

The lessee shall dispose of those drill cuttings and drilling muds associated with drilling and production well work, in accordance with regulations promulgated by the appropriate Regional Water Quality Control Board. The method employed to dispose of the drill cuttings and drilling muds shall be submitted to the staff for approval along with the drilling mud program that is required in Section 2128(d)(1). (2 Cal. Admin. Code Section 2138).

MITIGATION MEASURES:

1. Onshore disposal of drilling muds and cuttings.
Since this measure will avoid the potential impact, it is deemed completely effective.
2. Regulation of mud and cuttings discharge:
 - a. restrict discharges to periods of high currents;
 - b. restrict discharge periods when currents are flowing away from hard-bottom areas; or
 - c. require shunting (e.g., piping at or close to the sea-bottom).

This measure is deemed to be partially to completely effective because it is dependent on environmental conditions at the time of discharge.

3. Require disposal in an approved ocean disposal site.
Since this measure will involve the transportation of the drilling muds and cuttings away from the sensitive areas, it will also avoid the potential effect and thus deemed completely effective.

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DUPLICATE PAGE	2494

MARINE BIOLOGY
Kelp

IMPACT: Deposition of drilling muds and cuttings may exert subtle effects on kelp communities (PRC 3150 only).

- FINDING:
- a) Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR.
 - b) Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding (Regional Water Quality Control Board, Central Coast Region). Such changes have been adopted by such other agency or can and should be adopted by such other agency.

FACTS SUPPORTING FINDING:

Drilling mud and cuttings discharges may affect the health of giant kelp communities, especially in PRC 3150, where kelp is located within about 300 feet of the drillsite at Carpinteria Reef. Kelp is also located in the inshore portions of PRC's 2199 and 2894, but the drillsites are several hundred to several thousand feet from the seaward extent of the kelp beds and kelp are unlikely to be affected.

It is possible that exposure of kelp in PRC 3150 to drilling muds in suspension and muds and cuttings deposited on the substrate may exert subtle, indirect effects on the plants themselves or the ecosystem of which they are an integral part. For example, deposited drilling mud and cuttings particles might affect recruitment of new plants or larval settlement of invertebrates that graze on the.

The Commission recognizes the principal role of the Central Coast District Water Quality Control Board in regulating the effects of drilling muds and cuttings on marine biota in the project area. The Commission's regulations for oil and gas drilling and production operations on State tide and submerged lands specifically provide:

The lessee shall dispose of those drill cuttings and drilling muds associated with drilling and production well work, in accordance with regulations promulgated by the appropriate Regional Water Quality Control Board. The method employed to dispose of the drill cuttings and drilling muds shall be submitted to the staff for approval along with the drilling mud program that is required in Section 2128(d)(1). (2 Cal. Admin. Code Section 2138).

MITIGATION MEASURES:

1. Onshore disposal of drilling muds and cuttings.

Since this measure will avoid the potential affect, it will be completely effective.

2. Regulation of mud and cuttings discharges:

- a. restrict discharges to periods of high currents;
- b. restrict discharge periods when currents are flowing away from hard-bottom areas; or
- c. require shunting.

This measure is deemed to be partially to completely effective because it is dependent on environmental conditions.

3. Require disposal in an approved ocean disposal site.

Since this measure will involve the transportation of the drilling muds and cuttings away from sensitive areas, the measure will be completely effective.

MARINE BIOLOGY
Kelp

IMPACT: Physical damage to kelp plants due to crew and supply boat traffic in PRC 3150

FINDING: Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR.

FACTS SUPPORTING FINDING:

Kelp plants associated with Carpinteria Reef could be damaged by passage of crew or work boats during routine operations in PRC 3150. This can be avoided by specifying that boats approach from the south and west, thereby avoiding the reef.

MITIGATION MEASURES

1. Require that crew and supply boats avoid kelp area at Carpinteria Reef and use restricted corridors.

Since this measure involves the avoidance of potential damage to the kelp, it will be completely effective.

MARINE BIOLOGY
Marine Mammals

IMPACT: Vessels working on placement or retrieval of drilling unit or servicing the unit while it is in operation may collide with resident or transient marine mammals.

- FINDING:
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 - b) Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency.

The California Department of Fish and Game regulations also apply, and mitigations adopted by that Agency have been included in the project.

FACTS SUPPORTING FINDING:

Several species of cetacean, (whales and dolphins) and pinnipeds (seals and related families) as well as the sea otter either live in the project area or travel through it on migrations. The increased boat traffic associated with the project could increase the risk of collision with these mammals, causing injury or death.

Many studies have shown that the majority of marine mammals exhibit strong "avoidance" behavior when presented with the sound of a boat, and will thus not present a problem to the relatively slow moving supply boats.

Within the project area the main problems will come from resting pinnipeds and sea otters which do not notice the boats, and from Grey Whales, which exhibit indifference to boat noises at most times.

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MITIGATION MEASURES:

Three mitigations are proposed for the project which should reduce the impact to an insignificant level.

1. The placement and removal of the drilling unit will be scheduled between the migrations of the Gray Whales, so that whale transit will be at a minimum when boat traffic is high;
2. Crews could be transported by helicopter, reducing significantly the total boat traffic (see hearing comment response 54 in the FEIR for a discussion of helicopter impacts); and,
3. Boat crews will be trained to observe and avoid mammals resting on the water surface.

MARINE BIOLOGY
Unique Marine Environments

IMPACT: Burial of epibiota of hard-bottom area (Carpinteria Reef in PRC 3150) due to deposition of drilling muds and cuttings.

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 - b) Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding (Regional Water Quality Control Board, Central Coast Region). Such changes have been adopted by such other agency or can and should be adopted by such other agency.

FACTS SUPPORTING FINDING:

Because of their distance from the proposed drillsites, none of the Marine Refuges, Ecological Reserves or Preserves, or Areas of Special Biological Significance in the Santa Barbara Channel should experience impacts from routine, project-related activities. The only unique marine environment that may be affected is Carpinteria Reef, a subtidal/intertidal hard-bottom feature in PRC 3150 that is classified by Santa Barbara County and the California Coastal Commission as an environmentally sensitive habitat. The Reef is close enough to the proposed drillsite in PRC 3150 (the seaward edge is within about 300 feet of the proposed drillsite) to receive accumulations of drilling muds and cuttings discharged during exploratory drilling. Accumulations of several millimeters thickness of cuttings and several hundred microns thickness of drilling muds are possible at distances of 300 feet or more from the proposed drillsite. However, the actual accumulations on the reef are difficult to predict because they will depend largely on local ocean currents, which will vary in speed and direction over the course of the exploratory drilling period.

If drilling muds and cuttings accumulate at Carpinteria Reef, hard-bottom epibiota sensitive to sedimentation (or to components of the drilling muds) may be adversely affected.

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The Commission recognizes the principal role of the Central Coast District Water Quality Control Board in regulating the effects of drilling muds and cuttings on marine biota in the project area. The Commission's regulations for oil and gas drilling and production operations on State tide and submerged lands specifically provide:

The lessee shall dispose of those drill cuttings and drilling muds associated with drilling and production well work, in accordance with regulations promulgated by the appropriate Regional Water Quality Control Board. The method employed to dispose of the drill cuttings and drilling muds shall be submitted to the staff for approval along with the drilling mud program that is required in Section 2128(d)(1). (2 Cal. Admin. Code Section 2138).

MITIGATION MEASURES:

1. Onshore disposal of drilling muds and cuttings.

Since this measure will avoid the potential effect, it is deemed completely effective.

2. Regulation of mud and cuttings discharge:

- a. Restrict discharges to periods of high currents;
- b. Restrict discharge periods when currents are flowing away from hard-bottom areas; or
- c. Require shunting (e.g. piping at or close to the sea-bottom).

This measure is deemed to be partially to completely effective because it is dependent on environmental conditions at the time of discharge.

3. Require disposal in an approved ocean disposal site.

Since this measure will involve the transportation of the drilling muds and cuttings away from the sensitive areas, it will also avoid the potential effect and thus deemed completely effective.

CULTURAL RESOURCES

IMPACT: Possible cultural resources could be buried by drilling mud and cuttings discharges. Also, such resources could be damaged by drilling unit placement and/or anchoring systems.

FINDINGS: Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR.

