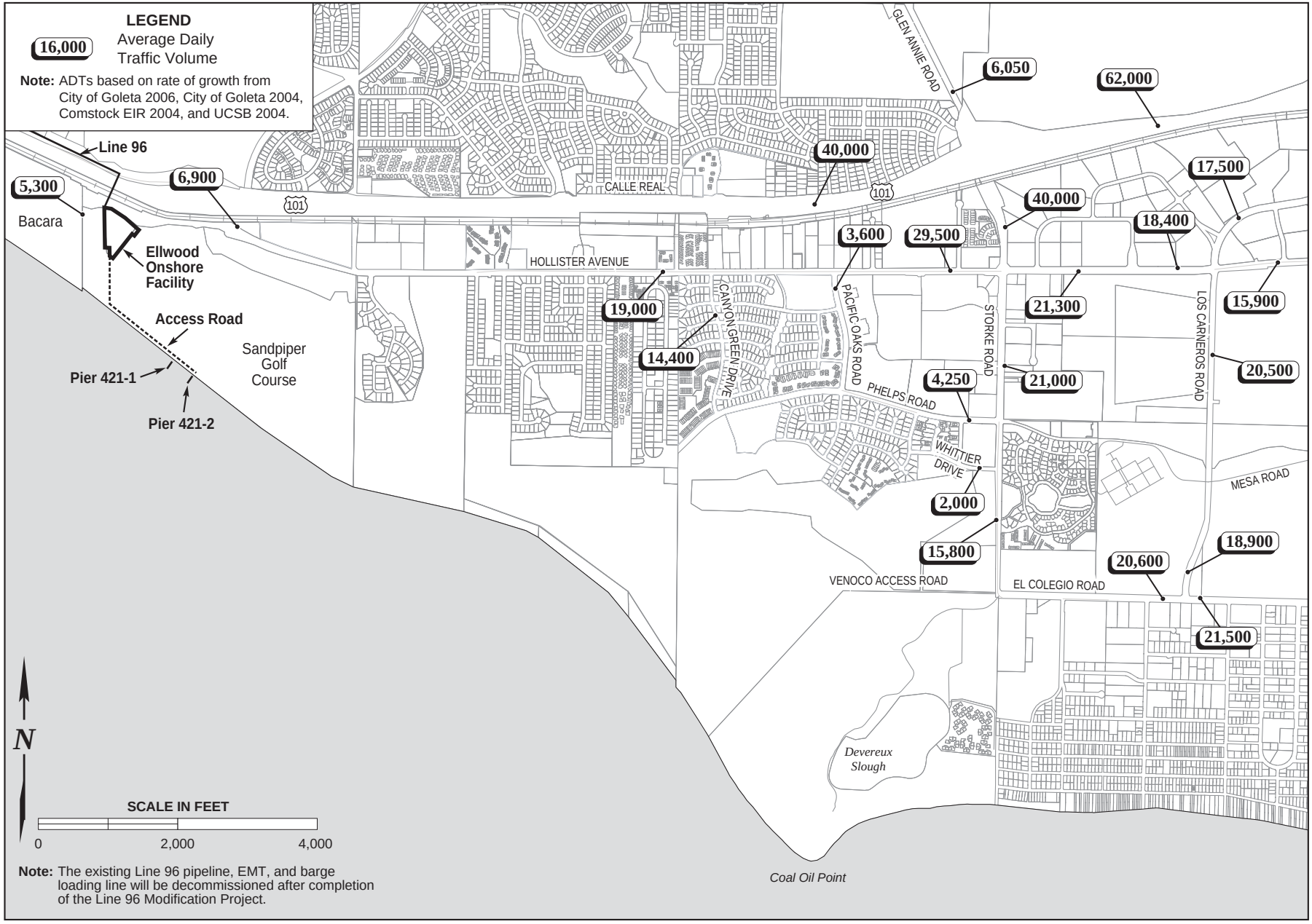
Facility (EOF) driveway. A dirt road runs south from the EOF across Sandpiper Golf Course and links to the beachfront dirt road which runs along the toe of the bluff to PRC 421. In the Project vicinity, access to Hollister Avenue is provided by two freeway exits, Winchester Canyon Road or Storke Road, approximately 0.5 mile west and 2.3 miles east of the EOF driveway, respectively. Descriptions of the major roadways in the Project vicinity are detailed below (CSLC 2009):

Highway 101: Highway 101 extends along the Pacific Coast between Los Angeles and San Francisco. Within Santa Barbara County, the 101 operates as a four- to six-lane highway and provides the principal route between Goleta and the cities of Santa Barbara, Carpinteria, and Ventura to the south, and Buellton and Santa Maria to the north. Highway 101 generally operates at an acceptable LOS in the Project vicinity, but experiences increasing congestion east of its interchange with Highway 217.

Hollister Avenue: Hollister Avenue is primarily a four-lane arterial roadway that is the main east/west surface street in Goleta. Hollister Avenue extends easterly from its terminus at the new Hollister Avenue Interchange (formerly Winchester Canyon/Highway 101 interchange) through the City of Goleta and the unincorporated Goleta Valley where it connects to State Street in the City of Santa Barbara. Hollister Avenue generally operates at an acceptable LOS in the Project vicinity, except west of its intersection with Storke Road where congestion increases (Figure 4.10-1). Hollister Avenue is a main transit corridor in Goleta and supports the trans-Goleta Valley bus line 11 and bus line 25 between Sandpiper Golf Course and University of California Santa Barbara (UCSB). Hollister is striped with a Class II bike path its entire length.

Storke Road: Storke Road extends from Highway 101 in the north, approximately 1.2 miles south to El Colegio Road. Between Highway 101 and Phelps road, Storke is a four-lane arterial roadway, but narrows to three lanes south of Phelps Road. Storke Road provides the primary freeway in western Goleta via the Storke Road/Highway 101 interchange. Storke Road is signalized at the Highway 101 interchange northbound and southbound ramps, and at Hollister Avenue, Marketplace Drive, Phelps Road, and El Colegio Road. Storke Road generally operates at an acceptable LOS in the Project vicinity, except south of its intersection with Highway 101 where congestion increases (Figure 4.10-1). Storke Road also serves as a main transit route, and provides transit to access UCSB and the Camino Real shopping center via lines 6, 10, 12, 23, 24, 25, and 27. Storke Road is also striped with a Class II bike path along its entire reach.

Bacara Access Road: This two-lane road provides access to Sandpiper Golf Course, Bacara Resort, the EOF, and the Project site from Hollister Avenue. Its intersection with Hollister Avenue is controlled by a stop sign. Access to the EOF is controlled by a locked gate. Line of sight from this entrance driveway is more than 300 feet to the east and west.



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Transportation Network and Average Daily Traffic Volumes in the Project Vicinity

FIGURE 4.10-1

Existing and Future Roadway Conditions

Existing and future roadway conditions were derived based upon data from the EMT Lease Renewal EIR as well as that from the EIR on the City of Goleta's adopted GP/CLUP. Because the EMT Lease Renewal EIR appears to rely upon older data (2004), more recent data from the city's GP/CLUP EIR were also reviewed and used where applicable. That EIR, however, only assessed the impacts of full development of Goleta's GP/CLUP over the next 15 to 20 years and therefore these more recent data would exceed the scope of required cumulative analysis for an individual project. As a result, this EIR relies primarily upon the older data and analysis contained in the EMT Lease Renewal EIR. Estimated current and future roadway and intersection conditions in the Project vicinity are summarized in Tables 4.10-1 and 4.10-2.

Table 4.10-1. Roadway Traffic in the Project Vicinity

Roadway	Classification	Existing		Future*	
		ADT	LOS	ADT	LOS
Hollister Ave. at intersection with Storke Rd.	4-lane Arterial	29,500	C	31,900	D
Hollister Ave. at northern ramp of Highway 101**	2-lane Arterial	6,900	A	7,700	A
Hollister Ave. (without Pacific Oaks)	2-lane Arterial	11,400	A	13,000	B
Hollister Ave. without Canyon Green Dr.	4-lane Arterial	19,000	A	21,000	A
Storke Rd. (Highway 101 ramp—Hollister Ave.)	4-lane Arterial	40,000	F	41,900	F
Storke Rd. (Hollister Ave —Phelps Rd.)	4-lane Arterial	21,000	A	24,100	B
Storke Rd. (Phelps Rd.—El Colegio)	3-lane Arterial	15,800	A	16,200	A

* Includes the proposed projects in the vicinity. LOS = level of service; ADT = average daily traffic.
** Note: New traffic counts for the realigned Hollister Avenue Interchanges with Highway 101 are not available.
Source: CSLC 2009; City of Goleta 2006a.

Table 4.10-2. Intersection Traffic in the Project Vicinity

Roadway	Control	Existing		Future*	
		V/C Ratio or Delay	LOS	V/C Ratio or Delay	LOS
Hollister Ave./Highway 101 southbound Ramps**	Stop-Sign	10.3 sec.	B	11.4	B
Hollister Ave./Ellwood School	Signal	0.36	A	0.40	A
Hollister Ave./Santa Barbara Shores Drive	Stop-Sign	8.5 sec.	A	8.7 sec.	A
Storke Rd./Hollister Ave.[1]	Signal	0.76	C	0.97	E
Storke Rd./Highway 101 northbound Ramps	Signal	0.59	A	0.61	B
Storke Rd./Highway 101 southbound Ramps	Signal	0.49	A	0.52	A

* Includes the proposed projects in Goleta. LOS = level of service; ADT = average daily traffic.
[1] The EMT Lease Renewal EIR identifies this intersection as operating at LOS D; more recent data from the Goleta Community Plan EIR identify this intersection as operating at LOS C as shown in this table.
** Note: New traffic counts for the realigned Hollister Avenue Interchanges with Highway 101 are not available.
Source: CSLC 2009; City of Goleta 2006a.

As can be seen from the information in these tables, most roads and intersections in the Project vicinity operate at an acceptable LOS (LOS A-C) and would continue to do so even with the addition of substantial traffic associated with development of pending projects. However, the section of Storke Road south of Highway 101 currently operates at LOS F and the segment of Hollister west of Storke Road is projected to operate at LOS D with cumulative traffic. Currently, the intersection of Hollister Avenue and Storke Road operates at LOS C and is projected to decline to LOS F with the addition of cumulative traffic.

Offshore Traffic

The Project would not directly affect offshore vessel traffic, which in the immediate project vicinity consists primarily of recreational boating. Marine traffic is typically described in numbers of port calls per vessel category, e.g., tankers, container vessels, and the number of vessels that traverse a given waterway. Offshore waters in high traffic areas can be designated as safety fairways to prohibit the placement of surface structures such as oil platforms in the area. The U.S. Army Corps of Engineers (USACE) is prohibited from issuing permits for surface structures within safety fairways, which are frequently located between a port and the entry into a Traffic Separation Scheme (TSS) (CSLC 2009).

4.10.2 Regulatory Setting

The Federal government passes the responsibilities of maintaining and regulating highways and roadways to the State and local levels; therefore, there are no Federal agencies or regulations related to this resource area. A summary of the regulatory setting at the State level is provided in Table 4.0-1 and the local level is provided below.

Local

The Santa Barbara County Association of Governments (SBCAG) has responsibility for all regional transportation planning and programming activities.

The Project would be subject to the provisions of the City of Goleta GP/CLUP Transportation Element and the Santa Barbara County Congestion Management Program (CMP). The CMP is a comprehensive program designed to reduce auto-related congestion and designates major highway and road segments within the Project vicinity. The CMP requires an assessment of the Project's potential impacts on the designated roadways, which include Hollister Avenue and Highway 101.

The Goleta GP/CLUP Transportation Element contains general goals and policies to improve overall circulation in Goleta and ensure that future development is supported by appropriate transportation facilities.

4.10.3 Significance Criteria

Thresholds of significance were derived from the State CEQA Guidelines, County of Santa Barbara Environmental Thresholds and Guidelines Manual, and City of Goleta. Traffic impacts would be considered significant if any of the following apply:

- The addition of project traffic to an intersection increases the volume to capacity ratio (V/C) by the value provided in Table 4.10-3, or adds at least 5, 10, or 15 trips to intersections operating at LOS F, E, and D, respectively.

Table 4.10-3. City of Goleta LOS Significance Thresholds

LOS (including Project)[1]	Increase in V/C Greater Than
A	0.20
B	0.15
C	0.10
	Or the addition of:
D	15 trips[2]
E	10 trips[2]
F	5 trips[2]

[1] The adopted standard for city roadways and intersections is LOS C; with the exception of the intersection of Hollister Avenue/Storke Road, which has been built to its planned capacity, and thus under GP/CLUP policy subsection TE 4.2 has a standard of LOS D.

[2] For purposes of analysis of the 2030 buildout, it was conservatively assumed that any increase in V/C projected over existing conditions reflects an increase of at least the threshold number of trips defined in this table, indicating a significant impact.

Source: City of Goleta 2006b.

- Project access to a major road or arterial road would require a driveway that would create an unsafe situation or a new traffic signal or major revisions to an existing traffic signal.
- Project adds traffic to a roadway that has design features (e.g., narrow width, roadside ditches, sharp curves, poor sight distance, inadequate pavement structure) or receives use which would be incompatible with substantial increases in traffic (e.g., rural roads with use by farm equipment, livestock, horseback riding, or residential roads with heavy pedestrian or recreational use) that will become potential safety problems with the addition of Project or cumulative traffic. Exceedance of the roadway's designated Transportation Element Capacity may indicate the potential for the occurrence of the above impacts.
- Project traffic would use a substantial portion of an intersection's capacity where the intersection is currently operating at acceptable LOS (A through C) but with cumulative traffic would degrade to or approach LOS D (V/C 0.80) or lower. Substantial is defined as a minimum change of 0.03 V/C for intersections that would operate from 0.80 to 0.85 V/C and a change of 0.02 V/C for intersections

that would operate from 0.86 to 0.90 V/C, and 0.01 V/C for intersections operating at anything higher than 0.90 V/C.

- Project traffic or construction must use an access road that is already at or exceeds LOS E or brings a roadway down to LOS E.
- Project results in a roadway being degraded to a lower LOS.
- Project results in a substantial safety hazard to motorists, bicyclists, or pedestrians.
- Project results in insufficient parking.
- Project restricts one or more lanes of a primary or secondary arterial roadway during peak hour traffic, thereby reducing its capacity and creating congestion.
- Project results in a noticeable deterioration of pavement or roadway surfaces.
- Project activities would reduce the existing level of safety for navigating vessels.

4.10.4 Impact Analysis and Mitigation

There is currently very limited regular daily traffic associated with PRC 421, as it is currently not under production. Existing traffic is limited to daily security patrols, which also provide security to the EOF. Future traffic generation associated with Project implementation would consist of construction- and limited operation-related traffic. Table 4.10-4, located at the end of this section, provides a summary of Project impacts and recommended MMs to address these impacts.

Impact TR-1: Construction-Generated Traffic

Traffic generated from construction activities would have a short-term, less than significant impact on local transportation and circulation (Less than Significant with Mitigation).

Impact Discussion

Traffic generated from construction activities would consist of daily trips from employees and periodic trips associated with delivery of equipment and construction materials and hauling of debris. Additionally, during the decommissioning and removal of Pier 421-1, expected to occur approximately 1 year following recommissioning of Pier 421-2, construction traffic would include traffic from similar activities, as well as regular hauling trips to remove debris. Venoco estimates that Project construction would require 90 working days; depending upon weather and other factors this may not be continuous and may extend over 3 or more months. Therefore, any potential impacts associated with traffic generated from construction activities would be of a short duration. The decommissioning and removal of Pier 421-1 is expected to have a 30-day construction schedule, so it would also be short in duration.

