MINUTE ITEM
This Calendar Item No. 26
was approved as Minute Item
26 by the State Lands
Commission by a vote of 3
to 0 at its 3-5-81
meeting.

CALENDAR ITEM

2/81
W 21986
Louie
PRC 5967

# 26

## GENERAL LEASE - INDUSTRIAL USE

APPLICANT: Union Oil Company of California
P. O. Box 6176
Ventura, California 93003

AREA, TYPE LAND AND LOCATION:
23.59-acre parcel of tide and submerged land in Santa Barbara Channel, Ventura County.

LAND USE: Construction and maintenance of submarine oil and gas lines, water lines and power cables. Serving applicant's Outer Continental Shelf oil and gas development.

TERMS OF PROPOSED LEASE:

Initial period: 25 years from April 1, 1981.

Public liability insurance: $1,000,000 combined single limit coverage.

Surety bond: $50,000.

Special: Rental Impound: Provides that rentals in excess of the minimum annual rental shall be paid into a special deposit account in the State Treasury pending the outcome of pending litigation challenging the Commission's volumetric rental regulations. Should the regulations be declared invalid, the impounded rentals shall be refunded and a new reasonable rental will be determined by the Commission.

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CONSIDERATION: Commencing on the beginning date of this lease, volumetric rental accrues according to the following schedule:

(a) Parcel 1. The annual rental shall be computed by multiplying each barrel of crude oil passing over the State's land by $0.0092.

(b) Parcel 2. The annual rental shall be computed by multiplying each barrel of crude oil passing over the State's land by $0.0036 and each thousand cubic feet of gas passing over the State's land by $0.0006.

(c) The minimum annual rental is $19,586; the State reserves the right to fix a different rental on each fifth anniversary of the lease.

BASIS FOR CONSIDERATION:
Pursuant to 2 Cal. Adm. Code 2005 & 2006.

PREREQUISITE TERMS, FEES AND EXPENSES:
Applicant is permittee of upland.

Filing fee has been received.

STATUTORY AND OTHER REFERENCES:
A. P.R.C.: Div. 6, Parts 1 & 2; Div. 13; Div. 20.

B. Cal. Adm. Code: Title 2, Div. 3; Title 14, Div. 6.

OTHER PERTINENT INFORMATION:
1. Union Oil Company has applied to the State Lands Commission for a lease of State land in the Santa Barbara Channel, Ventura County, for the construction and maintenance of submarine oil and gas lines between Union's proposed OCS development at Platforms Gina and Gilda and a proposed onshore treating facility immediately south of the Mandalay Generating Station in Oxnard.

2. The proposed pipeline routes will cross two existing State oil and gas leases, P.R.C. 3314.1 and PRC 3945.1. Union's development of federal lease OCS P-0202 from Platform Gina may affect State lease PRC 3945.1 should a common reservoir exist between the two lease areas Current geological data available is insufficient to determine the delineation of the reservoir proven on OCS P-0202.

   Since Union is planning to develop the reservoir in the immediate future, the staff is in the process of preparing an agreement to be approved by the Commission which would protect the State's interest should such a common reservoir exist. This agreement will include, but may not be limited to, the following:

   a. The State will receive geological data on Union's OCS P-0202 lease.

   b. The State will have access to all production data.

   c. Union will agree to unitize if the State so desires.

   If such a reservoir agreement is not approved by the Commission as of June 1, 1981, then the subject lease shall be void as of that date.

3. A final EIR was prepared by the City of Oxnard, pursuant to CEQA and the State EIR Guidelines. Mitigation measures which have been imposed by the City are specified in the EIR Summary, Exhibit C attached.

A Notice of Determination has been received for the project.

4. This project is situated on State land identified as possessing significant environmental values pursuant to P.R.C. 6370.1, and is classified in a use category, Class B, which authorizes Limited Use.

Staff has coordinated this project with those agencies and organizations which nominated the site as containing significant environmental values. They have found this project to be compatible with their nomination.