FACTS SUPPORTING FINDINGS:

Fluctuating sea levels and the long history of human use of the project area make possible the presence of many types of cultural relicts on or just below the sea floor. These include shipwrecks, aboriginal sites and watercraft, and lost anchorage, or piers. All of these artifacts could be damaged by drill units or their anchors, and could be buried if under a mud/cuttings disposal site.

MITIGATION MEASURES:

The proposed mitigation includes a detailed survey of disposal, unit placement, and anchor sites for cultural remains. Any positive findings, as well as the sites already identified (primarily on site PRC 3150) will be surrounded by a "zone of protection." No discharges will be permitted within these zones. Unit and anchor placement will also be out of the zones. This will preserve suspected artifacts for future evaluation.

SOCIOECONOMICS
Commercial and Recreational Fisheries

IMPACT: Fishing operations will be excluded from an area with a 0.4 km (0.25 mile) radius around a jack-up drilling unit, and a 1.6 km (1.0 mile) radius around a semi-submersible drilling unit.

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 - b) Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency.

The California Coastal Commission has issued a general policy statement on conflicts between commercial fishing and drilling operations which suggests several mitigation measures which are included in the EIR.

FACTS SUPPORTING FINDING:

Fishing operations are restricted by the placement of drilling rigs and their associated anchoring systems. It is the consensus of many commercial fisherpersons that a jack-up rig excludes them from an area with a radius of approximately 1/4 mile, while the anchors used by semi-submersible rigs extend out for approximately 1 mile. In particular, access to the Carpinteria Reef fishing ground could be restricted.

MITIGATION MEASURES:

To limit the effects of rig placement the operator has agreed to follow the Coastal Commission's suggestion and use jack-up rigs on leases PRC 2894, 3150 and 3184. A jack-up is also proposed for PRC 2199, but may not be available, forcing use of a semi-submersible (Diamond M. Eagle). If this occurs, anchor buoys will be used, positioned below normal fishing net depth. The combination of these corrections will reduce the areas excluded from fishing to the absolute minimum.

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SOCIOECONOMICS
Commercial and Recreational Fisheries

IMPACT: The presence of the active drilling unit may require fisherpersons to alter courses, and set gear operations may be excluded from supply boat corridors.

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 - b) Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding. Such changes have been adopted by such other agency or can and should be adopted by such other agency.

The California Coastal Commission has issued a general policy statement on conflicts between commercial fishing and drilling operations which suggests several mitigation measures which are included in the EIR.

FACTS SUPPORTING FINDING:

The physical presence of a drilling unit and the traffic corridors used by supply boats effect commercial fishing operations in several ways. Vessels dragging trawl nets must alter course or haul-in and re-set gear more frequently to avoid drilling units and subsea structures. Purse seiners cannot set up their nets up-current near drilling units or supply boat corridors because of the danger of collision during lengthy haul-ins. Finally, set-gear operators (gill netters and trappers) find it prudent to avoid areas near drilling units to minimize damage from support boat traffic.

MITIGATION MEASURES:

To reduce or avoid these problems the operator of the project, Chevron, has adopted a "Contingency Plan for Contacts with Commercial Fisheries." The measures contained in that plan include notification in advance of drilling operations, establishment of support boat corridors and restriction of

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their use to daylight hours (except during an emergency), and use of helicopters for crew transport. The early notification of fisherpersons will be carried both in the Santa Barbara Marine Advisory Program Newsletter and the Notice to Mariners. This will allow fisherpersons to plan their operations to minimize any damage to their equipment. By restricting the times and routes of supply boat approach most fishing operations can be either left unaffected (much netting is done at night) or done in areas away from the support activities. Both of these procedures, in addition to the use of helicopters to reduce boat traffic will avoid the effects of this impact.

SOCIOECONOMICS
Commercial and Recreational Fishing

IMPACT: Fishing gear could be damaged or lost on remains of drilling equipment left after drilling unit is removed.

FINDINGS: Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR.

FACTS SUPPORTING FINDINGS:

When a unit is actively drilling a lot of equipment rests on top of the well, on the sea floor. This equipment guides the drill string, supports pumping equipment, and shuts off the hole in case of accidents. After drilling and other operations have been completed this well-head gear projects above the sea bed and could possibly catch fishing gear, causing damage or loss.

MITIGATION MEASURES:

A two-stage mitigation has been proposed for this project that will eliminate this impact.

1. A full survey will be done of the drilling site after operations are complete. This will identify all potentially hazardous equipment on the sea floor.
2. All of the equipment will then be removed, with well sealed and cemented in beneath the sea floor, so that nothing will be left that could damage fishing gear.

SOCIOECONOMICS
Visual

IMPACT: Direct impact of ocean views on residents, park visitors, and travelers within 8 km (5 mi) of the lease tracts

FINDING: Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR.

FACTS SUPPORTING FINDINGS:

Although individual perceptions of what is attractive and what is not attractive are highly subjective, most persons can agree that there are high, moderate, and low degrees of impact relative to four basic determinants of visual impact. The level of impact of projects on visual receptors was determined by applying site-specific weightings to these four separate determinants of visual impacts:

- 1) Viewing population (number of receptors),
- 2) Distance (from project to receptors),
- 3) Duration (period of time project is in place), and
- 4) Degree of change (comparison to existing view).

For purposes of the analysis, all visual effects were considered to be adverse because there is general agreement that increased industrial development in a scenic natural environment results in the degradation of the visual quality of relatively undeveloped landscapes and/or seascapes.

Leases 2199 & 2894

Based on the visual impact assessment, (Table 4.1-13 of the DEIR) the project is judged to have a low level of impact on the viewing population at Gaviota.

The average distance from the drillsites in PRCs 2199 and 2894 to the shore at Gaviota is 2.7 km (1.7 mi). The project is judged to have a high distance factor impact rating at Gaviota.

Exploratory drilling would take place at Gaviota for a period of approximately 42 months. Because this is between 24 and 48 months, the project would have a moderate impact rating on the visibility factor at Gaviota.

In the vicinity of Gaviota, Platform Helen is about 5.3 km (3.3 mi) west and Platform Hondo and the Exxon OS&T are located about 8.0 km (5.0 mi) southeast of the nearest exploratory drillsites. With these existing offshore facilities within the same viewing area, placement of the proposed exploratory drilling unit is judged to have a moderate impact on the degree of change factor at Gaviota.

Lease 3150

The visual impact assessment (Table 4.1-13) for this lease indicated a moderate level of impact on visual resources.

The project would be located about 0.8 km (0.5mi) from the nearest shoreline (Sandy Point). The project distance impact is considered to be high.

Because the exploratory drilling is intended to last about 10 months at Carpinteria (less than 24 months), its impact is rated low.

The degree of change for Carpinteria is judged to be moderate because of the proximity of two existing platforms: Hazel about 2.7 km (1.7 mi) southwest of the proposed drillsites; and Hilda, about 5.1 km (3.2 mi) to the west. Further, directly south, about 5.3 km (3.3 mi), is the Henry through Heidi Platform group.

Lease 3184

Table 4.1-13 indicates the project would have a high impact level on visual resources at Pitas Point.

The project exploratory drillsites would be located an average of about 2.3 km (1.45 mi) from the shore and would therefore have a high distance factor impact.

The exploratory drilling is proposed to last about 10 months in this area, and would therefore have a low impact on the duration factor.

Platform Heidi (in the Henry through Heidi Platform group) is located 9.8 km (6.1 mi) northwest of the nearest exploratory drillsites at Pitas Point, while Platform Gilda is 13.6 km (8.5 mi) to the south. With this relatively great distance, the degree of change factor is judged to be substantial in this area, and would get a high impact rating because the drilling unit would be introducing a high level change element into the area.

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Other Visual Considerations:

Flaring: Although natural gas flaring is not expected to be extensive, it can be quite visible if done at night, especially with wells drilled near shore.

Structure Lights: USCG regulations state that obstruction lights for Class "A" structures shall be of sufficient candlepower as to be visible at a distance of at least 9.3 km (5.8 mi) 90% of the nights of the year. In the 11th USCG District waters, this translates to a requirement for at least 6,500 candela. Although 6,500 candela would not create an inordinate amount of light onshore [a distance of about 0.8 km (0.5 mi) at Carpinteria], it would nevertheless be quite brilliant on the nighttime horizon. Because of structure size and proximity to shore, lights from the Carpinteria drillsites would be quite obvious and may be distracting to shoreline residences for the duration of exploratory drilling.