Project construction would generate additional vehicular movement along roads in the Project vicinity, including Highway 101, Winchester Canyon and Storke Road interchanges, Hollister Avenue, and the Bacara Access Road. Venoco has not prepared a traffic management plan and precise estimates of construction-related traffic are unavailable. However, this EIR uses data for similar recent repair projects at PRC 421 to provide a reasonable worst case estimate of Project-related short-term traffic likely to be generated from construction activities. In 2004, caisson repair and stabilization efforts at Pier 421-1 required approximately 60 tractor trailer one-way trips entering/leaving the EOF and 88 round trips across the easement road between the EOF and PRC 421 access road. Repair of the caisson walls at Pier 421-2 would be the primary Project component generating construction traffic; installation of new cables and piping would have a limited traffic impact because there would be no import or export of excavated material. Therefore, the following estimates are consistent with construction traffic that would be generated by the Project.

Up to an estimated 90 tractor trailer one-way trips entering/leaving the EOF and 90 round trips across the easement road between the EOF and PRC 421 (an estimate of an average of two per day over the estimated 90-day construction period) associated with construction equipment and material deliveries would be required for other Project elements such as power cable installation and Pier 421-2 repairs and improvements. In addition, during periods of peak construction such as pipeline and power cable installation or use of the workover rig at Pier 421-2, up to 12 construction workers would be onsite, generating approximately 12 morning and afternoon peak hour trips to the site (24 total). When added to material and construction equipment deliveries, construction traffic could average approximately 15 peak hour trips per day, peaking at up to 40 to 60 average daily trips per day during the most intensive construction activities. Construction traffic is anticipated to add 15 trips per day during a “normal” construction period and 40 to 60 trips during an “intensive” construction period. Over an 8-hour work day, approximately two trips an hour would take place during “normal” construction and at most eight trips an hour during “intensive” construction. Trips associated with “normal” construction would not exceed significance criteria according to City of Goleta and Santa Barbara County for one roadway categorized with an LOS of F (Storke Road between Hollister Road and the Highway 101 on-ramp) but under “intensive” construction (eight trips per hour) these criteria may be exceeded. However, this impact would be temporary, lasting an estimated 90 days; therefore, this impact would be less than significant.

Construction trips associated with decommissioning and removal of Pier 421-1 would be similar to Project construction in terms of daily traffic loads; however, the duration of this activity would be shorter (30 days). Roughly 40 haul trips would be required to remove debris (an average of under three per day over the estimated 30-day construction period). Trips associated with “normal” construction would not exceed significance criteria according to City of Goleta and Santa Barbara County for one roadway

categorized with an LOS of F but under "intensive" construction these criteria may be exceeded. However, decommissioning and removal activity would be temporary, and impacts would therefore be less than significant.

The short-term, construction-related traffic would not be expected to adversely affect long-term area roadway or intersection operations. In addition, Venoco has proposed scheduling construction activities and associated traffic to begin at 7:00 a.m. and end at 7:00 p.m. to avoid the morning and afternoon peak hour. Trucks would use the northbound and southbound Winchester Canyon exits to access the EOF, which operate at LOS A, meaning free flowing traffic conditions. Although Project construction would span a short duration of time, increased truck volume resulting from the Project could incrementally contribute to delays at already congested facilities such as Storke Road south of Highway 101; however, this is not anticipated to be frequent or significant. Hollister Avenue has adequate capacity to handle increased traffic resulting from this Project. Should any traffic be diverted to the Storke Road/Highway 101 exits, impacts would also be less than significant due to majority of construction-generated truck trips taking place during off-peak hours.

Parking would be provided at an existing easement area immediately adjacent to the EOF west fence line. There are two staging areas at the EOF and a 30- by 30-foot helipad at the south end of the EOF could also be used as an additional staging area for vehicles and material should the need arise. Therefore, no parking would obstruct Hollister Avenue.

Further, implementation of the Project would not restrict access to or from private property or adjacent land uses like the beach, restrict movements of emergency vehicles with no reasonable alternative access routes, impede pedestrian movements or bike trails, with no suitable alternative routes, but could result in noticeable deterioration of pavement or roadway surfaces. Therefore, construction-generated traffic impacts associated with the Project would be less than significant with mitigation.

Mitigation Measures

The following recommended measures would ensure that construction-related traffic impacts are less than significant.

MM TR-1a. Route Construction Traffic to Avoid Congested Intersections. To minimize the potential for adverse impacts, Venoco shall direct Project construction traffic, particularly heavy trucks, during non-emergency trips, to avoid congested areas at Storke Road and use the Winchester Canyon Overpass to access the Project site. Venoco shall prepare and implement a Construction Traffic Control Plan that would apply to all construction activities, including but not limited to recommissioning and decommissioning activities, for review and approval by the City of Goleta.

MM TR-1b. Repair/Upgrade Any Damage to Access Road. To minimize the potential for adverse impacts, Venoco shall repair/upgrade the access road if it receives damage or degradation as a result of construction-related traffic. The access road shall be inspected and photographed before and after the Project, and a determination will be made regarding any needed repairs.

Rationale for Mitigation

When combined with the Applicant-proposed measure to schedule trips outside the peak hour, MM TR-1a would ensure that the short-term Impact TR-1 would remain less than significant with respect to transportation and circulation. Similarly, MM TR-1b would ensure that short-term impacts would remain less than significant on the access road.

Impact TR-2: Operation-Generated Traffic

Traffic from operation of the Project would have a less than significant impact on transportation and circulation (Less than Significant).

Impact Discussion

On-road traffic generated by Project operations would be minimal. Venoco proposes that all operational maintenance issues would be handled by existing staff at the EOF; therefore, the facility would require only limited and periodic maintenance beyond that provided by existing EOF staff. Daily security patrols are already ongoing. Traffic associated with pipeline transportation to the Plains All American Pipeline L.P. (PAAPLP) Coastal Pipeline would not increase as a result of the Project because the additional throughput would not require additional personnel or facilities. As a result, the Project would not generate any increase in ongoing operational average daily or peak hour trips for the Project's duration.

Mitigation Measures

None required.

Impact TR-3: Increased Potential for Traffic Accidents

Large trucks and construction equipment coming to and leaving from the Project site could increase the potential for traffic accidents due to delays and backups on Hollister Avenue and at the Winchester Canyon Road bridge over Highway 101 (Less than Significant).

Impact Discussion

The intersection of the Bacara access road with Hollister Avenue has been recently realigned as part of the relocation of the Winchester Canyon/ Hollister Avenue

interchange with U.S. Highway 101. This new intersection consists of a standard "T" alignment, with Hollister Avenue forming the east leg, the Bacara Access Road the west approach and the Winchester Canyon Road bridge over Highway 101 the north leg. All approaches are controlled by stop signs and line of sight and visibility are excellent. While the addition of large heavy trucks from the Project to this interchange could incrementally increase delays at this intersection, these impacts would be short-term and intermittent and are considered insignificant.

Mitigation Measures

None required.

Table 4.10-4. Summary of Transportation and Circulation Impacts and Mitigation Measures

Impact	Mitigation Measures
TR-1: Construction-Generated Traffic	**TR-1a.** Route Construction Traffic to Avoid Congested Intersections. **TR-1b.** Repair/Upgrade Any Damage to Access Road.
TR-2: Operation-Generated Traffic	None required.
TR-3: Increased Potential for Traffic Accidents	None required.

4.10.5 Cumulative Impacts Analysis

Other projects proposed in the Project area would contribute to transportation congestion; however, because the Project would have no long-term transportation impacts, it would not have a cumulative impact on transportation and circulation in the Project vicinity.

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4.11 NOISE

This section describes the noise environment in the Project vicinity and potential impacts to the noise environment associated with Project implementation. This document incorporates by reference the conclusions of the Ellwood Marine Terminal (EMT) Lease Renewal Environmental Impact Report (EIR) (California State Lands Commission [CSLC] 2009) and Line 96 Modification Project EIR (Santa Barbara County 2011) regarding baseline noise environment conditions. Where this document relies upon mitigation measures (MMs) contained in those EIRs to address Project impacts, these are summarized to permit report reviewers to understand their relationship to the Project.

4.11.1 Environmental Setting

Study Area Location and Description

The primary Project study area comprises the Ellwood area immediately surrounding and adjacent to PRC 421 that could be impacted by Project-generated noise, extending roughly from the Ellwood Mesa on the east to Bacara Resort to the west. Because pipeline operations do not generate substantial noise, there is no secondary Project study area for noise-related issues.

Definitions

Noise is defined as unwanted sound that is heard by people or wildlife and that interferes with normal activities or otherwise diminishes the quality of the environment. Noise is usually measured as sound level on a logarithmic decibel (dB) scale, with the frequency spectrum adjusted by the A-weighting network. The dB is a unit division on a logarithmic scale that represents the intensity of sound relative to a reference intensity near the threshold of normal human hearing. The A-weighting network is a filter that approximates the response of the human ear at moderate sound levels. The resulting unit of measure is the A-weighted decibel, or dBA.

To analyze the overall noisiness of an area, noise events are combined for an instantaneous value or averaged over a specific time period, e.g., one hour, multiple hours, 24 hours. The time-weighted measure is referred to as Equivalent Sound Level and represented by L_{eq}. The equivalent sound level is defined as the same amount of sound energy averaged over a given time period. The percentage of time that a given sound level is exceeded can also be represented. For example, L_{10} is a sound level that is exceeded 10 percent of the time over a specified period.

Effects on Wildlife

Wildlife response to noise is dependent not only on the magnitude, but also the characteristic of the sound, or the sound frequency distribution. Wildlife is affected by a broader range of sound frequencies than humans. Determining the effects of noise on wildlife is complicated because responses vary between species and individuals of a population. However, noise is known to affect an animal's physiology and behavior, and chronic noise-induced stress is deleterious to an animal's energy budget, reproductive success, and long-term survival (Radle 2001). Noise impacts to marine wildlife are detailed in Section 4.6, Marine Biological Resources.

Effects on Humans

Human response to noise is dependent not only on the magnitude but also on the characteristic of the sound, or the sound frequency distribution. Generally, the human ear is more susceptible to higher frequency sounds than lower frequency sounds. Human response to noise is also dependent on the time of day and expectations based on location and other factors. For example, a person sleeping at home might react differently to the sound of a car horn than to the same sound while driving during the day. The regulatory process has attempted to account for these factors by developing overall noise ratings such as Community Noise Equivalent Level (CNEL) and the Day-Night Average Noise Level (L_{dn}) which incorporate penalties for noise occurring at night. The L_{dn} rating is an average of noise over a 24-hour period in which noises occurring between 10:00 p.m. and 7:00 a.m. are increased by 10 dBA. The CNEL is similar but also adds a weighting of 3 dBA to noises that occur between 7:00 p.m. and 10:00 p.m. Average noise levels over daytime hours only (7:00 a.m. to 7:00 p.m.) are represented as L_d and nighttime noises as L_n. Figure 4.11-1 is a scale showing typical noise levels encountered in common daily activities.

The effects of noise are considered in two ways: how a proposed project may increase existing noise levels and affect surrounding land uses and how a proposed land use may be affected by existing surrounding land uses. The Goleta General Plan/Coastal Land Use Plan (GP/CLUP) Noise Element focuses on particular types of land uses (sensitive receptors) when measuring the effects of noise. These "sensitive receptors" include residences, transient lodging, such as hotels and motels, hospitals, nursing homes, convalescent hospitals, schools, libraries, houses of worship, and public assembly places.

When a new noise source is introduced, most people begin to notice a change in noise levels at approximately 5 dBA. Typically, average changes in noise levels of less than 5 dBA cannot be definitely considered as producing an adverse impact. For changes in levels above 5 dBA, it is difficult to quantify the impact beyond recognizing that greater noise level changes would result in greater impacts (CSLC 2009).

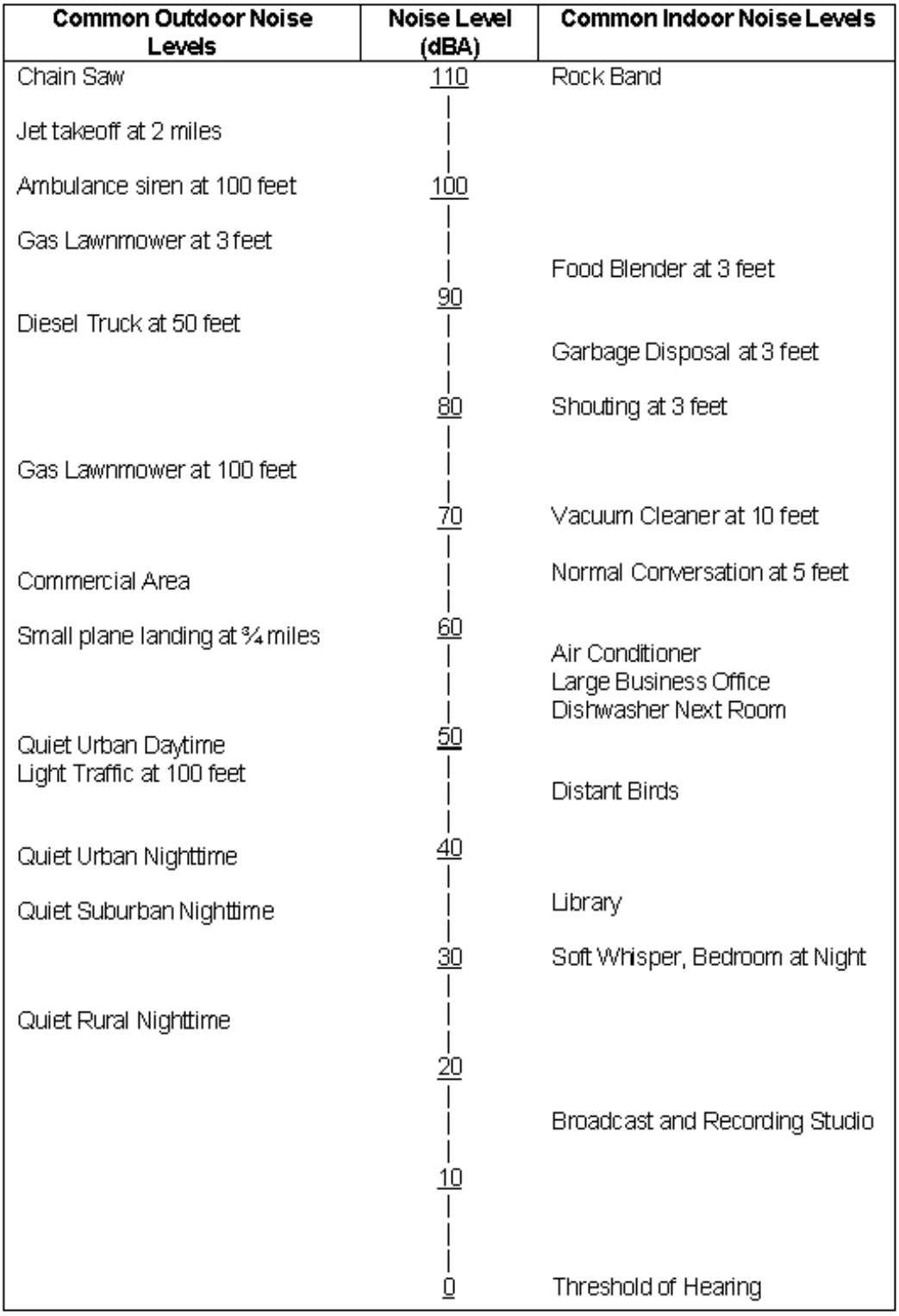


FIGURE 4.11-1. COMMON ENVIRONMENTAL NOISE LEVELS

Source: Adapted from FAA 2005.