MITIGATION MEASURES:

The purpose of visual mitigations is to make obstrusive project features less evident by reducing their visibility or the degree to which they contrast with their surrounding environment.

Relocation to some extent is possible with the use of directional drilling techniques; however, relocation of the drillsites would not improve the visual affect appreciably because the drilling units would remain in view regardless of position in the lease tract. Because of the shallowness of the water at most of the drillsites, a jackup drilling unit of the KEY SINGAPORE type with its extremely long legs (410 ft less depth of water) would have to be used. Less conspicuous drilling units are not feasible under such circumstances.

Because the majority of the visitors to the State and County parks along the shoreline use the parks during summer months, there would be less impact on the viewing population if all drilling occurred between September and June; however, because of the high cost of relocating the drilling unit, this is not considered to be a practical mitigation measure. It would be most effective at the Carpinteria URIA (PRC 3150) where the drilling unit location would be especially close to shore and Carpinteria State Park. It may be possible to schedule the overall drilling program so as to minimize the number of summer months during which drilling occurs close to Carpinteria Beach.

1. Where necessary lighting on the drilling units is so bright as to be a visual problem to residents, the offensive lights would be shielded to prevent direct glare onto shore. Such selective shielding should not create a navigational hazard. In fact, the USCG has permitted total elimination of the shoreward side lights on Shell's Penrod 76 drilling unit about 3.7 km (6 mi) east of Gaviota, at the request of nearby residents (USCG, 1984).
2. Mitigation of the glare from occasional flaring would be accomplished by allowing such flaring to take place during daylight hours only.

SOCIOECONOMICS
Noise

IMPACT: Fog signal noise results in corrected LDN values above 75 dB or change in excess of 3 dB, projected to occur more than a few days per year

- FINDINGS:
- a) Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR.
 - b) Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding (U.S. Coast Guard). Such changes have been adopted by such other agency or can and should be adopted by such other agency.

FACTS SUPPORTING FINDINGS:

Noise is defined as unwanted or objectionable sound. Sound is a form of energy associated with pressure changes in an elastic medium such as air. It is characterized by its magnitude (energy level), frequency (pitch or tone), and duration.

Perceived loudness is a function of both energy and frequency content. At the same energy level, sounds at different pitches may have radically different perceived loudnesses. Consequently, instruments designed to measure acoustic noise are equipped with electrical filters that approximate the frequency response of the human ear. In this way, measurements may be made that are reasonably representative of human perception levels.

Measurement of sound power in this study was by use of the "A" weighted decibel (dB). An increase of 3dB represents a doubling of the sound power, while an increase of about 10 dB is needed to double the perceived loudness. In addition, noise must be placed in the context of community noise exposure and group response to long-term noise exposure. The day-night average noise level (LDN) is used for this.

Three distinct noise sources from the project were considered: (1) drilling and related operations; (2) operation of transport boats (supply and personnel); and, (3) fog-horn operation.

The impact analysis considers the probable levels of generated noise, the reduction in noise level as a function of distance to the onshore receptor sites under consideration, and the existing uses and noise environments of these sites. The degree of impact is then judged in terms of the resultant LDN at the receptor with the addition of project noise, including any appropriate adjustments recommended by the California Office of Noise Control (CONC) (1976) for different uses, community settings, and source characteristics.

For this EIR, both potential levels and durations of exposure to noise have been considered in assessing the significance of impacts. A corrected threshold LDB value of 60dB represents a change from the normally acceptable into the conditionally acceptable range. If the threshold is exceeded on a calculated change of less than 1 dB, it is not considered significant: the environment must already be relatively noisy, and likely subject to fluctuations larger than the calculated difference. If the change is from 1 to 3 dB and of long duration (e.g., likely to occur for weeks or months) or more than 3 dB for more than two or three days, the impact is rated as significant.

For activities related to Lease PRC 2199 and Lease PRC 2394 (Gaviota) noise impacts from all sources were found to be insignificant for the two receptor sites: Vista Del Mar School and Gaviota Beach State Park. Lease PRC 3150 (Carpinteria) and Lease PRC 3184 (Pitas Point) would have significant impacts on local receptors, but only from the fog-horn operation.

MITIGATION MEASURES:

These impacts could be mitigated by:

1. Coast Guard relaxation of fog signal requirements to allow a 1/2 mile fog-horn instead of the "two-mile" signal which is proposed; or,
2. Scheduling of operations to avoid peak fog months.

The first of these measures would reduce noise at the receptor sites to below the significance level. It would reduce not only the level of noise, but also frequency of use. Implementation of this measure is dependent on a decision from the Coast Guard. The second mitigation measure is judged to be only partially effective since foggy weather is not entirely predictable. Activities underway during the least foggy months may still experience fog.

II. IMPACTS RELATED TO ACCIDENTS

Explanatory Notes:

Many of the impacts which would result from abnormal events during operation of the project derive from oil spill impacts. Because the basic analysis of impacts and mitigation measures for oil spills have applicability for a large number of the accident-related impacts, the following overview analysis is presented here to avoid unnecessary repetition.

After the discussion of oil spills, each specific impact due to accidents is then discussed individually, by resource affected. An additional issue, System Safety and Reliability, is also discussed in detail for accident-related impacts.

Oil Spills - Overview

During exploratory drilling, an oil spill could occur as a result of a well blowout, a vessel ramming a drilling unit, or collision of an oil tanker in the vicinity of the Getty mooring. The likelihood of an oil spill resulting from any of these potential accidents is considered "unlikely," defined as possible, but not likely within the life of the project (Section 4.2 of the DEIR).

The significance of environmental impacts due to an oil spill, in the unlikely event one occurred, would be a function of the type and quantities of oil spilled, trajectories and spill landfall locations, and the effectiveness of spill response measures. The significance and duration of spills are also influenced by weathering processes, including spreading, drift, evaporation, dissolution, dispersion, emulsification, sedimentation, biodegradation, and photooxidation.

Data on winds, tides, and water currents were used to perform an oil spill trajectory analysis for three spill sizes for each lease tract. Oil may reach shore within 4 h for PRCs 2199 and 2894, 45 min for PRC 3150, and 2 h for PRC 3184. (Section 4.2.1 of the DEIR)

The most likely landfall of an oil spill in PRCs 2199 and 2894 is between El Capitan Beach State Park to the east and San Augustine to the west.

Conditions at PRC 3150 would most likely cause a landfall between Rincon Point to the south and east and Santa Barbara to the north and west; however, landfall may occur as far south as Pitas Point and as far to the north and west as Gaviota.

Conditions at PRC 3184 would most likely cause a landfall between Ventura to the south and Summerland to the north and west. Approximately 32 km (20 mi) of coast that could be affected consists of 40% straight and narrow sandy beaches, 10% sand-gravel-cobble beaches, 30% riprap and seawall, and 20% wetlands. Most beaches are backed by cliffs.

The California Public Resources Code and the State Lands Commission implementing regulations (2 Cal. Admin. Code Sections 2125-2142) govern and control oil and gas activities on state lands. Specifically, the "Regulations for Oil and Gas Drilling and Production Operations on State Tide and Submerged Lands" (SLC, 1980) pertain to oil and gas drilling operations on state oil and gas leases located on state tide and submerged

lands under the jurisdiction of the State Lands Commission, and are applicable to operations conducted from mobile rigs, fixed offshore structures and upland locations serving these leases. The following specific references to the Administrative Code are incorporated herein by reference: (1) Article 3.2 -Oil and Gas Drilling Regulations; (2) Article 3.3 -Oil and Gas Production and Regulations; (3) Article 3.4 -Oil and Gas Drilling and Production Operations: Pollution Control. Article 3.2 begins with the general requirement:

"All drilling operations conducted on State oil and gas leases shall be carried on in a proper and workmanlike manner in accordance with accepted good oil-field practice.

Authority: Public Resources Code Sections 6103, 6108, 6216, 6301, and 6873(d), and Government Code Section 11152.

Reference: Public Resources Code Sections 6005, 6216, 6301, 6871, 6871.1 and 6873(d)."