In community noise impact analysis, long-term noise increases of 5 to 10 dBA are considered to have "some impact." Noise level increases of more than 10 dBA are generally considered severe. In the case of short-term noise increases, such as those from construction activities, the 10 dBA threshold between "some" and "severe" is replaced with a criterion of 15 dBA. These noise-averaged thresholds shall be lowered when the noise level fluctuates, when the noise has an irritating character such as considerable high frequency energy, or if it is accompanied by subsonic vibration. In these cases the impact must be individually estimated.

Project Area Overview

Major noise sources in the Project vicinity include breaking waves along the beach, occasional aircraft overflights (the Santa Barbara Airport is approximately 6 miles from PRC 421), the Ellwood Onshore Facility (EOF), and on-road traffic. The piers are located on State tide and submerged lands below the bluffs marking the southern limit of the Sandpiper Golf Course. On the north and east sides, the PRC 421 piers are surrounded by public beach area and the Sandpiper Golf Course. To the northwest of the piers is the Bacara Resort (approximately 0.75 mile from PRC 421). South of the piers is the Pacific Ocean. The Sandpiper Golf Course is the nearest noise receptor to the Project area.

Two noise studies were conducted for a previous EIR to collect baseline noise levels in the Project vicinity (CSLC 2009). Noise measurements were collected on May 24, 2005, during the day and in the evening at the sensitive receptors in the Project vicinity, and during the day on July 21, 2005. The data collected included L_{eq}, maximum levels, and minimum levels. Noise levels associated with the maximum reading were generally produced by the ocean surf for locations near the beach, or by traffic on nearby local roads for other areas. Noise from aircraft overflights associated with the Santa Barbara Airport could be heard from all locations (CSLC 2009). Background noise levels measured in the study area and their distance to PRC 421 are shown in Table 4.11-1.

Table 4.11-1. Baseline Noise Levels in the Project Vicinity

Location/Sensitive Receptor	Distance from PRC 421	Major Noise Sources	L_{eq}, dBA			
			Day	Eve.	Night	CNEL
1. Ellwood Mesa pedestrian and biking trail	8,509 feet	Trucks, noise from EMT, aircraft	49.6	56.3	51.3	58.6
2. Public walking trails on ocean bluff	8,714 feet	Ocean	63.8	63.0	58.0	66.4
3. Public beach area east of the piers	9,008 feet	Ocean	63.2	59.7	54.7	64.0
4. Vicinity of Bacara Resort and Sandpiper Golf Course		Cars, Ocean	60-63	NM	NM	NM

NM = not measured; Source: CSLC 2009.

A third noise monitoring study was conducted August 9, 2005, near the Line 96 tie-in at the EOF, in the vicinity of the Bacara Resort, Sandpiper Golf Course, and residences on the north side of Highway 101. This study examined only daytime ambient noise levels and determined that day background L_{eq} noise levels in this location were between 60 and 63 dBA. Figure 4.11-2 shows a map of the background-noise-monitoring locations.

4.11.2 Regulatory Setting

Noise is regulated at the Federal, State, and local levels through regulations, policies, and/or local ordinances. Local policies are commonly adaptations of Federal and State guidelines, based on prevailing local conditions or special requirements. These guidelines have been developed at the Federal level by the U.S. Environmental Protection Agency (EPA) and at the State level by the now-defunct California Office of Noise Control. A summary of the regulatory setting for noise at the Federal and State level is provided in Table 4.0-1 and the local level is provided below.

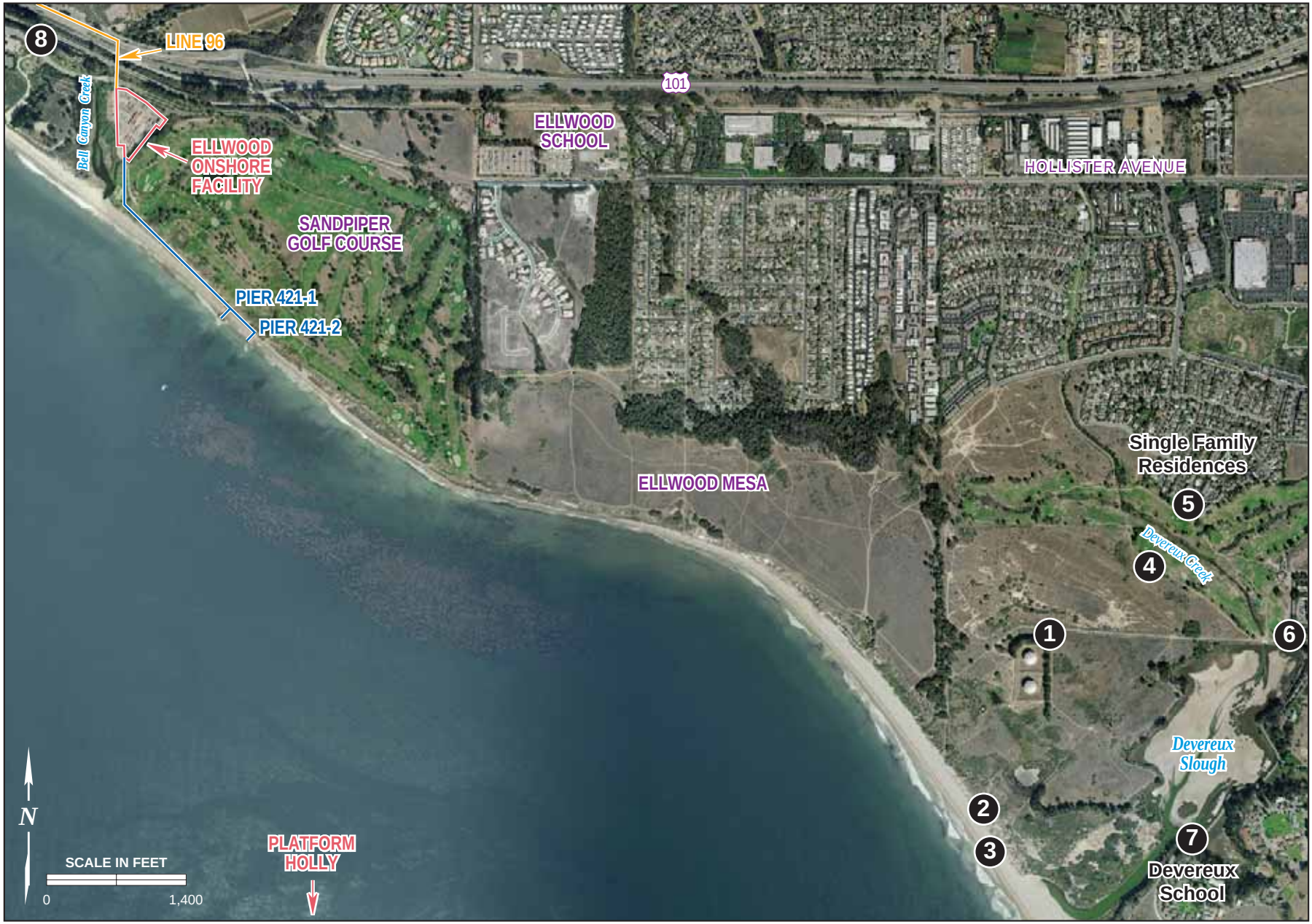
Local

City of Goleta GP/CLUP

The intent of the Noise Element (NE) contained within the City of Goleta GP/CLUP is to limit exposure of residents, workers, and visitors to excessive noise levels, while allowing future development consistent with the Land Use Element and other plan elements. The Noise Element also contains policies that serve to achieve certain resource protection objectives of the Open Space and Conservation Elements.

The Goleta GP/CLUP NE 1.1 protects noise sensitive interior uses by minimizing noise impacts:

> *The City shall use the standards and criteria of Table 9-2 [within the Noise Element] to establish compatibility of land use and noise exposure. The City shall require appropriate mitigation, if feasible, or prohibit development that would subject proposed or existing land uses to noise levels that exceed acceptable levels as indicated in this table. Proposals for new development that would cause standards to be exceeded shall only be approved if the project would provide a substantial benefit to the City (including but not limited to provision of affordable housing units or as part of a redevelopment project), and if adequate mitigation measures are employed to reduce interior noise levels to acceptable levels.*



amec

Noise Monitoring Locations

FIGURE 4.11-2

NE 1.4 outlines the makeup of acoustical studies:

> *An acoustical study that includes field measurement of noise levels may be required for any proposed project that would: a) locate a potentially intrusive noise source near an existing sensitive receptor, or b) locate a noise-sensitive land use near an existing known or potentially intrusive noise source such as a freeway, arterial roadway, railroad, industrial facility, or airport traffic pattern. Acoustical studies should identify noise sources, magnitudes, and potential noise mitigation measures and describe existing and future noise exposure. The acoustical study shall be funded by the applicant and conducted by a qualified person or firm that is experienced in the fields of environmental noise assessment and architectural acoustics. The determination of applicability of this requirement shall be made by the Planning and Environmental Services Department by applying the standards and criteria outlined within the standards and criteria of Table 9-2 [of the Noise Element].*

NE 5.1 addresses new, expanded, or upgraded stationary noise sources:

> *The City shall require proposals for new stationary sources or expansions or alterations of use for an existing stationary source to include appropriate noise mitigation measures. Retrofits and facility upgrades under the permitting jurisdiction of the City should ensure that noise levels are reduced, particularly for sources that impact adjacent sensitive receivers.*

NE 5.2 discusses equipment maintenance:

> *The City shall require that new and existing heating, ventilation, and air conditioning equipment and other commercial/industrial equipment be adequately maintained in proper working order so that noise levels emitted by such equipment remain minimal. The City shall also require noise shielding or insulation for such equipment if operation of the equipment results in objectionable noise levels at adjacent properties.*

NE 5.4 promotes the use of noise barriers for industrial or heavy commercial uses:

> *Absorptive types of noise barriers or walls should be used to reduce noise levels generated by industrial and certain heavy commercial uses. To be considered effective, the noise barrier should provide at least a 5-dBA-CNEL noise reduction.*

The Goleta GP/CLUP NE 6.4 places restrictions on construction hours. The policy states:

> *Noise-generating construction activities for projects near or adjacent to residential buildings and neighborhoods or other sensitive receptors shall be limited to Monday through Friday, 8:00 a.m. to 5:00 p.m. Construction in nonresidential areas away from sensitive receivers shall be limited to Monday through Friday, 7:00 a.m. to 4:00 p.m. Construction shall generally not be allowed on weekends and State holidays…. All construction sites subject to such*

restrictions shall post the allowed hours of operation near the entrance to the site, so that workers are aware of this limitation.

The NE provides Noise and Land Use Compatibility Criteria for various land uses. One criterion identifies noise levels of 50-70 dBA as "Normally Acceptable" levels at golf courses, riding stables, water recreation, and cemeteries. Levels between 70 and 80 dBA are classified as "Normally Unacceptable" and levels above 80 dBA are classified as "Clearly Unacceptable."

NE 6.5 states:

The following measures shall be incorporated into grading and building plan specifications to reduce the impact of construction noise:

a. All construction equipment shall have properly maintained sound-control devices, and no equipment shall have an unmuffled exhaust system.

b. Contractors shall implement appropriate additional noise mitigation measures including, but not limited to, changing the location of stationary construction equipment, shutting off idling equipment, and installing acoustic barriers around significant sources of stationary construction noise.

c. To the extent practicable, adequate buffers shall be maintained between noise-generating machinery or equipment and any sensitive receptors. The buffer shall ensure that noise at the receiver site does not exceed 65 dBA CNEL. For equipment that produces a noise level of 95 dBA at 50 feet, a buffer of 1,600 feet is required for attenuation of sound levels to 65 dBA (City of Goleta 2006).

NE 7.1 necessitates the control of noise at the source:

The City shall require that primary emphasis on the control of noise be accomplished at the source by reducing the intensity of the noise generated or through appropriate placement of noisy components of a project or use. Secondary emphasis should be through site design of receiver sites and noise attenuation and insulation measures.

4.11.3 Significance Criteria

A noise impact is considered significant if noise levels from Project operations exceed the local policies and noise standards. Thus, the noise policies of the Santa Barbara County and the City of Goleta shall be adhered to. Impacts of the Project would therefore be considered significant if:

- A noise level of greater than 65 dBA resulted from grading and construction activity proposed within 1,600 feet of sensitive receptors, including schools, residential development, commercial lodging facilities, hospitals or care facilities (City of Goleta 2006);

- Noise levels at neighborhood parks increased above 70 dBA, or levels at golf courses and riding stables increased above 70 dBA (City of Goleta 2006);
- Outdoor living areas of noise sensitive uses that are subject to noise levels in excess of 65 dBA CNEL would generally be presumed to be significantly impacted by ambient noise. A significant impact would also generally occur where interior noise levels cannot be reduced to 45 dBA CNEL or less (Santa Barbara County 2002); or
- A project will generally have a significant effect on the environment if it will increase substantially the ambient noise levels for noise-sensitive receptors adjoining areas. This may generally be presumed when ambient noise levels affecting sensitive receptors are increased to 65 dBA CNEL or more. However, a significant effect may also occur when ambient noise levels affecting sensitive receptors increase substantially but remain less than 65 dBA CNEL, as determined on a case-by-case level (Santa Barbara County 2002).

4.11.4 Impact Analysis and Mitigation

The nearest sensitive human receptor, as defined by the Goleta GP/CLUP, is the Bacara Resort, which is approximately 3,800 feet west of the Project area. The nearest residences to the Project site are approximately 2,500 feet east of the Project area. However, noise-sensitive recreational uses occur on the beach surrounding the project site and on the adjacent Sandpiper Golf Course. Current daytime background L_{eq} noise levels in the Project vicinity, the Sandpiper Golf Course, and the adjacent beach area are in the range of 60 to 63 dBA, as determined by the noise study performed on August 9, 2005, for the EMT Lease Renewal EIR. The primary noise source in the beach area is breaking waves. Noise impacts to biological resources are discussed in Sections 4.6 and 4.7, Marine Biological Resources and Terrestrial Biological Resources, respectively.

The Project has the potential to create both short-term construction-related and long-term operational noise impacts. Elevated noise levels from construction and grading activities would not occur within 1,600 feet of any residential or commercial human sensitive receptors and would not conflict with the significance threshold (under 65 dBA) for these distant locations. However, as discussed below, operation of construction equipment would generate short-term periodic high noise levels (e.g., 90 dBA at 50 feet) on the beach surrounding PRC 421 and to a lesser extent on limited portions of the adjacent Sandpiper Golf Course.

Noise associated with the Project would generally not exceed existing noise levels. The use of a downhole electric submersible pump (ESP) would eliminate the need for surface pumping equipment and noise associated with such equipment. The ESP would be installed at such a depth within the well that noise levels at the surface would be

negligible. Therefore, Project implementation would temporarily and minimally increase noise levels of outdoor or interior living areas during periods of construction, and create very limited long-term changes in ambient noise levels from operation of the ESP and other infrastructure at Pier 421-2. No noise impacts to residences or human sensitive receptors would occur.