The regulations cited above further cover many safety provisions of exploratory drilling. In particular, they address:

- well casing requirements
- casing cementing requirements
- pressure testing of casing
- blowout prevention equipment requirements
- pressure testing of blowout prevention equipment
- inspection and maintenance
- supervision and training
- hydrogen sulfide program
- mud program
- drilling practices
- plugging and abandonment of wells
- pollution control
- disposal of muds and cuttings
- oil spill contingency plan
- critical operations and curtailment plan

The regulations as a body significantly reduce the likelihood of an oil spill. In addition to engineering requirements (blowout preventers, etc.), training and supervision competency, inspection and equipment testing, the regulations require the submission to and approval by Commission staff Critical Operations and Curtailment Plan and an Oil Spill Contingency Plan prior to any drilling or production activities.

Critical operations are those where the potential for a significant spill exists. A Critical Operations and Curtailment Plan (COCP) is required to minimize certain critical drilling operations during periods when conditions are such as to impede spill containment and cleanup operations, communications, or transport of material to the drilling unit in an emergency. Chevron has an approved COCP on file with the State Lands Commission for their leases.

Weather conditions will be monitored daily while conducting drilling work on a well capable of flowing oil or gas to the surface. If a critical operation is in progress or is about to be initiated when one of these circumstances arises, the operator will decide to cease, limit, continue, or not commence the critical operation. Chevron will take into account whether immediate cessation of the critical operation might endanger the well or increase the risk of oil spillage.

Chevron has prepared an "Oil Spill and Emergency Contingency Plan" for its Santa Barbara Channel State leases (Chevron, 1983). The basic purpose of this plan is to establish procedures, responsibilities, and actions to be taken to provide for rapid and effective response by Chevron personnel and contractors in the event an oil spill should occur during the exploratory drilling operations. The plan was prepared to comply with the Regulations for Oil and Gas Drilling and Production Operations on State Tide and Submerged Lands, Article 3.4., and has been approved by the State Lands Commission.

Several other existing contingency plans apply to the proposed project.

The National Oil and Hazardous Substances Pollution Contingency Plan, more commonly referred to as the National Contingency Plan (NCP), provides the framework and mechanism for Federal response to actual or potential pollution incidents. Briefly, this national plan and its annexes provide for: assignment of responsibilities among Federal agencies in coordination with State and local agencies; procedures for identifying, containing, dispersing and removing oil and hazardous substances; a procedure for coordinating scientific support of cleanup operations; assessment of damage and research efforts; and a system of surveillance and reporting to give agencies rapid notification of discharges. The plan covering this area was published in 1979 by the Captain of the Port of Los Angeles-Long Beach. It has been periodically updated since then (Cdr. L. N. Onstad, 1984, personal communication, USCG).

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The State of California Oil Spill Contingency Plan was published in 1983. It provides the organizational framework within the State for spill contingency planning and response. It assigns responsibility for coordination of State response to coastal oil spills to the Director, CDFG. The State plan also requires local governments to prepare local contingency plans for oil spill response. Santa Barbara County is in the process of completely updating and revising its plan in response to this requirement and the major expansion of offshore oil and gas development occurring in the County. The CCC (1983b) has developed a Policy Statement on Oil Spill Response Measures.

The oil and gas industry assumes primary responsibility for spill abatement response and cleanup from its facilities and has formed an Oil Spill Cooperative comprising member companies operating in the geographic area. Clean Seas is the local cooperative and has prepared a contingency plan (Clean Seas, 1983). The Clean Seas Contingency Plan establishes an organizational framework for response to spills of a member company, provides detailed response procedures for specific sites along the coast, and has detailed lists of its own equipment as well as support equipment available through local contractors. It also serves as a training document used in conducting spill response training for operator personnel.

In summary, exploratory drilling is conducted according to appropriate State and Federal rules and regulations including all applicable safety and pollution standards. For example, blowout prevention (BOP) equipment will be used throughout the project period. Also, an Oil Spill Contingency Plan, including procedures for containment and cleanup of oil spills, and a Critical Operations and Curtailment Plan have been filed with and approved by the Commission staff. Thus, the project has been designed and will be carried out in such a manner as to greatly decrease the oil spill risk or the amount of oil released in the event of an oil spill. These protections substantially lessen the environmental impacts which derive from the risk of an oil spill.

SYSTEMS SAFETY AND RELIABILITY

IMPACT: Impact on vessels calling at Getty five-buoy mooring and proposed terminal near PRC's 2199 and 2894.

FINDINGS: Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR.

FACTS SUPPORTING FINDINGS:

The present Mooring Master boarding area at the Getty five-buoy mooring near Gaviota is in the area of the proposed drillsite for PRC's 2199 and 2894. Assuming that all proposed wells are drilled and that there are no interruptions in the drilling program, the maximum amount of time a drilling unit will be in place is approximately 23 months on PRC 2199 and 19 months on PRC 2894. Over that time period, approximately 42 vessels may call at the Getty mooring. All of these vessels would have to pass within 4.8 km (3 miles) of the drilling unit. Captain R.H. Brandenburger of Brandenburger Marine, the firm that supplies the Mooring Masters for the vessels calling at Getty, states that the proposed project would not present a hazard to its operations. Mooring Masters would be aware of the presence and location of the drilling units and the Mooring Master boarding area would be adjusted as necessary. In addition, vessels approaching the Mooring Master boarding area and transiting to and from the mooring would be operating at low speeds.

The consequence of a collision, if it resulted in a 1 to 2 tank oil spill, would be a moderate to significant impact. However, the probability analysis concluded that the potential for such a collision fell into the "unlikely" category.

The only marine terminal proposed for the future that might be affected by drilling is the Getty Terminal at Gaviota. This facility falls into the same category (unlikely) as the Mooring Master when collision potential was analyzed. Absent more specific design information it is not possible to evaluate spill potential and hence significance of impact. A Supplemental EIR, which will address these issues in more detail, is currently being prepared by Santa Barbara County.

CALIFORNIA	152.77
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Because the proposed drillsites on PRC's 2199 and 2894 are near the Getty five-buoy mooring and proposed terminal, it is recommended that Chevron inform Getty and Branderburger Marine of the timing, location, and intended movements of drilling units and support vessels in advance so that adjustments can be made accordingly. Barges and tankers calling at the mooring/terminal should also be notified in advance of the location and intended movements. This is regularly done through the USCG's local Notice to Mariners which is published weekly and the Broadcast to Mariners which is regularly broadcast over radio to the vessels. Radio contact should be made with any vessels approaching the area. It is felt that implementing these mitigation measures would reduce the likelihood of collisions from unlikely to rare, thus substantially lessening the potential impact associated with this issue.

SYSTEMS SAFETY AND RELIABILITY

IMPACT: Support vessels striking Carpinteria Reef near PRC 3150

FINDINGS: Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR.

FACTS SUPPORTING FINDINGS:

Supply/crew boat groundings are addressed because of the proximity of the proposed drillsite in PRC 3150 to Carpinteria Reef. It is not considered a problem for the other lease tracts. The reef is approximately 100 m (328 feet) north of the proposed drillsite. The reef is exposed at times during low tides and is marked on navigational charts. A supply or crew boat which hits the reef could spill some or all of its fuel. Supply boats have the capacity to carry approximately 113,000 gallons of fuel, while crew boats can carry 2,400 gallons. The draft of a supply boat is 10 to 16 feet, while the draft of a crew boat is approximately 10 feet. Both supply and crew boats are highly maneuverable; however, the possibility does exist that a supply or crew boat could have an engine or steering failure and drift onto the reef, resulting in a fuel spill. Although such an accident could be classified as having major consequences, this is categorized as unlikely.

To mitigate these potential impacts procedures should be established by Chevron to keep the supply and crew boats away from the reef. The crew should be briefed on the potential hazard. Procedures should establish that the boats approach and depart the drilling unit from the west or south side away from the reef. In addition, some consideration should be given to temporarily marking the extent of the reef by buoys. Support boats should not operate in severe weather.

The low probability for accident occurrence and the adoption of these mitigation measures largely reduces impacts due to a fuel spill at Carpinteria Reef.

SYSTEMS SAFETY AND RELIABILITY

IMPACT: Blowout

FINDINGS: Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR.