Table 4.11-2, located at the end of this section, provides a summary of Project-related noise impacts and recommended MMs to address these impacts.

Impact NZ-1: Construction Impacts to Beach Users and Golfers

Short-term noise levels would increase during Project construction potentially affecting a public beach and the Sandpiper Golf Course (Less than Significant).

Impact Discussion

Noise levels from construction machinery were modeled using documented noise levels (EPA 1971). The loudest piece of construction equipment that would be used during the Project would be diesel trucks and heavy equipment. Noise at 50 feet from diesel-powered equipment would not exceed 90 dBA L_{eq}; however, at 1,000 feet, L_{eq} would be 64 dBA. Such increases in noise are anticipated to be periodic during the Project's proposed 90 days of construction. The public beach area adjacent to the Project site is a relatively low-use beach area due to its distance from nearby access points (approximately 0.5 mile west of access from Ellwood Mesa and 0.5 mile east of access from the Bacara Resort). However, ambient noise levels at the beach area adjacent to the piers would increase noticeably during re-commissioning of Well 421-2 and decommissioning and removal of Well 421-1 and the associated infrastructure. Beach areas which are more heavily used by the public are approximately 0.5 mile in each direction from the Project site and ambient noise levels at these more distant beaches would not be significantly increased during construction activities at PRC 421. Because of the short-term periodic nature of construction-related increases in noise and the limited number of affected beach goers, noise impacts to beach users, while periodically exceeding the threshold for the beach area directly adjacent to the Project site, would be considered an adverse but less than significant impact.

Wells 421-1 and 421-2 are approximately 200 feet from the southern edge of Sandpiper Golf Course, where construction-related L_{eq} could reach 78 dBA for brief periods, which is above the 70 dBA threshold identified by the Goleta GP/CLUP Noise Element. The access road and proposed pipeline replacements are adjacent to the 12th green at Sandpiper Golf Course, where L_{eq} would be even greater during construction. The Applicant anticipates that construction activities along the access road and pipeline area will take 1 day; however, these activities could take up to 1 week. All other construction activities are anticipated to last for approximately 90 days. However, the City GP/CLUP policy states that noise in the vicinity of golf course and other recreational facilities be

reduced *to the extent practicable* and does not specify construction noise. Therefore, this policy would be more applicable to long-term operational noise which would be below the 70 dBA threshold. Further, standard noise reduction best management practices (BMPs) should be employed during construction including installing noise mufflers on all construction equipment and erecting temporary barriers between construction activities and Sandpiper Golf Course. In addition, in compliance with the City GP/CLUP Noise Element policy NE 6.4, construction activities would occur between 8:00 a.m. and 5:00 p.m. Monday through Friday. Construction would generally not be allowed on weekends and state holidays. Exceptions to these restrictions may be made in extenuating circumstances (e.g., in the event of an emergency) on a case-by-case basis at the discretion of the City of Goleta's Director of Planning and Environmental Services. Because high construction noise levels would be episodic during a limited 90-day construction period and would affect golfers only on a limited segment (e.g., two holes) of the Sandpiper Golf Course, noise impacts to recreational golfers would be short-term and less than significant.

Mitigation Measures

Although this impact would be less than significant, the following measures would be incorporated into grading and building plan specifications as required by City of Goleta ordinances to reduce the impact of construction noise:

MM NZ-1a. Sound-Control Devices. All construction equipment shall have properly maintained sound-control devices, and no equipment should have an unmuffled exhaust system.

MM NZ-1b. Additional Best Management Practices (BMPs). Contractors shall implement appropriate BMPs to avoid impacting the public including but not limited to changing the location of stationary construction equipment, shutting off idling equipment, and installing acoustic barriers around significant sources of stationary construction noise, so that the noise at sensitive receptors such as golf courses, water recreation areas, and riding stables does not exceed 70 A-weighted decibels (dBA) California Noise Equivalent Level (CNEL).

MM NZ-1c. Buffers. To the maximum extent feasible, adequate distance buffers shall be maintained between noise-generating machinery or equipment and any sensitive receptors. The buffer shall be of a width that will ensure that noise at the receiver site such as a residence does not exceed 65 A-weighted decibels (dBA) California Noise Equivalent Level (CNEL), and at receptors such as golf courses, water recreation areas, and riding stables, the noise does not exceed 70 dBA CNEL. For equipment that produces a noise level of 95 dBA at 50 feet, a buffer of 1,600 feet is required for attenuation of sound levels to 65 dBA.

Rationale for Mitigation

While there would be no significant impacts, the above MMs (NZ-1a through NZ-1c) are required by the City of Goleta and would further reduce noise generated from the Project.

Impact NZ-2: Operational Impacts to Beach Users and Golfers

Noise levels associated with the long-term operation of the Project potentially affecting a public beach and the Sandpiper Golf Course (Less than Significant).

Impact Discussion

The use of a downhole ESP would eliminate the need for surface pumping equipment and the noise associated with the above-ground oil pumping equipment. Therefore, upon Project implementation, less than significant long-term noise impacts to recreational users would occur.

Mitigation Measures

None required.

Table 4.11-2. Summary of Noise Impacts and Mitigation Measures

Impact	Mitigation Measures
NZ-1: Construction Impacts to Beach Users and Golfers	**NZ-1a.** Sound-Control Devices. **NZ-1b.** Additional Best Management Practices. **NZ-1c.** Buffers.
NZ-2: Operational Impacts to Beach Users and Golfers	None required.

4.11.5 Cumulative Impacts Analysis

A number of projects are located near the Project site. As stated above, no noise impacts would occur during operation of PRC 421; therefore, cumulative noise impacts would be limited to temporary construction noise. For the purposes of this analysis, cumulative impacts are only considered significant for projects with the potential to be under construction during the same time period as PRC 421. These could include minor ongoing habitat restoration and well decommissioning on the Ellwood Mesa. In the event that these projects are implemented concurrently with the Project, the Project would contribute to cumulative noise impacts. However, impacts would be temporary (last only the duration of construction) and all projects would be required to comply with City of Goleta noise standards.

4.12 AESTHETIC/VISUAL RESOURCES

This section describes the onshore and offshore visual environments in the Ellwood area and addresses the potential for the Project to impact the visual resources in the Project vicinity and its regional context. Potential impacts to visual resources created by the Project are based on a change from existing conditions.

The analysis in this section is based on field surveys of the Project study area and surrounding area and also incorporates by reference the conclusions of the Ellwood Marine Terminal (EMT) Lease Renewal Environmental Impact Report (EIR) (California State Lands Commission [CSLC] 2009) and Line 96 Modification Project EIR (Santa Barbara County 2011) regarding area visual resources and the potential impact on such resources associated with oil development projects, and summarizes these where appropriate. Where this document relies upon mitigation measures (MMs) contained in those EIRs to address Project impacts, these are summarized to allow report reviewers to understand the relationship of the MMs to the Project. This document also incorporates data from Santa Barbara County 01-ND-34 and City of Goleta 06-ND-001.

4.12.1 Analysis of Visual Impacts

Impacts to aesthetics and visual resources are determined by identifying the visual sensitivity and visual character of an environment. Visual impacts are then evaluated in the context of the character of these views.

Visual Sensitivity

Visual sensitivity is defined as the public attitudes about specific views, or interrelated views, and is a key factor in assessing how important a visual impact may be and whether or not it represents a significant impact. Visual sensitivity has three defined levels (see also Table 4.12-1):

High Sensitivity. High sensitivity suggests that at least some part of the public is likely to react strongly to a threat to visual quality. Concern is expected to be great because the affected views are rare, unique, or in other ways are special to the region or locale. A highly concerned public is assumed to be more aware of any given level of adverse change and less tolerant than a public that has little concern. A small modification of the existing landscape may be visually distracting to a highly sensitive public and represent a substantial reduction in visual quality.

Table 4.12-1. Indicators of Visual Sensitivity

High Sensitivity
§ Views of and from areas the aesthetic values of which are protected in laws, public regulations and policies, and public planning documents; § Views of and from designated areas of aesthetic, recreational, cultural, or scientific interest, including national, State, county, and community parks, reserves, memorials, scenic roads, trails, interpretive sites of scientific value, scenic overlooks, recreation areas, and historic structures, sites, and districts; § Views of and from areas or sites of cultural/religious importance to Native Americans; § Views from national- or State-designated scenic highways or roads, or designated scenic highways or roads of regional importance; § Views from resort areas; § Views from urban residential subdivisions; and § Views from segments of travel routes, such as roads, rail lines, pedestrian and equestrian trails, and bicycle paths near designated areas of aesthetic, recreational, cultural, or scientific interest leading directly to them. Views seen while approaching an area of interest may be closely related to the appreciation of the aesthetic, cultural, scientific, or recreational significance of that destination.
Moderate Sensitivity
§ Views from segments of travel routes near highly sensitive use areas of interest, serving as a secondary access route to those areas; § Views from rural residential areas and segments of roads near them which serve as their primary access route; § Views of and from undesignated but protected or popularly used or appreciated areas of aesthetic, recreational, cultural, or scientific significance at the local, county, or State level; § Views from highways or roads locally designated as scenic routes and of importance only to the local population, or informally designated as such in literature, road maps, and road atlases; § Views from travel routes, such as roads, trails, bicycle paths, and equestrian trails leading directly to protected or popularly used undesignated areas important for their aesthetic, recreational, cultural, or scientific interest; and § Views of and from religious facilities and cemeteries.
Low Sensitivity
§ Views from travel routes serving as secondary access to moderately sensitive areas; § Views from farmsteads, or groupings of fewer than four residences; and § Views from industrial research/development, commercial, and agricultural use areas.

Moderate Sensitivity. Moderate sensitivity suggests that the public would probably voice some concern over substantial visual impacts. Often the affected views are secondary in importance or are similar to others commonly available to the public. Noticeably adverse changes would probably be tolerated if the essential character of the views remains dominant.

Low Sensitivity. Low sensitivity is considered to prevail where the public is expected to have little or no concern about changes in the landscape. This may be because the affected views are not “public” (not accessible to the public) or because there are no indications that the affected views are valued by the public. For instance, little public

concern for aesthetics is assumed to pertain to views from industrial, commercial, and purely agricultural areas. There are exceptions: some agricultural areas are prized for their open space value, and views of such are highly sensitive. Visual sensitivity is low for views from all sites, areas, travel routes, and sections of travel routes not identified as moderate or high in sensitivity.

Visual Character

The visual character of a landscape is typically described in terms of its land forms, vegetation, water features, and the "built" features of the environment. There are three objectives in assessing visual character. One is to identify the types of features considered to be inherent to the area, those features that are expressive of the prevailing land uses or of the ecological processes in the natural landscape. The second objective is to identify patterns or distribution of features characteristic of the affected setting. The third objective is to describe the existing quality of the visual resources, which varies inversely with how noticeable incongruous features may be within public views. The current visual quality of the physical environment is described as its existing visual condition, which is defined in terms of four Visual Modification Classes (VMC), noted in Table 4.12-2.

Table 4.12-2. Visual Modification Class (VMC) Definitions

VMC	Definition
1	**Not noticeable** Changes in the landscape are within the field of view but generally would be overlooked by all but the most concerned and interested viewers; they generally would not be noticed unless pointed out (inconspicuous because of such factors as distance, screening, low contrast with context, or other features in view, including the adverse impacts of past activities).
2	**Noticeable, visually subordinate** Changes in the landscape would not be overlooked (noticeable to most without being pointed out); they may attract some attention but do not compete for it with other features in the field of view, including the adverse impacts of past activities. Such changes often are perceived as being in the background.
3	**Distracting, visually co-dominant** Changes in the landscape compete for attention with other features in view, including the adverse impacts of past activities (attention is drawn to the change about as frequently as to other features in the landscape).
4	**Visually dominant, demands attention** Changes in the landscape are the focus of attention and tend to become the subject of the view; such changes often cause a lasting impression on the affected landscape.

4.12.2 Environmental Setting

Study Area Location and Description

The primary Project study area comprises the beach in the immediate Project vicinity that could be impacted by Project-related visual changes as well as beaches and bluff

tops the Ellwood area extending roughly from Coal Oil Point west to Bacara Resort. A secondary study area includes creeks and beaches along the Gaviota Coast that have a low potential to be impacted by an oil spill from the Line 96 pipeline as described in the EIR for that project (Santa Barbara County 2011).

Onshore Visual Environment

The primary Project area is located on the beach within the Ellwood Coast, an area widely recognized for its scenic beauty. The natural environment of the Project area consists of open sandy beach and dune vegetation interspersed with urban development. Significant visual resources include views of open water, bluffs, and an area of wetland at Bell Creek. The Project area is used for both passive (beach walks, bird watching) and active recreation (Sandpiper Golf Course). Public beach access is provided near the Project site at Bacara Resort/Haskell's Beach approximately 0.5 mile west of Pier 421-1. Beach access in this area is constrained during periods of high tide and by the flow of water from Bell Canyon Creek. Figure 4.12-1 shows existing beach access under the existing piers during low tide.

FIGURE 4.12-1. CURRENT VIEW OF PIER 421-2 FROM THE BEACH SHOWING PEDESTRIAN BEACH ACCESS

Bell Creek is an Environmentally Sensitive Habitat vegetated with native and non-native plant species. It serves as a nesting habitat for avian species, as well as a number of State and federally listed species (e.g., tidewater goby). For beachgoers and birdwatchers, Bell Canyon Creek is a significant visual feature. Development in the area includes the Sandpiper Golf Course, the Ellwood Onshore Facility (EOF), Piers 421-1 and 421-2, the EMT, "Bird Island" (the converted platforms of the old State Lease 421 pier extension, which lies offshore the Project area), and facilities associated with the Bacara Resort such as tennis courts, public restrooms, and pedestrian access from a public parking lot at Haskell's Beach. The Sandpiper Golf Course, a public golf course, is located on a bluff just north of and adjacent to the Project area, but at a higher elevation that makes Piers 421-1 and 421-2 only partially visible to golfers. Although dirt access roads serving the EOF and piers exist, there are no public trails from the golf course to the beach. The beach provides the only public access to the Project site. The EOF is the last oil and gas processing plant located in the City of Goleta. Once considered to be located in a remote area, the EOF now lies between Sandpiper Golf Course and the Bacara Resort (see Figure 2-2). Piers 421-1 and 421-2 have been part of the visual setting for over 75 years, or since the mid-1920s. A man-made access road and rock revetment leading to Pier 421-1 and Pier 421-2 runs alongside the toe of a bluff that extends to the end of the State Lease boundary.

Existing prominent oil and gas facilities may detract from the open views of the water, bluffs and wetland vegetation. Other manmade facilities exist within the viewshed, including the rock revetment, access roads, the EOF, and Sandpiper Golf Course; however, the pier structures are more prominent than these other facilities.

Offshore Visual Environment

The offshore visual environment associated with the Project is frequently enjoyed by commercial and recreational fishermen, surfers, swimmers, and boaters. Views of Piers 421-1 and 421-2 from the ocean are unobscured and the piers stand out on the sand. In a regional context, however, the piers blend in with the development in the region, including the Ellwood Pier, the EOF, Sandpiper Golf Course, Platform Holly, and the EMT (Figure 4.12-2).