FACTS SUPPORTING FINDINGS:

Offshore oil and gas structure can and have been involved in various types of mishaps. These accidents can result in various types of impacts, with one of the most severe being a blowout.

A blowout is commonly defined as the uncontrolled discharge of oil or gas from a drillhole. Such an event could occur when the reservoir pressure exceeds the downward pressure of the mud column in a well. This can be caused by encountering abnormal reservoir pressure, loss of circulation, swabbing the well, or not keeping the hole filled with mud at all times. In addition, there must be a failure of the crew to operate the BOP equipment properly or a malfunction of the BOP equipment which will cause the loss of well control and allow it to blow out. Geologic conditions that could lead to blowouts have been identified in all lease tracts surveyed. All drilling units will be equipped with BOP equipment.

Most blowouts involve the release of gas; historically, only a small percentage have resulted in the discharge of oil to the environment. A large percentage stop flowing naturally and relatively quickly because of formation plugging or the collapse of the hole. Nevertheless, because of the potential for uncontrolled release of oil and the chance that large quantities of flammable and possibly toxic gases may be discharged, blowouts are considered the most spectacular, expensive, and feared operational hazard of offshore oil and gas activities. Consequences may include fires, explosions, casualties, serious property damage, cratering of the seafloor and localized sediment disruption, and both air and water pollution.

From 1970 through April 1983, after the 1969 Platform "A" blowout, it is estimated that approximately 1000 wells have been drilled in the Santa Barbara Channel (Chevron World, 1980; CCC, 1983). During this period, there have been no blowouts

resulting from drilling. This statistical data base does not indicate that the probability of a blowout resulting from drilling is zero, nor is the data base sufficiently large to demonstrate a particularly low probability of a blowout. Application of the Poisson probability distribution to the above statistics indicates that, at the 95% confidence level, the probability of a blowout per well is less than 3×10^{-3} , or less than one blowout per 333 wells. The actual probability indicated by local experience is less than this upper bound, but how much less cannot be derived from the data.

A fire or explosion from a blowout should not affect the general public on shore but could cause major damage to the drilling unit and injury or loss of life to workers. A crude oil fire could produce heavy smoke with soot being deposited downwind. This is classified as a rare occurrence with major consequences.

Exposure to H₂S from a blowout is a hazard that is treated under separate findings (see H₂S cloud - PRC 3150).

An oil spill resulting from a blowout is categorized as an unlikely event. The significance of impact would be classified as high for spills over 100,000 gallons. More specific probability and consequence information on oil spills, whether originating from blowouts or from other accidents, is contained in the Oil Spills - Overview and in the findings related to oil spill effects on particular resources. In brief, the shoreline impacts would be as follows:

PRC's 2199 and 2894

Conditions here would most likely cause landfall between El Capitan Beach and San Augustine, approximately 18 miles of coast.

PRC 3150

Conditions here would most likely cause a landfall between Rincon Pt. and Santa Barbara, approximately 20 miles of coast.

PRC 3184

Conditions here would most likely cause a landfall between Ventura and Summerland, approximately 20 miles of coast.

The project will conform to applicable regulations on blowout prevention equipment and oil spill response contained in State Lands Commission "Regulations for Oil and Gas Drilling and Production Operations on State Tide and Submerged Lands" (2 Cal. Admin. Code Sections 2125-2142).

Blowout prevention (BOP) equipment is used to maintain well-flow control throughout the project period. The system consists of three ram preventers rated at 10,000 psi and an annular preventer rated at 5,000 psi. When necessary, the ram preventers are hydraulically activated to close and seal around the drill pipe if needed. The annular preventer consists of a flexible rubber packer that can seal around drill pipe, Kelley's, or it can completely seal off the open hole.

The BOP equipment will be installed during various phases of the drilling process. A diverter system is installed immediately after the drilling unit is attached to the ocean floor with the conducted pipe. A second annular/diverter system is installed when drilling reaches 500 feet below the ocean floor. At 1,500 feet below the ocean floor and after a 13-3/8-in casing has been set and cemented in place, a 10,000-psi Class IV BOP system is installed. This procedure will be followed on all lease tracts except PRC 2894, where a 2,000-psi BOP system will be installed when the borehole reaches 1,500 feet below the ocean floor and another 10,000-psi BOP system will be installed when the hole reaches 2,960 feet below the ocean floor.

Upon installation of the BOP system, the equipment will be tested before drilling is continued. Installation, testing, and operation of the BOP system will comply with Chevron Operating Instructions and State Lands Commission and Division of Oil and Gas Regulations.

Refer to Oil Spills - Overview discussion for additional detail regarding State Lands Commission regulations on oil spill response.

The safety measures required by the State Lands Commission will reduce the likelihood of a blowout as well as lessen the consequences should one occur. The impacts due to blowout are therefore considered to be substantially avoided or lessened.

SYSTEMS SAFETY AND RELIABILITY

IMPACT: H₂S cloud reaching residences near PRC 3150

FINDINGS: Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR.

FACTS SUPPORTING FINDINGS:

One hazard of a well blowout is the possibility of exposure to H₂S gas. This exposure risk is highest in the immediate vicinity of the drilling unit; however, because of the close proximity to shore of these wells, it is also possible, although unlikely, that the general public could be exposed.

The physiological response to breathing H₂S is governed by the ambient gas concentration and by the exposure duration; that is, the dose. Acute effects of H₂S will only occur above a threshold concentration value because of the body's ability to detoxify the gas. This threshold value varies among individuals. The U.S. Department of Health Services and U.S. Department of Labor (1978) call this the Immediately Dangerous to Life or Health (IDLH) level and specifically define it as the maximum level from which one could escape within 30 minutes without any escape-impairing symptoms or any irreversible health effects. The IDLH level for H₂S is listed at 300 ppm.

A typical distance to the "safe" area (where concentrations are 400 ppm, the concentration where immediate fatalities may occur) would be about 1.6 km (1 mile). The distance to 300 ppm would be slightly greater.

For the two wells on PRC 3150, the hazard area would overlap the local shore community. People within the 400 ppm area would be susceptible to possible irreversible health effects or even death. Some people outside of this area could also have severe effects while others may only have minor symptoms such as those described above. The probability of an accident releasing H₂S which reaches the beach in IDLH concentrations would be extremely low.

A blowout would have to occur in a gas field with a high concentration of H₂S. The blowout would have to be of a duration to release enough gas to cause a problem, and the wind

would have to be blowing in the right direction. The likelihood of these happening concurrently is classified as rare with the consequences severe. Mitigation measures include:

1. Development of a risk management plan which exceeds current requirements, with particular emphasis on procedures to be followed during release of hazardous substances;
2. Review layout of drilling unit facilities in terms of safety consideration; and,
3. Training and notification of public.

A contingency plan for H₂S has been submitted to the State Lands Commission, as required by State Lands Commission "Regulations for Oil and Gas Drilling and Production Operations on State Tide and Submerged Lands." (2 Cal. Admin. Code Sections 2125-2142)

Chevron's H₂S Contingency Plan is contained as an appendix to the "Oil Spill and Emergency Contingency Plan for Santa Barbara Channel State Leases" which is on file with the State Lands Commission. The H₂S Contingency Plan includes a training program for all working personnel and supervisors in the proper procedures for responding to an emergency. Operating crews will undergo an H₂S drill each week in conjunction with other required drills. An alarm system activated by sensors will be present on the drilling unit to warn of H₂S concentrations of 10 ppm or more. Appropriate agencies will be notified immediately if concentrations exceed 10 ppm. Scott Air Paks and air capsules will be available to equip all personnel on the drilling unit in the event of an emergency. Equipment for retrieving and resuscitating incapacitated personnel will also be maintained on the drilling unit.

This plan would reduce the risks of exposure to H₂S, and has been incorporated into the project.

MARINE BIOLOGY
Intertidal Communities (Marshes)

IMPACT: Loss of primary and secondary productivity; loss of nesting, rearing, and feeding habitats for birds; and loss of spawning and rearing habitats for fishes and invertebrates from an oil spill near PRC 3150 [Carpinteria Marsh (Goleta Slough)] and PRC 3184 (Santa Clara River and Ventura River mouths)

FINDINGS: Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR.