Visual Sensitivity and Classification of the Ellwood Coast

The visual sensitivity of the Ellwood Coast is determined to be high due to the presence of scenic bluffs, wide sandy beaches, dunes and wetlands. The visual sensitivity of the Project area is determined to be moderate, as defined in Table 4.12-1, due to existing development such as the PRC 421 piers, caissons and seawall, which suggests that the public would voice some concern over substantial visual impacts. However, noticeable changes would probably be tolerated if the essential open space character of the views

FIGURE 4.12-2. HISTORIC VIEW OF PROJECT SITE FROM OFFSHORE SHOWING EXISTING ACCESS ROAD, ROCK REVETMENT, AND SANDPIPER GOLF COURSE

remains dominant. Changes to the current visual quality of the physical environment would be classified as VMC 2: Noticeable, visually subordinate.

Changes in the landscape would not be overlooked (noticeable to most without being pointed out); they may attract some attention but do not compete for it with other features in the field of view, including the adverse impacts of past activities. Such changes often are perceived as being in the background.

4.12.3 Regulatory Setting

There are no Federal regulations, authorities, or administering agencies that regulate aesthetic or visual resources that are specifically applicable to the Project. State laws, regulations, and policies regarding visual resources are discussed in Table 4.0-1, while local laws, regulations, and policies are discussed below.

Local

City of Goleta General Plan/Coastal Land Use Plan (GP/CLUP) Visual and Historic Resources Element

The Goleta GP/CLUP Visual and Historic Resources Element policies VH1.1, VH1.2, and VH1.5 apply to the Project. Policy VH1.1 states that Goleta shall support the protection and preservation of the Pacific shoreline, including beaches, dunes, lagoons, coastal bluffs, and open coastal mesas. Policy VH1.2 refers to a Scenic Resources Map which identifies the coastline and Hollister Avenue as public vantage points for viewing scenic resources. Policy VH1.5 states that views of open space from public areas shall be preserved. To minimize impacts to scenic resources, the following standard regulatory conditions would be applied to the Project, where appropriate, as part of the City of Goleta Development Plan permit.

- Limitations on the height and size of structures;
- Downcast, fully shielded, full cut off lighting of the minimum intensity needed for the purpose;
- Use of landscaping for screening purposes and /or minimizing view blockage as appropriate; and
- Selection of color and materials that harmonize with the surrounding landscape.

Santa Barbara County Local Coastal Program (LCP)

The Santa Barbara County LCP recognizes that industrial and energy facilities, particularly when sited within view corridors, may represent major impacts on scenic and visual resources. The Santa Barbara County Comprehensive Plan Land Use Element Visual Resources Policy 1 states that “All commercial, industrial, planned development shall be required to submit a landscaping plan to the county for approval.”

Similarly, Local Coastal Policy 6-2 states that a plan for eliminating or substantially mitigating adverse impacts on scenic resources due to siting, construction, or operation of facilities shall accompany a Development Plan filed with the Petroleum Administrator.

4.12.4 Significance Criteria

Visual impacts are considered significant if one or a combination of the following apply:

- The project is inconsistent with or in violation of public policies, goals, plans, laws, regulations or other directives concerning visual resources;
- Routine operations and maintenance visually contrast with or degrade the character of the viewshed;
- The project results in a perceptible reduction of visual quality, lasting for more than one year that is seen from moderately to highly sensitive viewing positions. A perceptible reduction of visual quality occurs when, for a highly sensitive view, the visual condition is lowered by at least one Visual Modification Class (VMC); or for a moderately sensitive view, the condition is lowered by at least two VMCs;

- Night lighting would result in glare conditions affecting nearby residences; or
- Because of the time factor involved in oil dispersion, visual impacts from spills are considered to be significant (i.e., a significant impact that remains significant after mitigation) if first response efforts would not contain or clean up the spill, resulting in residual impacts that would be visible to the general public on shoreline or water areas.

4.12.5 Impact Analysis and Mitigation

The visual resources assessment focuses on identifying potentially significant impacts, with the analysis directed toward public views in which the Project would be most visible. Critical views are partly defined as those that are moderately to highly sensitive. The public is considered to have a substantial concern over adverse changes in the quality of such views. Critical views also are defined as being those public views that would be most affected by the subject action, e.g., the greatest intensity of impact due to viewer proximity to the Project and duration of the affected view. Critical views in the Project area were identified as those from the beach and bluffs toward the onshore and offshore portions of the Project located at the Ellwood Coast (Piers 421-1 and 421-2).

Table 4.12-3, located at the end of this section, provides a summary of Project-related aesthetic/visual impacts and recommended MMs to address these impacts.

Impact VR-1: Visual Effects from Construction Activities at PRC 421

Construction activities would create negative visual impacts (Less than Significant with Mitigation).

Impact Discussion

Construction activities associated with Project implementation would have potentially significant short-term impacts to the visual quality of the Project area. The visual environment would be disturbed by construction equipment (particularly the large workover rig), construction fencing, construction materials, and occasional stockpiling of debris on the upper reaches of the beach overnight for pick up and removal the next day for the duration of the 90-day construction schedule. Given that the visual environment at PRC 421 is enjoyed daily by beach goers, golfers, boaters, fishermen, and surfers, views in the Project area would be significantly degraded on a daily basis for the duration of the construction activities; however, these impacts would be temporary and no permanent changes to the visual character of the area would occur as a result of the Project. Night lighting would likely be used infrequently and for short periods of time during Project construction since, by necessity, work on the Project would need to be performed during low tide, which occurs late in the day during the fall and early winter months when natural lighting is low. Per City of Goleta GP/CLUP Policy NE 6.4, work would stop by 5:00 p.m., substantially reducing potential night lighting

needs. However, as the Applicant has stated that construction hours would need to extend until 7:00 p.m., this impact would remain potentially significant.

Mitigation Measures

MM VR-1a. Use Laydown Areas for Overnight Storage of Equipment. Equipment placed on the beach shall be returned to the laydown areas at the end of each workday, both for public safety and for aesthetic considerations.

MM VR-1b. Caution Tape around Materials Placed on Beach. Materials temporarily placed on the upper reaches of the beach shall be roped-off with caution tape and removed within 24 hours in most cases.

MM VR-1c. Material Removal at Construction Completion. All materials, equipment, and debris shall be removed from the site upon completion of the Project construction. Venoco shall revegetate all areas subject to ground disturbance associated with project construction with species that are biologically and visually compatible with the surroundings in accordance with a Restoration Plan approved by the City of Goleta as identified in MM TBIO-1c Restoration Plan/Restoration.

MM VR-1d. Minimal Night Lighting. Lighting shall use the minimum number of fixtures and intensity needed for construction activities. Fixtures shall be fully shielded and have full cut-off lights to minimize visibility from public viewing areas, wildlife habitats, migration routes, and other sensitive environs. Venoco shall prepare and implement a Night Lighting Plan to ensure that night lighting is minimal and directed away from sensitive habitats to the maximum extent feasible, for review and approval by the City of Goleta.

MM VR-1e. No Night Lighting After 5:00 p.m. Night lighting and work shall not occur past the 5:00 p.m. work stoppage deadline.

Rationale for Mitigation

The above MMs would reduce the amount of time construction equipment would be visible from the beach and minimize the use of night lighting, thereby reducing visual impacts from construction activities. Full implementation of these measures would reduce Impact VR-1 to less than significant.

Impact VR-2: Visual Effects from Accidental Oil Spills

Project implementation would incrementally increase the likelihood of oil spill from primary or secondary Project components, including Pier 421-2, associated pipelines, and the Line 96 pipeline (Significant and Unavoidable).

Impact Discussion

A large spill from the Project could cause visual impacts ranging from oil sheens to heavy oiling including floating lumps of tar. Heavy crude oil may disappear over the

duration of several days, with remaining heavy fractions floating at or near the surface in the form of mousse, tarballs, or mats, and lasting from several weeks to several months. Therefore, the presence of oil on the water would change the color and, in heavier oiling, textural appearance of the water surface. Oil on shoreline surfaces or near shore marsh areas would cover these surfaces with a brownish-blackish, gooey substance. However, direct releases of oil onto Goleta area beaches are projected to be limited to approximately 1.75 barrels of oil, a relatively modest amount; however, the Project would incrementally contribute to larger spills from Line 96 upcoast into Gaviota area streams, with a low potential for spills as large as 60 barrels of oil, a portion of which could find its way to the shoreline and potentially onto downcoast Goleta area beaches.

Although the potential for spills is low and volumes would not be large, such oiling would result in a negative impression of the highly sensitive viewshed. The public would likely react negatively to the visual effects. Without rapid containment by immediate booming and cleanup, the visual effects of even a small spill can leave residual impacts, and can be significant.

The impact of a spill could last for a long period of time, depending on the level of physical impact and effectiveness of clean up. Even in events where light oiling would disperse rapidly, significant impacts are expected. In events where medium to heavy oiling occurs over a widespread area, and where first response cleanup efforts are not effective, leaving residual effects of oiling, significant impacts would be expected. The physical efforts associated with cleanup efforts would also contribute to a negative impression of the environment and the visual impact, particularly in the primary study area along the Ellwood Coast which receives substantial recreational use of beaches and trails. It is impossible to predict with any certainty the potential visual consequences of spills; therefore visual impacts are considered significant.

Mitigation Measures

Implementation of those measures identified in Sections 4.2, Safety; 4.3, Hazardous Materials; 4.5 Hydrology, Water Resources, and Water Quality, 4.6, Marine Biological Resources; and 4.7 Terrestrial Biological Resources for contingency planning and spill response shall be required.

Rationale for Mitigation

Even with implementation of the measures presented in the above-mentioned sections, which provide improved oil spill capabilities, spill containment measures, and protection of resources, the risk to the visual environment may be significant, even for small spills.

Residual Impacts

Even with successful implementation of MMs for oil spill impacts, visual resources may be affected by spills and impacts would remain potentially significant.

Impact VR-3: Visual Improvements due to Removal of Pier 421-1

Removal of Pier 421-1 would restore the natural appearance along this section of the beach (Beneficial).

Impact Discussion

Decommissioning and removal of Pier 421-1 and restoration of the beach along this stretch would restore the aesthetic value of this stretch of coastline. Removal of the pier would allow a greater view of the Pacific Ocean and other sensitive view sheds of the Ellwood-Devereux Coast (Figure 4.12-3). Additionally, views from the ocean toward the beach would no longer include this structure. Therefore, the Project would produce beneficial impacts to aesthetic and visual resources of the area.

FIGURE 4.12-3. VIEW OF PIER 421-2 FROM THE BEACH WITH REMOVAL OF PIER 421-1

Mitigation Measures

No mitigation required.

Impact VR-4: Visual Changes to Pier 421-2

Modifications to Pier 421-2 would change the appearance of this structure (Less than Significant).

Impact Discussion

Recommissioning of Pier 421-2 would include installation of new caisson walls on the non-seaward-facing sides, new handrails, and new decking. Pier 421-2 has been part of the visual setting since the mid-1920s, but has been substantially changed over time. Further, these changes would constitute improvements to the aesthetics of the pier, which has suffered the effects of corrosion and weathering from environmental exposure. Therefore, impacts would be less than significant.

Mitigation Measures

No mitigation required.

Table 4.12-3. Summary of Aesthetics/Visual Resources Impacts and Mitigation Measures

Impact	Mitigation Measures
VR-1: Visual Effects from Construction Activities at PRC 421	**VR-1a.** Use Laydown Areas for Overnight Storage of Equipment. **VR-1b.** Caution Tape around Materials Placed on Beach. **VR-1c.** Material Removal at Construction Completion. **VR-1d.** Minimal Night Lighting. **VR-1e.** No Night Lighting After 5:00 p.m.
VR-2: Visual Effects from Accidental Oil Spills	Implementation of those measures identified in Sections 4.2, Safety; 4.3, Hazardous Materials; 4.5 Hydrology, Water Resources, and Water Quality, 4.6, Marine Biological Resources; and 4.7 Terrestrial Biological Resources.
VR-3: Visual Improvements due to Removal of Pier 421-1	None required.
VR-4: Visual Changes to Pier 421-2	None required.

4.12.6 Cumulative Impacts Analysis

Cumulative impacts associated with the Project include the continued urbanization of the Ellwood area, including the proposed expansion of the Bacara Resort, improvements to Sandpiper Golf Course, and the partially completed construction of 62 homes by Comstock Homes. The Project would remove one existing pier, a beneficial contribution to the cumulative impacts from historic oil development in the area. However, development activity at PRC 421 would increase the public's awareness of oil production occurring in the region. Depending on the viewers' personal and cultural interpretations of oil production, this awareness would affect their coastal experience.

4.13 CULTURAL, HISTORICAL, AND PALEONTOLOGICAL RESOURCES

This section identifies cultural, historical, and paleontological resources in the Project area, including PRC 421 itself, and evaluates impacts to such resources that would potentially result from Project development. This document incorporates by reference the conclusions of the Ellwood Marine Terminal (EMT) Lease Renewal Environmental Impact Report (EIR) (California State Lands Commission [CSLC] 2009) and Line 96 Modification Project EIR (Santa Barbara County 2011) regarding cultural, historical, and paleontological resources and summarizes these conclusions where appropriate. Where this document relies upon mitigation measures (MMs) contained in those EIRs to address Project impacts, these are summarized to permit report reviewers to understand their relationship to the Project. This document also incorporates data from Santa Barbara County 01-ND-34 and City of Goleta 06-MND-01 which included assessment of cultural resources in the Project vicinity.

4.13.1 Environmental Setting

Study Area Location and Description

The primary Project study area comprises the immediate vicinity of PRC 421 that would be subject to direct impacts as a result of Project implementation. This area includes existing PRC 421 facilities, access road, and the pipeline route along the access road, coastal bluff, golf course easement, and tie-in at the existing Ellwood Onshore Facility (EOF). Impacts related to construction of the Line 96 Pipeline project were addressed in the EIR for that project, but a secondary Project study area is associated with the Line 96 pipeline alignment due to the potential for spill effects on Cultural, Historical, and Paleontological Resources.

Cultural Resources

Evidence exists for the presence of humans in the Santa Barbara coastal area for more than ten thousand years. While some researchers (e.g., Orr 1968) have suggested that the Santa Barbara Channel area may have been settled as early as 40,000 years ago, only limited evidence for occupation much earlier than 9,500 years has been discovered. Even so, human prehistory along the Santa Barbara channel area coast may extend back as much as 12,000 years (Erlandson et al. 1987; Erlandson et al. 1996).Due to the rich food resources found on land and in the sea, Native American populations grew over time and their organization became more complex. The area's various sources of fresh water, including Tecolote and Winchester Canyon creeks to the west and Glen Annie Creek and the Goleta Slough to the east, were ideal locations for permanent and semi-permanent village settlements that provided abundant fish, birds, and plants for hunting and gathering.

Current models of cultural evolution along the Santa Barbara Channel recognize that over time, prehistoric peoples became increasingly dependent upon marine resources though they required greater energy to procure. Populations also became less dependent upon terrestrial resources such as large game animals due to reduced numbers of game. The need for more sophisticated subsistence technologies and group cooperation resulted in increasingly complex cultural interactions, culminating in the Chumash culture and complex social organization encountered by the Spanish in the 1500s (Arnold et al. 1997; Glassow et al. 1990; Wilcoxon et al. 1982). Climatic change during the transition from the Middle to Late Period around A.D. 1150 to 1300 may have played an important role in this process (Raab and Larson 1997), although others consider that pressures from increased population were also involved (Arnold et al. 1997).

A Sacred Lands File search conducted for the Project area failed to indicate presence of Native American traditional cultural places (Native American Heritage Commission 2013). Within the Project vicinity, cultural resources include six documented sites within the Bacara Resort property. Among these is Site SBa-71, which covers two-thirds of the East Terrace at the Bacara Resort and was an area of permanent habitation by the Chumash and “is designated highly sensitive because of its relatively undisturbed nature, dense deposits, and extensive burials” (California Coastal Commission 2013).

There is a potential for offshore cultural resources in the Project vicinity, however none are known from within 1 mile of shore. Refer to the Line 96 Modification Project EIR (Santa Barbara County 2011) for detailed description of offshore cultural resources along the coastline.

Historical Resources

Oil exploration began in Santa Barbara County when significant discoveries of oil were successfully tapped in the Santa Maria Valley, 45 miles northwest of the current Project area, during the 1880s. During the 1890s, the first offshore oil drilling piers were built in the waters off Summerland, 17 miles east of the Project area. Other significant discoveries followed in the early 1900s at the Orcutt and Cat Canyon fields. One well in the Orcutt field struck an oil reservoir in 1904 that produced one million barrels of oil in its first 100 days of operation, causing a sensation in the rest of the country which proclaimed it to be “the greatest gusher in the world” (Santa Barbara County 2006).

World War I marked increased demand for oil that lasted through the 1920s. Even after the disastrous stock market collapse of 1929, foreign demand for U.S. oil in the 1930s spurred further oil development in Santa Barbara County. Oil production in the Orcutt Hills hit an all-time high during World War I and then declined temporarily until rising domestic automobile use in the 1920s necessitated more production.

Following the peak of World War II oil demands, oil and gas production in Santa Barbara County declined. Beginning in the late 1950s, oil companies began to explore for oil in State tidelands. The first offshore drilling platform off the Santa Barbara County coast was installed in 1958 near Carpinteria. Eight other platforms and other facilities were installed in State tidelands off of Santa Barbara County between 1956 and 1966. On January 28, 1969, Union Oil's Platform A suffered a blowout in the Dos Cuadras field installation that lasted eight days. The resulting spill of 90,000 barrels of crude oil affected over 40 miles of coastline. Several environmental laws were passed at the Federal and State levels following the incident, including the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA).

The Ellwood Oil Field was discovered in 1928. PRC 421 was also built and commissioned in 1928 and Piers 421-1 and 421-2 are historic structures, though they are without historic or cultural significance to the community, State or nation. Although they are the last remaining surf zone wells in California, they have been modified significantly since the 1930s and do not maintain historic integrity (Figure 4.13-1; the red arrow points to Pier 421-2). Further, based on review of historical photographs the Piers were changed from the historic configuration sometime between 1979 and 1987; therefore, making most of the structures less than 40 years old.

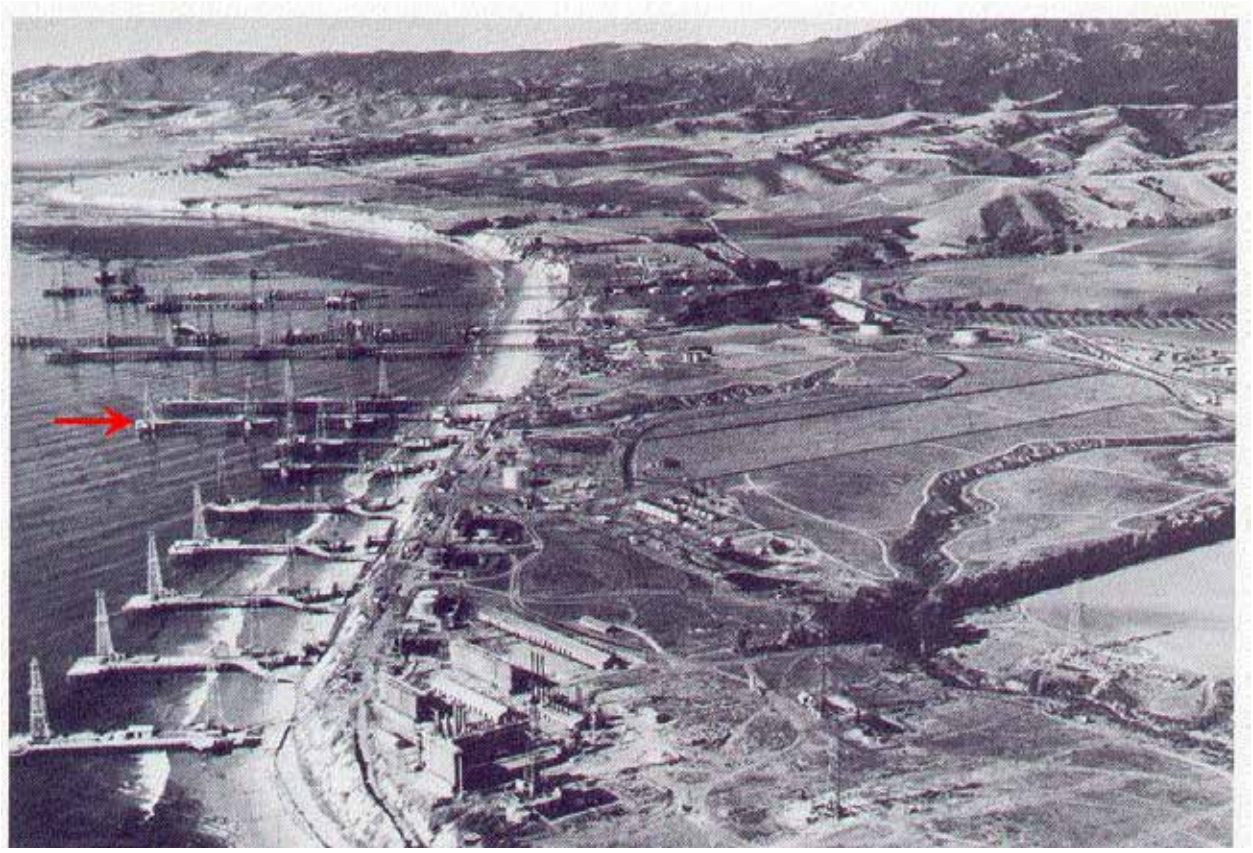


FIGURE 4.13-1. 1938 PHOTO OF ELLWOOD OIL PIERS

Known historic resources near the Project site consist of a landmark site at the northeast corner of the Sandpiper Golf course, located approximately 0.52 mile away.

Paleontological Resources

The Project area is situated on Pleistocene older alluvium deposits, consisting primarily of relatively unconsolidated silt, sand, and gravel. These alluvial deposits overlie the Miocene Sisquoc Formation, which is exposed in the coastal bluff northwest of the Project area and consists of silty, diatomaceous, clay shale (Dibblee 1987).

Paleontological resources are commonly found in sedimentary rock units. The boundaries of a sedimentary rock unit generally define the limits of paleontological sensitivity in a given region. Paleontological sites are normally discovered in cliffs, ledges, steep gullies, or along wave-cut terraces where vertical rock sections are exposed. Fossil material may be exposed by a trench, ditch, or channel created by construction.

Paleontologists examine invertebrate fossil sites differently than vertebrate fossil sites. Invertebrate fossils in microscopic form such as diatoms, foraminifera, and radiolarians can be so prolific as to constitute major rock material in some areas. Invertebrate fossils are normally of marine origin and are widespread, abundant, fairly well preserved, and predictable as to fossil sites. Therefore, the same or similar fossils can be located at any number of sites throughout central California.

Vertebrate fossil sites are usually found in non-marine or continental deposits. Vertebrate fossils of continental material are usually rare, sporadic, and localized. Scattered vertebrate remains (mammoth, mastodon, horse, groundsloth, camel, and rodents) have been identified from the Pleistocene non-marine continental terrace deposits on Vandenberg Air Force Base, but these resources would not be expected in the Project site and vicinity (Gray 2003).

The invertebrate fossils that would be expected to exist within Project site geologic rock units are widespread and abundant in many areas throughout the Pacific Coastline including the Santa Barbara County (Gray 2003). The overwhelming bulk of invertebrate fossil material in these rocks is due to the deposition of sediment in marine basins. Very seldom are vertebrate marine fossils such as whale, porpoise, seal, or sea lion found in marine rock units such as the Miocene Monterey Formation and the Pliocene Sisquoc Formations located within the PRC 421 Project area and vicinity. Therefore, the sensitivity for encountering important paleontological resources within the PRC 421 Project area and vicinity is considered low (CSLC 2009).

4.13.2 Regulatory Setting

There are several Federal regulations related to cultural resources and paleontological resources. Both cultural and paleontological resources are regulated at the State level. Federal and State laws, regulations, and policies related to cultural and paleontological resources are discussed in Table 4.0-1, while the local regulatory setting is discussed below.

Local

Cultural Resources

The Santa Barbara County Coastal Plan has several policies that address the preservation of significant cultural resources. Policy 10-1 states that all available measures must be explored to avoid development on significant historic, prehistoric, archaeological and other classes of cultural sites. Policy 10-2 states that project design shall be required to avoid impacts on archaeological or other cultural sites if possible. Policy 10-3 states that where avoidance of construction impacts is not possible, adequate mitigation shall be required in accordance with State Office of Historic Preservation and Native American Heritage Commission guidance. Policy 10-4 states that indirect activities including off-road vehicle use, unauthorized artifact collection or similar actions capable of destroying or damaging archaeological or cultural sites is prohibited. Policy 10-5 states that Native Americans shall be consulted when development is proposed that would potentially impact significant archaeological or cultural sites. Santa Barbara County Cultural Resource Guidelines provide direction to archaeologists on what types of research topics and research questions are appropriate to determine the significance of an archaeological site.

The City of Goleta's General Plan/Coastal Land Use Plan (GP/CLUP) contains several policies in the Open Space and Visual and Historic Resources Elements pertaining to cultural resources. One of the main goals in the Open Space Element is to ensure the protection of areas associated with Native American culture, including burial sites, religious and ceremonial sites, archaeological or historical sites, and other cultural sites. Policy OS 7.1 contains a measure to protect the places, features, and objects associated with Native American cemeteries, religious or ceremonial sites, archaeological or historical sites, or other cultural sites. Policy OS 8 contains several measures by which to identify and protect prehistoric and historic cultural sites and resources from destruction or harmful alteration. Policies VH 2.2 and 2.3 both call for the preservation and protection of historic structures and/or sites. The most relevant policy is Policy VH 5, the Protection of Native American and Paleontological Resources, the objective of which is to identify, protect, and encourage preservation of significant architectural, historic, and prehistoric sites, structures, and properties that comprise Goleta's heritage. Table 6.1 of the Visual and Historic Resources Element lists historic

resources in Goleta, none of which are located at or near the Project site. Lastly, Policy VH 6 seeks to identify, preserve, protect, and enhance significant historic landscaping, gardens, and open spaces which contribute to the setting or context of Goleta.

Paleontological Resources

Policy VH 5, discussed above, addresses potential impacts to paleontological resources.

4.13.3 Significance Criteria

Cultural Resources

The State CEQA Guidelines section 15064.5 defines a significant cultural resource, either prehistoric or historic, as a "historical resource." Public Resources Code section 5020.1 subdivision (j) defines a historical resource as:

> *"Historical resource" includes, but is not limited to, any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California.*

A resource included in a local register of historical resources, as defined in Public Resources Code section 5020.1, subdivision (k) or identified as significant in an historical resource survey meeting the requirements of section 5024.1, subdivision (g), shall be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant. *Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Resources Code, § 5024.1 and Cal. Code Regs. tit. 14, § 4852), including the following:*

- *(A) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;*
- *(B) Is associated with the lives of persons important in our past;*
- *(C) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or*
- *(D) Has yielded, or may be likely to yield, information important in prehistory or history.*

The fact that a resource is not listed in, or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to Pub. Resources Code, § 5020.1, subd. (k)), or identified in an

historical resources survey (meeting the criteria in § 5024.1, subd. (g)) does not preclude a lead agency from determining that the resource may be a historical resource as defined in sections 5020.1, subdivision (j), or 5024.1.

The State CEQA Guidelines section 15064.5, subdivision (b) provides significance threshold criteria for determining a substantial adverse change to the significance of a cultural resource:

1. *Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired.*
2. *The significance of an historical resource is materially impaired when a project:*
   - *(A) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources; or*
   - *(B) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or*
   - *(C) Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA.*

Paleontological Resources

The State CEQA Guidelines Appendix G, which includes an Environmental Checklist Form, provides a suggested significance threshold for impacts to paleontological resources:

- Would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

4.13.4 Impact Analysis and Mitigation

Impacts to cultural resources can occur by direct or indirect impacts. Direct impacts result from ground disturbances directly and indirectly caused by facility construction,

decommissioning, operation or maintenance. Indirect impacts result from increased access to archaeological sites, i.e., construction or facility employees participating in unauthorized artifact collecting.

Table 4.13-1, located at the end of this section, provides a summary of Project-related cultural resources impacts and recommended MMs to address these impacts.

Impact CR-1: Potential Impacts to Previously Undiscovered Cultural Resources During Construction

Although no cultural resources are known to be present within the Project area and Project activities would generally occur in previously disturbed areas, excavations around the EOF and along the Project access road could exceed previous depths and disturb previously undiscovered cultural resources (Less than Significant with Mitigation).

Impact Discussion

Potential for impacts to subsurface cultural resources is limited due to the fact that construction and decommissioning for the Project would take place on artificial fill along the seawall access road, on previously graded and developed areas and on existing piers. Previous reviews of cultural resources in the area to be affected by the project have not identified significant cultural resources (Santa Barbara County 2001; City of Goleta, 2006; Santa Barbara County 2011). The seaward portion of the EOF, the access road, and PRC 421 pier area consists of relatively loose beach sand that is prone to erosion and scour (i.e., the removal of sand due to wave action along the oceanfront, sometimes to shale bedrock). Due to the open exposure, the oceanfront is generally not considered suitable for occupation by prehistoric peoples. Additionally, due to the movement of sand on a seasonal basis (i.e., sand is generally scoured off the beach during the winter months as a result of high surf activity, but is generally deposited during the summer months of gentle surf), intact prehistoric cultural material is generally not found along the oceanfront. Therefore, there is no archaeological sensitivity within most of the Project site, and little to no potential for impacts. As described above, the sensitivity for encountering important paleontological resources within the Project area and vicinity is considered low. However, there remains a potential that Project-related ground disturbance would exceed previous depths and affect heretofore undiscovered cultural resources, such as along the access road or within the EOF. Therefore, this impact would be less than significant with mitigation.

Mitigation Measures

MM CR-1. Cultural Resources Monitor. A qualified cultural resources expert shall act as a construction monitor during all ground-disturbing work. The expert shall be retained by the City of Goleta and paid for by Venoco. The Cultural Resources Monitor shall prepare a Cultural Resources Monitoring Plan,

outlining the approach to monitoring, involvement of the affected Native American nation, and detailing pre-construction workshops for construction personnel for review approval by the City of Goleta and paid for by Venoco. In the event archaeological resources are encountered during grading, as observed by the cultural resources monitor or their designee, work shall be stopped immediately or redirected until the City-approved archaeologist and local Chumash observer can evaluate the significance of the find pursuant to Phase 2 investigation standards set forth in the City Archaeological Guidelines. The Phase 2 shall be funded by Venoco. If resources are found to be significant, they shall be subject to a Phase 3 mitigation program consistent with City Archaeological Guidelines. The Phase 3 shall be funded by the permittee. This requirement shall be printed on all plans submitted for any City of Goleta Land Use Permit, building, grading, or demolition permits.