FACTS SUPPORTING FINDINGS:

Oil spills which have occurred in nearshore areas have generally had their greatest impacts on intertidal environments and organisms. The significance and duration of impacts in these areas is generally a function of biological and geomorphologic characteristics of the habitat. Habitats with low energy regimes have large biological populations (e.g., salt marshes, sheltered tidal flats, sheltered rock coasts), high oil residence times, and are the most sensitive to oil pollution. Recovery of these areas from a spill is expected to occur slowly over many years. Gravel beaches and mixed sand and gravel beaches generally have small biological populations but oil which reaches these areas is resistant to cleaning due to sediment penetration.

Shoreline types in the area of the proposed drilling consist mainly of sandy beaches, sand-gravel-cobble beaches, and rocky intertidal areas. Areas of seawall and riprap are also fairly common in the vicinity of PRCs 3150 and 3184. Of these shoreline types, rocky intertidal areas are of most concern from a biological point of view. Other sensitive areas include marshes at such locations as Carpinteria and Goleta Sloughs.

Exploratory drilling is conducted according to appropriate State and Federal rules and regulations including all applicable safety and pollution standards. Thus, the project has been designed and will be carried out in such a manner as to greatly decrease the oil spill risk or the amount of oil released in the event of an oil spill. These

protections substantially lessen the environmental impacts which derive from the risk of an oil spill. Please refer to "Oil Spills - Overview" section preceding for a thorough discussion of this finding.

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MINUTE PAGE	2527

MARINE BIOLOGY

Intertidal Communities (Rocky Shorelines)

IMPACT: Smothering and death of shoreline communities from an oil spill

FINDINGS: Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR.

FACTS SUPPORTING FINDINGS:

Spills originating from PRCs 2199 and 2894 and moving in a westerly direction were projected to reach shore after approximately 3 to 4 h (depending upon spill size) along the coastal segment between San Augustine and El Capitan State Beach, part of the South Coast Intertidal Preserve. Due to the relatively undisturbed nature of the rocky intertidal zones present, oil coming ashore in these rocky coastal areas would result in significant impacts upon biota present. Sessile species such as barnacles may be smothered; mobile forms are likely to be trapped in the surface slicks of tidepools or immobilized by coated oil. Secondary impacts could alter community structure over the short term.

Oil released from PRC 3150 and moving in a west direction was projected to hit the shoreline between Goleta/Santa Barbara and the coast immediately west of Summerland. Unique marine environments in this area include Goleta Point, Goleta Slough, and the More Mesa area. The rocky intertidal areas of this region are of concern for reasons noted above.

Oil released from PRC 3150 and moving in an east direction was projected to hit the shoreline between Carpinteria and Rincon Point. Unique marine environments in this segment of the coast include Carpinteria Marsh (El Estero Slough), Carpinteria Pier, and Carpinteria Reef. The rocky intertidal/subtidal habitat of Carpinteria Reef, considered as one of the most diverse intertidal areas in Santa Barbara County south of Point Arguello, would be impacted from oil contamination.

Exploratory drilling is conducted according to appropriate State and Federal rules and regulations including all applicable safety and pollution standards. Thus, the project has been designed and will be carried out in such a

manner as to greatly decrease the oil spill risk or the amount of oil released in the event of an oil spill. These protections substantially lessen the environmental impacts which derive from the risk of an oil spill. Please refer to "Oil Spills - Overview" section preceding for a thorough discussion of this finding.

MARINE BIOLOGY
Intertidal Communities (Sandy Beaches)

IMPACT: Coating of the beach by oil and incorporation into sediments, resulting in death of indigenous organisms

FINDINGS: Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR.

FACTS SUPPORTING FINDINGS:

Spills originating from PRCs 2199 and 2894 and moving in a westerly direction were projected to reach shore after approximately 3 to 4 h (depending upon spill size) along the coastal segment between San Augustine and El Capitan State Beach, part of the South Coast Intertidal Preserve. Due to the relatively undisturbed nature of the rocky intertidal zones present, oil coming ashore in these rocky coastal areas would result in significant impacts upon biota present. Sandy beaches within this coastal segment could also experience significant impact, but low population numbers and proposed cleanup methods would tend to minimize the deleterious effects normally associated with spilled oil.

Exploratory drilling is conducted according to appropriate State and Federal rules and regulations including all applicable safety and pollution standards. Thus, the project has been designed and will be carried out in such a manner as to greatly decrease the oil spill risk or the amount of oil released in the event of an oil spill. These protections substantially lessen the environmental impacts which derive from the risk of an oil spill. Please refer to "Oil Spills - Overview" section preceding for a thorough discussion of this finding.

MARINE BIOLOGY
Intertidal Communities (Kelp Beds)

IMPACT: Loss of productivity of kelp beds from an oil spill;
near PRCs 2199 & 2894

FINDINGS: Changes or alterations have been required in, or
incorporated into, the project which avoid or
substantially lessen the significant environmental
effect identified in the Final EIR.

FACTS SUPPORTING FINDINGS:

An episode event such as an oil spill could potentially
impact several unique marine environments in the Santa Barbara
Channel area, depending upon the size of the spill and the wind
and wave conditions present.

Spills originating from PRCs 2199 and 2894 and moving in
a westerly direction were projected to reach shore after
approximately 3 to 4 h (depending upon spill size) along the
coastal segment between San Augustine and El Capitan State
Beach, part of the South Coast Intertidal Preserve. In the
nearshore zone, the extensive kelp beds of this region are not
expected to have significant impacts, aside from a loss of
primary productivity due to the presence of a natural mucus
covering on blades and stipes.

Exploratory drilling is conducted according to
appropriate State and Federal rules and regulations including
all applicable safety and pollution standards. Thus, the
project has been designed and will be carried out in such a
manner as to greatly decrease the oil spill risk or the amount
of oil released in the event of an oil spill. These
protections substantially lessen the environmental impacts
which derive from the risk of an oil spill. Please refer to
"Oil Spills - Overview" section preceding for a thorough
discussion of this finding.

CALIFORNIA STATE	152.90
STATE PRINT	2531

MARINE BIOLOGY
Benthos

IMPACT: Lethal and sublethal effects on benthic infauna and epifauna from oil which reaches the sea bottom

FINDINGS: Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR.

FACTS SUPPORTING FINDINGS:

Spilled petroleum which does not evaporate or wash ashore, or is not recovered by mechanical means, is eventually incorporated into bottom sediments. Oil which reaches the benthos will be transported as nonbuoyant oil residues, through absorption into particulate matter, or through incorporation into the food chain and elimination as fecal pellets which sink to the bottom. Generally, the oils undergo extensive modification before sedimentation occurs.

Oil which is incorporated into sediments becomes a chronic source of pollution, unlike hydrocarbons in the water column which tend to be diluted and dispersed. Sediment hydrocarbons become available to benthic and demersal organisms through ingestion and/or incorporation across gill membranes. For organisms (e.g., molluscs) without the ability to metabolize hydrocarbons, concentrations can be reached in the tissues that possibly induce sublethal effects and possible mortality.

It is suspected that absorption onto particulate matter is one of the major pathways that oil spilled on the surface reaches the benthos. Hence, the amount of oil which is deposited in an area following a spill will be a function of the total concentration of suspended material in the water column, depth of the water column, and current velocities.

The significance and types of impacts from oil on benthic communities will be a function of the degree of weathering of the oil. Oil which sinks before it has significantly weathered will contain toxic hydrocarbons which can be accumulated by benthic organisms; oil which is accumulated by demersal fishes and shellfishes can result in contamination of these species. Highly weathered oil will be a concern from the standpoint of coating and smothering; this is of particular concern in hard-bottom areas, especially around such features as Carpinteria Reef.

Exploratory drilling is conducted according to appropriate State and Federal rules and regulations including all applicable safety and pollution standards. Thus, the project has been designed and will be carried out in such a manner as to greatly decrease the oil spill risk or the amount of oil released in the event of an oil spill. These protections substantially lessen the environmental impacts which derive from the risk of an oil spill. Please refer to "Oil Spills - Overview" section preceding for a thorough discussion of this finding.

MARINE BIOLOGY
Marine Birds

IMPACT: Coating of birds by oil can be fatal; hatching success can be reduced if eggs come in contact with oil; sublethal stress can also be induced through ingestion or coating of oil; see Unique Marine Environments: Endangered Species

FINDINGS: Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR.

FACTS SUPPORTING FINDINGS:

Oil spills pose a significant threat to marine and shore birds. Because of the migratory nature of many of these species, the significance of any immediate impacts from a spill will depend on the time of year that a spill occurs, the species present, and their numbers. These factors, in addition to the nature of the crude oil spilled during the Santa Barbara blowout in 1969, may have accounted for the fact that only 3,000 birds were killed in the incident.

In addition to the immediate dangers from coating by oil, birds are also subject to chronic, long-term effects from oil that remains in the environment (e.g., in marshes). For example, small amounts of oil on a bird's plumage which is transferred to the eggs during incubation has been shown to kill developing embryos. Birds can also accumulate oil in the diet and through preening.

An oil spill that impacts prime bird habitat (e.g., in marshes), even during periods of low use, may pose future problems. Birds have been observed to leave an area that has been impacted by a spill. The EIR notes that such movements would be most severe during the breeding season or in winter, although the significance of such impacts is unknown.

Exploratory drilling is conducted according to appropriate State and Federal rules and regulations including all applicable safety and pollution standards. Thus, the project has been designed and will be carried out in such a manner as to greatly decrease the oil spill risk or the amount of oil released in the event of an oil spill. These

protections substantially lessen the environmental impacts which derive from the risk of an oil spill. Please refer to "Oil Spills - Overview" section preceding for a thorough discussion of this finding.

CALENDAR DATE	152.94
MINUTE PAGE	2535

MARINE BIOLOGY
Marine Mammals

IMPACT: Lethal and sublethal effects on marine mammals by coating or ingestion of oil;/Haul-out areas

FINDINGS: Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR.

FACTS SUPPORTING FINDINGS:

Marine mammals that could be potentially affected by an oil spill from the proposed project locations include pinnipeds, cetaceans, and transient Sea Otter. Marine mammals unable to avoid contact with oil could suffer from mechanical fouling, inhalation, or ingestion problems that could result in sublethal or lethal affects.

Sea Otter is by far the marine mammal most susceptible to impact from oil spills, but this marine mammal is transient in the region. If an otter is unable to avoid contact with a slick and its pelage is heavily oiled, it could die of exposure within hours. Unlike other marine mammals, Sea Otters lack a protective blubber layer and rely only on dense fur for insulation. If the fur is soiled or matted by oil, it loses its thermoregulative properties. However, cleaning activity may also jeopardize the otter. If the oil has large amounts of light aromatic hydrocarbons, the otter may ingest levels toxic enough to induce illness or death. Because the present breeding range of Sea Otter is kilometers north of Point Conception and Sea Otter traveling and inhabiting areas south of this point are rare, it is unlikely that perpetuation of the California Sea Otter population would be threatened by the unlikely event of a massive oil spill from exploratory drilling operations within the proposed lease tracts.

The species of pinnipeds most likely to be impacted by a potential oil spill because of their expected overall abundance within the vicinity of the proposed drillsites are Sea Lion and Harbor Seal. An important Harbor Seal haul-out area exists at the Chevron pier at Carpinteria. It is likely that Harbor Seal in this area would be oiled if a spill occurred in PRC 3150.

All seals have the ability to detect and avoid oil slicks. However, it has been found that breeding male and female seals swam through oil to reach rookery beaches during the breeding season.

Surface contact with oil has a much greater impact on seals than absorption of the petroleum. Controlled experiments in which seals were exposed to floating oil resulted in reversible eye damage. Fur Seals, which rely in part on their pelage for insulation, would be subject to an increase in metabolism if their pelts became fouled with oil. This increase in metabolic rate could cause enough additional stress to already stressed or weak animals to cause death. Physical stress could also be caused by the ingestion or respiration of toxic hydrocarbons..

Secondary impacts to seals could result from man's response activities following a spill. The EIR notes that seals disturbed on San Miguel Island retreated into the sea and did not return for from one to several days. Such impacts could be significant behavioral disturbances during the breeding season.

It is unlikely that oil spills will substantially threaten cetaceans. A massive oil spill could result in mechanical fouling of the baleen, oil toxicity from ingestion, respiratory difficulties, and irritation of the eyes, skin, and mucous membranes. However, unless a cetacean were absolutely confined within an oil spill area, it would sustain only minor impacts from oil contact and would generally recover from these effects. Observations suggest that either cetaceans avoid surfacing in oil slicks or change their respiratory pattern by taking shorter breaths and staying submerged longer when traveling through oil slicks. Oil does not tend to cling to and foul cetacean skin. Studies indicate that the levels of oil fouling by skin contact and accidental ingestion would not reach toxic levels and any irritation would likely be only temporary. The only baleen whale likely to transit the area in significant numbers is the Gray Whale; mechanical fouling of the baleen resulting in feeding interruption is not a major concern because Gray Whale do not generally feed during their migration past the proposed lease tracts.

Exploratory drilling is conducted according to appropriate State and Federal rules and regulations including all applicable safety and pollution standards. Thus, the project has been designed and will be carried out in such a manner as to greatly decrease the oil spill risk or the amount of oil released in the event of an oil spill. These protections substantially lessen the environmental impacts which derive from the risk of an oil spill. Please refer to "Oil Spills - Overview" section preceding for a thorough discussion of this finding.

MARINE BIOLOGY
Endangered Species

IMPACT: Loss of foraging and nesting habitats for endangered inhabitants (Light-Footed Clapper Rail, Belding's Savannah Sparrow, California Least Tern) of marshes and tidal estuaries from an oil spill; oiling of Salt Marsh Bird's Beak; coating of endangered avifauna resulting in diminished hatching success, sublethal stress, or fatality.

FINDINGS: Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR.

FACTS SUPPORTING FINDINGS:

An oil spill from PRC 3150 would impact the shoreline between Goleta/Santa Barbara and the coast immediately west of Summerland.

Oil released from PRC 3150 and moving in a west direction was projected to hit the shoreline between Goleta/Santa Barbara and the coast immediately west of Summerland. Unique marine environments in this area include Goleta Point, Goleta Slough, and the More Mesa area. The extensive marsh and estuarine habitat of Goleta Slough would be seriously damaged by the entry of spilled oil. In addition to providing habitat for numerous resident and migrant species, Goleta Slough is also prime habitat for two endangered species--Salt Marsh Bird's Beak and Belding's Savannah Sparrow. Impacts associated with habitat fouling by oil would pose a serious threat to the continued existence of these species within the slough.

Oil released from PRC 3150 and moving in an east direction was projected to hit the shoreline between Carpinteria and Rincon Point. Unique marine environments in this segment of the coast include Carpinteria Marsh (El Estero Slough), Carpinteria Pier, and Carpinteria Reef. Nesting and foraging habitat for two endangered avian species--Light-Footed Clapper Rail and Belding's Savannah Sparrow. Salt Marsh Bird's Beak also occurs here.

Oil released from PRC 3184 is expected to move to the east. Landfall would occur between Ventura and Pitas Point. The unique marine environments in this portion of the coast

include the Ventura and Santa Clara River mouths. The Santa Clara River estuary experiences extensive avifaunal utilization from resident and migrant species, including California Least Tern and Belding's Savannah Sparrow. Salt Marsh Bird's Beak is also found here. Oil entering these areas would result in serious impacts upon indigenous species.

The Brown Pelican and the California Least Tern, two species of endangered avifauna, may suffer some mortality in the event of an oil spill. As an offshore forager, Brown Pelican is highly susceptible to oil ingestion and fouling. Effects of oil contamination on the population could be significant as the population is still recovering from the effects of DDT contamination, the species is sensitive to disturbance, and the breeding success of the species is highly variable. The California Least Tern, as a coastal inhabitant, is less likely to be affected by an oil spill than the Brown Pelican. Should a spill reach the tern's coastal marsh habitat, however, significant mortality could be realized. This would also be evident for the endangered Belding's Savannah Sparrow, another marsh inhabitant. Little or no impacts are expected on the terrestrial avian fauna currently listed as endangered.

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SOCIOECONOMICS
Commercial and Recreational Fisheries

IMPACT: Lethal and sublethal effects on commercial and recreational species from an oil spill

FINDINGS: Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR.