Rationale for Mitigation

Although the potential for encountering cultural resources in previously disturbed areas and on the wave-cut beach is considered extremely low, the above MM would ensure that any cultural resources inadvertently exposed during construction would be protected and properly documented. Full implementation of this measure would reduce Impact CR-1 to less than significant.

Impact CR-2: Potential Impacts to Cultural Resources Due to Oil Spill and Cleanup Activities

A potential oil spill from PRC 421 facilities or from Project-related oil transported in the Line 96 pipeline could result in primary impacts to undiscovered cultural resources from contamination, or secondary impacts related to spill cleanup activities (Less than Significant).

Impact Discussion

Although no cultural resources have been identified within the primary Project area, there is a potential for undiscovered cultural resources outside previously disturbed portions of the site. In the event of a spill from Pier 421-2 or the flowline, those cultural resources could become contaminated and damaged during clean-up activities. Further, efforts to remediate contaminated soils may require additional ground disturbance. For Line 96, the primary concern would be spills in areas adjacent to coastal drainages that have a high sensitivity for prehistoric archaeological resources. Refer to Impact CR-5 in the Line 96 Modification Project Final EIR (Santa Barbara County 2011). There are also no known shipwrecks near the Project area that would be vulnerable to Project-related oil spills (Santa Barbara County 2011). Given the production levels at PRC 421, the Project presents a low risk of a spill that would require extensive ground disturbance and subsequent damage to undiscovered cultural resources. As described in Section 4.2 Safety, spills from PRC 421 facilities are estimated to be limited to 1.7 barrels.

Potential spills from Line 96 would involve larger volumes, but procedures are already in place to reduce those potential impacts to undiscovered cultural resources. Therefore, it is a less than significant impact.

Mitigation Measures

None required. However, MM CR-1b from the Line 96 Modification Project EIR (see Appendix H) would apply and would reduce potential oil spills impacts from oil transportation to less than significant. Further, any ground disturbing work related to oil spill cleanup within the Project area would be subject to the requirements of MM CR-1 in this EIR, requiring a Cultural Resources Monitor to be present.

Table 4.13-1. Summary of Cultural, Historical, and Paleontological Resources Impacts and Mitigation Measures

Impact	Mitigation Measures
CR-1: Potential Impacts to Previously Undiscovered Cultural Resources During Construction	**MM CR-1:** Cultural Resources Monitor
CR-2: Potential Impacts to Cultural Resources Due to Oil Spill and Cleanup Activities	None required.

4.13.5 Cumulative Impacts Analysis

Historic archaeological sites are non-renewable resources that have been destroyed at an alarming rate State-wide and locally. Thus, the assessment of potential cumulative impacts on cultural resources within the Project area considers these past activities resulting in loss of historic sites, along with other probable future projects in the vicinity.

The Project would have a less than significant contribution to cumulative impacts to undiscovered cultural resources within the Project area.

4.14 ENERGY AND MINERAL RESOURCES

This section describes energy and mineral resources such as natural gas, oil, and sand and gravel in the Project vicinity and evaluates the impacts that the Project may have on these resources. The analysis provides an overview of energy consumption and energy sources and focuses upon area energy and mineral resources that could be affected by the construction and operation, and/or decommissioning, of primary Project components, such as the construction and operation of Well 421-2 and decommissioning and removal of Pier 421-1. This analysis also briefly discusses area resources that could be affected by the operation of secondary Project components (existing facilities not proposed for modification) such as the Ellwood Onshore Facility (EOF) and Line 96 pipeline. For a full discussion of such resources, see the Ellwood Marine Terminal (EMT) Lease Renewal Environmental Impact Report (EIR) (California State Lands Commission [CSLC] 2009) and Line 96 Modification Project EIR (Santa Barbara County 2011).

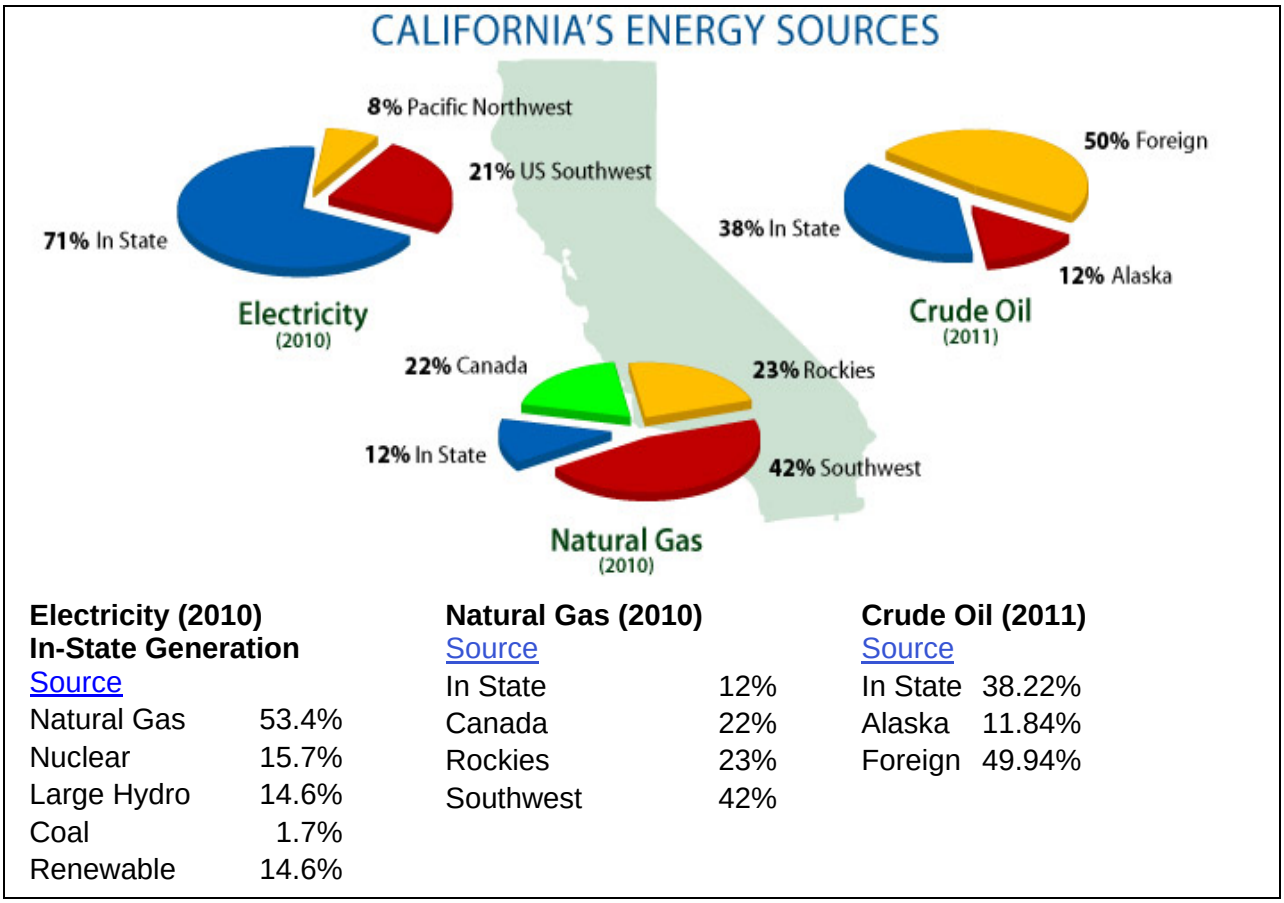
Potential impacts to energy and mineral resources created by the Project are based on a change from existing conditions. Significance criteria are used to assess the significance of the impacts, and whether mitigation measures (MMs) can be applied to reduce the level of significance.

This document uses information from the U.S. Energy Information Administration (USEIA), California Energy Commission (CEC) 2011 Integrated Energy Policy Report (IEPR) and 2012 IEPR Update, California Department of Conservation Division of Oil, Gas, and Geothermal Resources (DOGGR) 2012 Preliminary Report of California Oil and Gas Production Statistics, City of Goleta 2006 MND (06-MND-001), and Santa Barbara County 2001 MND (01-ND-34) and incorporates by reference the conclusions of the Line 96 Modification Project EIR and EMT Lease Renewal EIR regarding area mineral and energy resources and the potential impacts on such resources associated with operation of area oil facilities, and summarizes these where appropriate.

4.14.1 Environmental Setting

State Overview

California largely relies on electricity, natural gas, and petroleum-based fuels for its energy (Figure 4.14-1). Due to high energy demand, California imports more energy than any other state (USEIA 2013). The following information provides a summary of the State's energy sources, including energy production and consumption in California.



Electricity (2010) In-State Generation
Source

Natural Gas	53.4%
Nuclear	15.7%
Large Hydro	14.6%
Coal	1.7%
Renewable	14.6%

Natural Gas (2010)
Source

In State	12%
Canada	22%
Rockies	23%
Southwest	42%

Crude Oil (2011)
Source

In State	38.22%
Alaska	11.84%
Foreign	49.94%

Source: http://energyalmanac.ca.gov/overview/energy_sources.html

FIGURE 4.14-1. CALIFORNIA'S ENERGY SOURCES (2010-2011)

Electricity

According to the CEC 2012 IEPR Update, Californians consumed 273,103 gigawatt hours (GWh) of electricity in 2010 with consumption projected to increase to between 308,677 and 333,838 GWh annually by 2022. This reflects an annual average growth rate of between 1.03 and 1.69 percent. Natural gas-fired power plants account for about one-half of State electricity generation followed by nuclear power, hydropower, and renewable energy; California leads the nation in electricity generation from non-~~hydroelectirc~~ hydroelectric renewable energy sources, including wind, geothermal, solar, fuel wood, and municipal solid waste/landfill gas resources (USEIA 2013).

Natural Gas and Petroleum

According to the CEC (2013), Californians consumed 12,774 million (MM) therms (1,277 billion cubic feet) of natural gas in 2010, not including gas used in natural gas-fired power plants (which provided more than 40 percent of California's electricity in 2010). By 2022, projected annual customer demand is estimated range from 13,688 to

14,075 MMtherms, an estimated growth rate of between 0.58 and 0.81 percent. In 2011, according to the USEIA (2013; www.eia.gov/state/data.cfm?sid=CA), Californians consumed 2,153 billion cubic feet of natural gas (including natural gas used for electricity) and 642.9 million barrels of petroleum.

California's demand for gas and oil exceeds in-State production. According to the USEIA (2013), California natural gas production typically accounts for less than 2 percent of total U.S. production and satisfies less than one-fifth of State demand. Although California is currently the third-ranked oil-producing state in the nation (behind Texas and Alaska), California receives more crude oil from non-California sources (i.e., Alaska, foreign countries) than from sources in California. In 2012, 222.4 billion cubic feet of natural gas and 197.5 million barrels of oil were produced in-State; crude oil production averaged 541,100 barrels per day (DOGGR 2013) (see Table 4.14-1).

Table 4.14-1. California Gas and Oil Production (2008-12)

	2012	2011	2010	2009	2008
Net Gas Production (billions of cubic feet)	**222.4**	**244.4**	**255.4**	**245.2**	**265.5**
Oil Production (millions of barrels): TOTAL	**197.5**	196.8	200.9*	207.2	214.6
· State Onshore	184.3	184.5	187.8	194.9	200.5
· State Offshore	13.2	12.3	13.0	13.3	14.1

* Rounded to significant figures; therefore, added totals may not agree with onshore/offshore subtotals.
Source: DOGGR (2013; ftp://ftp.consrv.ca.gov/pub/oil/annual_reports/2012/PR03_Preannual_2012.pdf).

Renewable Energy Sources

California, with its abundant natural resources, has a long history of support for renewable energy. According to the CEC's California Renewable Energy Overview and Programs website (www.energy.ca.gov/renewables/index.html), in 2009, 11.6 percent of all electricity came from renewable resources such as wind, solar, geothermal, biomass and small hydroelectric facilities; large hydroelectric plants generated another 9.2 percent of State electricity generation.

In 2002, Senate Bill (SB) 1078 established California's Renewables Portfolio Standard (RPS) Program, with the goal of increasing the percentage of renewable energy in the State's electricity mix to 20 percent of retail sales by 2017. In 2003, the CEC, California Public Utilities Commission (CPUC), and the now defunct Consumer Power and Conservation Financing Authority (CPA) jointly adopted the State Energy Action Plan (Energy Action Plan I), which described a "loading order" (a priority sequence for actions) to address increasing energy needs: (1) cost-effective energy efficiency and demand response; (2) renewable resources, including moving the 20 percent RPS target from 2017 to 2010; (3) distributed generation; (4) combined heat and power applications; and (5) clean and efficient fossil-fired generation.

The 2007 IEPR (CEC 2007) added policies and provided a comprehensive set of recommended actions to enable California to meet its energy needs while achieving Assembly Bill (AB) 32 greenhouse gas (GHG) reduction goals. In 2011, Governor Brown signed SBX1 2, which requires one-third of California's electricity to come from renewable sources (the legislation increased California's RPS target from 20 percent to 33 percent) by December 31, 2020. The CEC's 2012 IEPR Update (CEC 2012) focuses on, and identifies five strategies and specific actions related to, the renewable resources component of the loading order in the Energy Action Plan. The five strategies are: (1) Identify Preferred Geographic Areas for Renewable Development; (2) Maximize Value Through Appropriate Assessment of Benefits and Costs; (3) Minimize Interconnection and Integration Costs and Requirements; (4) Economic Development With Renewable Energy; and (5) Research and Development and Financing.

Regional Overview

Santa Barbara County has been an oil and gas producing region, including oil and gas produced off its coast, since the late-1880s, following the discovery of the Summerland oil field. Oil production in Santa Barbara County, including offshore production landed in the County, reached an all-time high of 68,798,091 barrels in 1995, while natural gas production reached an all-time high of 99,425,269 thousand cubic feet in 1967; in recent years, the predominant focus in production has shifted from onshore and near-shore fields to fields underlying federal waters more than 3 nautical miles from shore (www.sbcountyplanning.org/energy/information/oilGasProduction.asp).

Historically, minerals produced in Santa Barbara County have included "asphalt and bituminous rock, clay, diatomaceous earth, gypsum, limestone, sandstone, oil, shale, miscellaneous stone products, mineral water, copper, chromite, gold, silver, quicksilver, and petroleum and natural gas" (California Division of Mines 1949). Other than oil/petroleum and natural gas, however, there are no known mineral resources in the Project area (City of Goleta 2004; Santa Barbara County 2004).

4.14.2 Regulatory Setting

Local

The City of Goleta regulates energy sector development through its General Plan and Coastal Land Use Plan. In the coastal zone, priority is given to coastal-dependent projects, including oil and gas projects that involve offshore oil and gas resources and facilities. In addition, priority is also given to efficient harnessing of energy through recommendations provided in the Energy Element of the Santa Barbara Comprehensive Plan. Section 13 of the City of Goleta's Conservation Element contains policies for the conservation of energy. Its main objective is to promote energy efficiency in future land use and development within Goleta, encourage the use of renewable energy sources, and reduce reliance upon fossil fuels. Policy CE 13.2, in particular, addresses industrial

development with measures intended to reduce energy consumption in existing and new [commercial and] industrial buildings.