FACTS SUPPORTING FINDINGS:

An oil spill may have direct effects on adults and larvae of important commercial and recreational species by damaging habitat, breeding, and nursery areas as well as causing mortality which may reduce the total available catch. An oil spill may adversely affect commercial and recreational fisheries by excluding contaminated areas from fishing. A major spill could cause temporary closure of harbors, marinas, and beaches associated with fishing activities. Contaminated areas would be avoided because oil has potential adverse effects on the quality of any organism coming into contact with it; fishes may be affected by direct coating or ingestion of hydrocarbons. Oil could also foul fishing equipment, requiring cleaning of vessels and either cleaning or replacement of gear. Avoidance of areas by fisherman due to an oil spill would last at least for the duration of the spill and probably longer.

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SOCIOECONOMICS
Commercial and Recreational Fisheries

IMPACT: Fouling of fishing equipment with oil

FINDINGS: Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR.

FACTS SUPPORTING FINDINGS:

An oil spill may have direct effects on adults and larvae of important commercial and recreational species by damaging habitat, breeding, and nursery areas as well as causing mortality which may reduce the total available catch. An oil spill may adversely affect commercial and recreational fisheries by excluding contaminated areas from fishing. A major spill could cause temporary closure of harbors, marinas, and beaches associated with fishing activities. Contaminated areas would be avoided because oil has potential adverse effects on the quality of any organism coming into contact with it; fishes may be affected by direct coating or ingestion of hydrocarbons. Oil could also foul fishing equipment, requiring cleaning of vessels and either cleaning or replacement of gear. Avoidance of areas by fisherman due to an oil spill would last at least for the duration of the spill and probably longer.

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SOCIOECONOMICS
Commercial and Recreational Fisheries

IMPACT: Exclusion of oil-contaminated areas from fishing

FINDINGS: Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR.

FACTS SUPPORTING FINDINGS:

An oil spill may have direct effects on adults and larvae of important commercial and recreational species by damaging habitat, breeding, and nursery areas as well as causing mortality which may reduce the total available catch. An oil spill may adversely affect commercial and recreational fisheries by excluding contaminated areas from fishing. A major spill could cause temporary closure of harbors, marinas, and beaches associated with fishing activities. Contaminated areas would be avoided because oil has potential adverse effects on the quality of any organism coming into contact with it; fishes may be affected by direct coating or ingestion of hydrocarbons. Oil could also foul fishing equipment, requiring cleaning of vessels and either cleaning or replacement of gear. Avoidance of areas by fisherman due to an oil spill would last at least for the duration of the spill and probably longer.

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SOCIOECONOMICS
Tourism

IMPACT: Reduced access to park and beach areas from oil spills resulting in loss of tourist revenues

FINDINGS: Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR.

FACTS SUPPORTING FINDINGS:

The effect of an oil spill upon tourism levels in the potentially affected communities depends upon the severity of the spill and whether the spill occurs during peak tourism months (typically the summer months) or during off-seasons. Much of what can be understood about the effect oil spills have upon tourism levels are case studies performed for spills which have occurred in the past and which have affected local tourism-dependent communities. Of the several oil spills which have affected local tourism-dependent communities, the effects of the 1969 Santa Barbara oil spill are of most interest.

In the Santa Barbara case study, bed tax receipts of potentially affected jurisdictions along the south coast and monthly attendance records at local beaches in periods immediately before and after the spill were examined. These results were inconclusive, however in that the changes in visitor levels and beach attendance were attributable to other changes such as entrance fees and facilities quality. Survey data also were analyzed which indicated that the mean number of visits to the beach per Santa Barbara area resident in the previous 12 months before the spill declined approximately 25% in the 12-month period immediately following the spill. Again, however, these results remain inconclusive as to the effect the spill had upon the economy in that the decline in local residents' visits to beach areas, in terms of dollars spent in the local economy, is not as significant as dollars spent by visitors to the area.

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protections substantially lessen the environmental impacts which derive from the risk of an oil spill. Please refer to "Oil Spills - Overview" section preceding for a thorough discussion of this finding.

SOCIOECONOMICS
Noise

IMPACT: Increased noise levels from oil spill cleanup equipment

FINDINGS: Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR.

FACTS SUPPORTING FINDINGS:

The incidents that could result in oil spills (equipment failures, accidental damage, etc.) are not expected to produce significant noise levels. Similarly, the noise associated with a spill, including most blowouts, would not normally be high (explosions would be a rare exception). However, the use of boats and heavy equipment in minimizing the impact of a spill and in rehabilitating impacted areas is a potential source of noise impact. In this case, it is the impact of the mitigation measure, rather than of the primary impact itself, that should be considered.

For all but the smallest spills, two noise sources can be expected to be present for some time adjacent to populated areas:

- Boats working day or night and inshore as closely as feasible when necessary, considering safety with respect to surf and tide conditions; and
- Heavy earthmoving equipment working principally during daylight hours along the beach.

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CALENDAR PAGE	152.104
MINUTE PAGE	2545

SOCIOECONOMICS
Visual

IMPACT: Fouling of beaches with oil and discoloration of ocean surface water within the viewshed

FINDINGS: Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effects identified in the Final EIS

FACTS SUPPORTING FINDINGS:

Minor oil spills which never reach the shore would have negligible impact on visual resources. Major oil spills which fail to reach the shoreline would have a moderate impact on the viewing public. This would be due to discoloration of the water surface from high vantage points, and the interruption of the seascape by cleanup vessels and equipment. Oil spills that reach the shoreline would have moderate to severe impacts upon visual resources, depending upon the extent of beach contamination and the location.

The most significant visual impacts would be to persons who live or recreate along contaminated shorelines. The shoreline nearest Pitas Point (PRC 3184) has over 300 residences that could be directly impacted by shoreline contamination of oil. In the vicinity of Carpinteria, there are about 150 such residences, but they are much closer to the drill sites in PRC 3150.

Regarding recreational areas, the areas in the vicinity of Carpinteria (PRC 3150) are projected to have over a half million visitors in 1986. The Pitas Point (PRC 3184) parks may have over a quarter million, and those in the vicinity of Gaviota about 216,00 visitors. As was shown after the 1969 Santa Barbara oil spill, visitors went to uncontaminated beaches until the contaminated beaches were cleaned.

In many areas, such as along the Gaviota coast, the shoreline is not within view of the traveling public on U.S. Highway 101, although it is very close, because of the bluffs above the shoreline. Beaches are most visible to U.S. Highway 101 travelers in the vicinity of Pitas Point.

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MINUTE PAGE	25.46

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CALENDAR PAGE 152 .106
MINUTE PAGE 2547

III. CUMULATIVE IMPACT

SOCIOECONOMICS Air Quality

IMPACT: Incremental increase in ozone concentration.

- FINDINGS:
- a) Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR.
 - b) Such changes or alterations are within the responsibility and jurisdiction of another public agency and not the agency making the finding (Santa Barbara and Ventura County Air Pollution Control Districts). Such changes have been adopted by such other agency or can and should be adopted by such other agency.

FACTS SUPPORTING FINDING:

The cumulative incremental increase in ozone concentration downwind of the coincidental projects is 10 to 15 percent of the maximum baseline levels. This increase would be sufficient to produce exceedances of the Federal 1-hour ozone standard when baseline concentrations are 0.11 ppm or more.

This proposed exploratory project will be of relatively short period (59 months maximum). In the event that development is pursued by Chevron, such development will be reassessed for its cumulative impact on air quality.

Mitigations have been proposed which will substantially lessen the impacts resulting from this project. (See "Air Quality" impact discussion)

CALENDAR PAGE	152.107
MINUTE PAGE	2548

SOCIOECONOMICS
Visual

IMPACT: Decrease in visual quality of ocean views.

FINDING: Changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect identified in the Final EIR.

FACTS SUPPORTING FINDING:

Overall, oil development poses the principal threat to visual quality in the area. The public may perceive the coast and inland agricultural areas as becoming increasingly industrialized, particularly given the proliferation of offshore platforms along the southern and central coast...In time there will be no stretch of coastline from Point Sal south that will not be exposed to views of offshore platforms.

Because of its relative nearness to shore, the Chevron exploratory drilling project will contribute to this impression. However, it should be noted that the drilling activity will not be conducted simultaneously but over a period of 59 months.

Mitigations have been proposed which will lessen the impacts resulting from this project. (See "Socioeconomics - Visual" impact discussion)