4.14.3 Significance Criteria

Impacts to energy and mineral resources would be considered significant if the Project would:

- Result in the loss of availability of a known energy or mineral resource (i.e., oil) that would be of value to the region and the residents of the State;
- Conflict with the adopted California energy conservation plans;
- Use non-renewable energy resources in a wasteful and inefficient manner;
- Result in a substantial increase in demand upon existing power or natural gas utilities; or
- Result in a need for new systems or supplies or substantial alterations to the existing power and natural gas utilities.

4.14.4 Impact Analysis and Mitigation

The Project would produce crude oil for delivery to markets in the San Francisco and Los Angeles areas. As discussed in Section 2.4.1, production from PRC 421 is expected to average no more than 150 barrels of oil per day (BOPD) over the production life of the well; with average production of 150 BOPD for the first month, converging to 50 BOPD after 2 years, and leveling off at 50 BOPD for the following 18 years. Based on these estimates and a linear rate of decline from 150 to 50 BOPD over the first 2 years, if implemented, the Project is anticipated to produce a total of approximately 402,000 barrels over the lifetime of the Project.

Operations at PRC 421 would use electricity to operate the oil and gas production equipment and operational and safety controls. Electric power for the Project would be obtained from the existing Southern California Edison (SCE) electric grid system, via electricity lines that would be extended from the EOF. It is projected that the Project would have an electric power consumption rate of 80 kilowatts (kW).

Implementation of the Project would increase direct fossil fuel consumption from operation of construction equipment, and indirect fossil fuel consumption from consumption of electricity for production and transportation of oil. Table 4.14-2, located at the end of this section, provides a summary of Project-related impacts and recommended MMs to address these impacts.

Impact EMR-1: Increase in Electricity Use

The Project would increase electricity use (Less than Significant).

Impact Discussion

The Project would increase electricity use in the area due to operation of electrical oil production equipment. The expected total electricity usage by the Project facilities is approximately 80 kW, or 0.701 GWh/year. These numbers are estimated assuming the equipment runs 24 hours a day and 365 days per year. This increase in electricity use is negligible compared to the 3,235 GWh/year consumed in Santa Barbara County or 257,275 GWh/year consumed in California (CEC 2011). Therefore, the Project would have adverse, but less than significant, impacts on electrical energy resources.

Mitigation Measures

None required.

Impact EMR-2: Conflict with State-Adopted Energy Conservation Plans

The Project would not substantially conflict with energy conservation plans adopted by the State (Less than Significant).

The Project would incrementally increase the availability of oil and natural gas, which could incrementally reduce the cost of these non-renewable resources. Such an increase would be very small, given that the annual production from PRC 421 would be less than 0.001 percent of Statewide consumption. Further any production from PRC 421 would be expected to displace oil imported from distant locations, reducing the lifecycle energy expenditure by reducing transportation. Therefore, although the Project would include development and processing of non-renewable fuels, it would not substantially affect the market for renewable energy nor would it conflict with adopted State policies for energy conservation and development of renewable energy.

Mitigation Measures

None required.

Table 4.14-2. Summary of Energy and Mineral Resources Impacts and Mitigation Measures

Impact	Mitigation Measures
EMR-1: Increase in Electricity Use	None required.
EMR-2: Conflict with State-Adopted Energy Conservation Plans	None required.

4.14.5 Cumulative Impacts Analysis

The Project is part of the energy resource production chain (crude oil transportation to a location where fuels are produced), as it supplies energy to other projects that might be consumers of energy. Therefore, the Project's cumulative energy impact would be beneficial, because it would help to partially offset increases in energy consumption.

4.15 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

This section analyzes the distributional patterns of high-minority and low-income populations on a regional basis and characterizes the distribution of such populations adjacent to the Project. This analysis focuses on whether the Project has the potential to adversely and disproportionately affect minority populations, low-income communities, and industries, thus creating a conflict with the intent of the California State Lands Commission's (CSLC's) Environmental Justice Policy.

This section relies on economic and population data from the U.S. Census Bureau and incorporates by reference the conclusions of the Ellwood Marine Terminal (EMT) Lease Renewal Environmental Impact Report (EIR) (CSLC 2009) and Line 96 Modification Project EIR (Santa Barbara County 2011), and summarizes these conclusions where applicable. However, the community of Isla Vista warrants an examination of the intent of the policy in light of the community's unique economic structure. This document also incorporates data from Santa Barbara County 01-ND-34 and City of Goleta 06-MND-01.

4.15.1 Background

On February 11, 1994, President Clinton issued an "Executive Order on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" designed to focus attention on environmental and human health conditions in areas of high minority populations and low-income communities, and promote non-discrimination in programs and projects substantially affecting human health and the environment (White House 1994). The order requires Federal agencies (as well as State agencies receiving Federal funds) to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.

CSLC Policy

The CSLC has developed and adopted an Environmental Justice Policy to ensure equity and fairness in its own processes and procedures. The CSLC adopted and amended the Environmental Justice Policy on October 1, 2002, to ensure consideration of environmental justice as part of CSLC processes, decisions, and programs. The policy stresses equitable treatment of all members of the public and commits to consider environmental justice in its processes, decision-making, and regulatory affairs. It is implemented, in part, through identification of, and communication with, relevant populations that could be adversely and disproportionately affected by CSLC projects or programs, and by ensuring that a range of reasonable alternatives is identified that would minimize or eliminate environmental issues affecting such populations. This discussion is provided in this document consistent with and in furtherance of the CSLC's Environmental Justice Policy.

4.15.2 Environmental Setting

Project Study Area and Communities of Comparison

According to U.S. Environmental Protection Agency (EPA) guidance, a minority or low-income community is disparately affected when the community would bear a disproportionate level of health and environmental effects when compared to the general population. Further, the guidelines recommend that the Communities of Comparison selected be the smallest governmental unit that encompasses the footprint for each resource. PRC 421 is located on State tide and submerged lands adjacent to the City of Goleta, in Santa Barbara County. Therefore, for the purposes of this environmental justice assessment, the Project study area includes the southwestern portion of the City of Goleta, south of Highway 101, west of Fairview Avenue, and east of the Bacara Resort. This area includes census tracts 29.15, 29.22, 29.24, 29.26, 29.28 and 29.30 (Figure 4.15.1). U.S. Census data from 2010 for these census tracts were used to characterize the Project study area for this analysis.

FIGURE 4.15-1. CENSUS TRACTS IN THE PROJECT VICINITY

The Line 96 pipeline crosses under U.S. Highway 101 near the Ellwood Onshore Facility (EOF) and runs parallel to the north side of the highway for approximately 8.5 miles to Las Flores Canyon (LFC). At LFC, the pipeline runs a short distance up the canyon to the Plains All American Pipeline L.P. (PAAPLP) Coastal Pipeline pump

station that is located at the ExxonMobil Santa Ynez Unit (SYU) oil and gas processing facility. The Line 96 pipeline ties directly into the PAAPLP Coastal Pipeline and does not use any ExxonMobil SYU storage tanks. The pipeline was installed along Calle Real, parallel to and north of U.S. Highway 101. Since Calle Real does not run the entire length of the pipeline route, the pipeline also crosses a few stretches of private ranch/agricultural roads that parallel U.S. Highway 101. Because the Line 96 pipeline alignment is not in proximity to environmental justice populations and potential impacts related to the pipeline only extend a short distance from the pipeline, no conflict with the CSLC's environmental justice policy occurs from usage of the Line 96 pipeline to the PAAPLP Coastal Pipeline, and census tracts along the pipeline route are not included in the study area.

Study Area Demographics

In 2010, the population of the City of Goleta was 29,888 and the population of Santa Barbara County was 423,895. The total population of all census tracts within the study area was 31,997 (U.S. Census Bureau 2010). Within the study area census tracts, minorities comprised 33.8 percent of the population in 2000, compared to 30.3 percent in the City of Goleta and 30.4 percent in Santa Barbara County (see Table 4.15-1). The minority composition of the study area (35.3 percent) may not be statistically significant from the minority composition of Santa Barbara County (30.4 percent), and therefore, likely does not comprise a disproportionately minority population.

Table 4.15-1. 2010 Ethnicity Data for the City of Goleta and Santa Barbara County

	Study Area		Goleta		Santa Barbara County	
	Population	**Percentage**	**Population**	**Percentage**	**Population**	**Percentage**
White	20,691	64.7	20,883	69.7	295,124	69.6
Minority	11,306	35.3	*9,005*	*30.3*	*128,771*	*30.4*
Black	774	2.4	469	1.6	8,513	2.0
Asian	4,501	14.1	2,728	9.1	20,665	4.9
Pacific Islander	53	0.2	26	0.1	806	0.2
Native American	178	0.6	283	0.9	5,485	1.3
Other	3,873	12.1	4,182	14.0	73,860	17.4
Two or More	1,927	6.0	1,367	4.6	19,442	4.6
Hispanic*	8,008	25.0	9,824	32.9	181,687	42.9

*May be counted in one or more of the other categories as well.

Source: U.S. Census Bureau 2010, 2010 Census Summary File 1.

Asians comprised the largest minority group within the study area (14.1 percent), while Pacific Islander and Native American groups comprised the smallest percentage of the population (0.2 percent combined). Hispanic or Latino write-in respondents could potentially be categorized under any of the classification groups designated by the U.S. Census Bureau, including "other," in addition to the Hispanic classification. Hispanic is

considered an origin, not a race, by the U.S. Census Bureau. An origin can be viewed as the heritage, nationality group, lineage, or country of birth of the person or the person's parents or ancestors before their arrival in the United States. Therefore, people who identify their origin as Spanish, Hispanic, or Latino may be of any race. Within the study area, Hispanic/Latino write-in respondents comprised 25.0 percent of the population, as compared to 42.9 percent of Santa Barbara County.

Census data were also analyzed to determine poverty status in the study area. As displayed in Table 4.15-2, approximately 38 percent of the individuals residing within the study area had income levels below the poverty level in 2010; however, these residents are typically students who may not be financially independent and would therefore not represent a disadvantaged population. In contrast, 9 percent of Goleta residents and 14 percent of Santa Barbara County residents had income levels below the poverty level in 2010.

Table 4.15-2. Poverty Status in 2010

	Project Study Area	Goleta	Santa Barbara County
Income in 2010 Below Poverty Level	9,842	2,629	57,463
Population for Whom Poverty Status was Determined	25,919	28,867	400,584
Percent with Income in 2010 Below Poverty Level	***38.0***	***9.1***	***14.3***

Source: U.S. Census Bureau 2010, 2006-2010 American Community Survey 5-Year Estimates, Poverty Status in the Past 12 Months.

Due to the wide discrepancy between the number of residents below the poverty level within the study area and the number in the surrounding communities, further analysis regarding the study area was conducted.

Census tracts 29.28, 29.26, and 29.24 are directly adjacent to the University of California Santa Barbara (UCSB), in the community of Isla Vista. UCSB has an average enrollment of 19,600 students, including approximately 2,600 graduate students, the vast majority of which live within the Isla Vista area (CSLC 2009) and may comprise 85 to 90 percent of that community's population. University students tend to be younger than the general population, which is represented by the fact that approximately 93 percent of the population in Census Tract 29.24 is between the ages of 18 and 24. The median age in this census tract is 21.0 years. Likewise, census tracts 29.28, 29.26, and 29.15 have approximately 80 percent, 85 percent, and 73 percent of their respective populations between the ages of 18 and 24. The median age in these census tracts is 21.3, 21.1, and 28.4 years, respectively. In contrast, the percentage of Santa Barbara County residents between the ages of 18 and 24 is 14.9 percent and the median age is 33.6 years while Goleta has approximately 12.7 percent of the population between the ages of 18 and 24, and the median age is 36.5 years (U.S. Census Bureau 2010).

In addition to being younger than the general population, university students tend to have less income due to the time-consuming nature of their studies and are often not economically independent. Therefore, in the census tracts with the highest percentage of population between the ages of 18 and 24, the percentage of those who had income in 2010 below the poverty level was also high. Approximately 38 percent of the predominantly student population of Isla Vista was at or below the poverty level in 2010, which is double the poverty level of many of the most impoverished counties in the nation (U.S. Census Data 2005). However, this population is able to live in a desirable Southern California beach community and afford to attend college. It should be noted that the median annual parental income for the 2007 class of UCSB was reported as $79,000, which is substantially above the poverty level (UCSB 2008). Therefore, while standard analyses of census data identified Isla Vista with an extremely large portion of the population at or below poverty level, these analyses did not identify a truly economically disadvantaged community as intended in the CSLC's Environmental Justice Policy.

4.15.3 Policy Issues

A conflict with the CSLC's Environmental Justice Policy would occur if the Project would:

- Have the potential to disproportionately affect minority and/or low-income populations at levels exceeding the corresponding medians for the County in which the Project is located; or
- Result in a substantial, disproportionate decrease in the employment and economic base of minority and/or low-income populations residing in the County and/or immediately surrounding cities.

4.15.4 Policy Analysis and Conditions

Policy Discussion

As discussed in Section 4.2, Safety, and Section 4.5, Hydrology, Water Resources, and Water Quality, Project construction and operation would incrementally increase the risk for a small crude oil spill which would expose people located in the Project vicinity to potential health, safety, and economic effects. The Project is located 0.6 mile from the nearest residence and 0.8 mile from the nearest school. People with the greatest potential to be affected by the Project are users of Sandpiper Golf Course and recreational beach users. The golf course is located approximately 200 feet away from Piers 421-1 and 421-2 and at an elevation of about 50 feet higher. The 6-inch line traverses the golf course near the 12th tee and leaks at that point represent the only real hazard to golfers. The beach near PRC 421 is used much less often than other beaches in the area as the adjacent beach is ephemeral with sand present only part of the year.

Further, the nearest beach access is approximately 0.5 mile in either direction, at the Bacara Resort and beneath Ellwood Mesa. Potential users of the adjacent beach could come from any ethnicity or income level. In contrast, users of Sandpiper Golf Course are more likely to be comprised of upper-middle and upper-class income levels.

As discussed in Section 4.5, Hydrology, Water Resources, and Water Quality, a potential spill from PRC 421 could travel east toward Devereux Slough. Devereux Slough is located adjacent to Isla Vista, a community dominated by UCSB students. A larger spill, such as a spill of up to 60 barrels from Line 96 along the Gaviota Coast would potentially affect recreational opportunities and visual resources for the residents of Isla Vista if the majority of this oil reached the ocean and drifted to Isla Vista. However, this would be a low probability, all of this spilled oil would be unlikely to reach the ocean and such a spill would be located more than 5 miles west of Isla Vista. In addition, potential malodor and air quality effects would disproportionately affect the coastal residents in this town compared to the general population of Goleta and Santa Barbara County. However, the demographics of Isla Vista do not qualify the community as a disadvantaged population within the CSLC's Environmental Justice Policy. Therefore, Project construction and operation would not disproportionately affect minority or low-income populations or result in a substantial disproportionate decrease in the employment and economic base of minority and/or low-income populations in the area.

4.15.5 Cumulative Policy Analysis

The projects identified in Section 3.0, Cumulative Impacts Methodology, primarily affect residents of south Santa Barbara County and the City of Goleta. People from every ethnicity and income level would be included in the potentially affected area. Some of these projects may be found to have a disproportionate effect on a minority or low-income population. Project effects associated with marine spills would affect resources used by many different people, regardless of ethnicity or income, and would therefore not have a disproportionate effect on a minority or low-income population. Therefore, the Project would not conflict with the CSLC's Environmental Justice Policy.