APPROVALS OBTAINED:
U.S.G.S., United States Army Corps of Engineers, City of Oxnard.

FURTHER APPROVALS REQUIRED:
California Coastal Commission.

EXHIBITS:
A. Land Description.
B. Location Map.
C. EIR Summary.

IT IS RECOMMENDED THAT THE COMMISSION:

1. DETERMINE THAT AN EIR HAS BEEN PREPARED AND CERTIFIED FOR THIS PROJECT BY THE CITY OF OXNARD.

2. CERTIFY THAT THE INFORMATION CONTAINED IN THE EIR HAS BEEN REVIEWED AND CONSIDERED BY THE COMMISSION.

3. DETERMINE THAT THE PROJECT WILL NOT HAVE A SIGNIFICANT EFFECT ON THE ENVIRONMENT; BECAUSE OF THE MITIGATION MEASURES REQUIRED BY THE CITY'S EIR.

4. DETERMINE THAT THE PROJECT IS CONSISTENT WITH THE PROVISIONS OF ARTICLE 6.5, OF TITLE 2, OF THE CAL. ADM. CODE.

5. FIND THAT GRANTING OF THE LEASE WILL HAVE NO SIGNIFICANT EFFECT UPON ENVIRONMENTAL CHARACTERISTICS IDENTIFIED PURSUANT TO SECTION 6370.1, OF THE P.R.C.

6. AUTHORIZE ISSUANCE TO UNION OIL COMPANY OF CALIFORNIA OF A 25-YEAR GENERAL LEASE - INDUSTRIAL USE FROM APRIL 1,

1981, ON FILE IN THE PRINCIPAL OFFICE OF THE STATE LANDS COMMISSION; IN CONSIDERATION OF ANNUAL RENTAL TO BE PAID AS FOLLOWS:

a. PARCEL 1. THE ANNUAL RENTAL SHALL BE COMPUTED BY MULTIPLYING EACH BARREL OF CRUDE OIL PASSING OVER THE STATE'S LAND BY $0.0092.

b. PARCEL 2. THE ANNUAL RENTAL SHALL BE COMPUTED BY MULTIPLYING EACH BARREL OF CRUDE OIL PASSING OVER THE STATE'S LAND BY $0.0036 AND EACH THOUSAND CUBIC FEET OF GAS PASSING OVER THE STATE'S LAND BY $0.0006.

c. THE MINIMUM ANNUAL RENTAL IS $19,586; THE STATE RESERVES THE RIGHT TO FIX A DIFFERENT RENTAL ON EACH FIFTH ANNIVERSARY OF THE LEASE.

PROVISION OF PUBLIC LIABILITY INSURANCE FOR COMBINED SINGLE LIMIT COVERAGE OF $1,000,000; FOR CONSTRUCTION AND MAINTENANCE OF SUBMARINE OIL AND GAS LINES, WATER LINES AND POWER CABLES SERVING LESSEE'S OCS DEVELOPMENT FROM PLATFORMS GINA AND GILDA ON THE LAND DESCRIBED ON EXHIBIT "A" ATTACHED AND BY REFERENCE MADE A PART HEREOF.

7. PROVIDE IN THE LEASE FOR PAYMENT OF RENTALS IN EXCESS OF THE MINIMUM ANNUAL RENTAL INTO A SPECIAL DEPOSIT ACCOUNT IN THE STATE TREASURY, PENDING FINAL DISPOSITION OF CURRENT LITIGATION CONCERNING THE VALIDITY OF THE COMMISSION'S RENTAL REGULATIONS; SAID IMPOUNDED RENTALS TO BE REFUNDED AND A NEW REASONABLE RENTAL DETERMINED BY THE COMMISSION SHOULD THE COMMISSION'S VOLUMETRIC RENTAL REGULATIONS BE INVALIDATED.

8. CONDITION THIS AUTHORIZATION UPON THE APPROVAL BY THE STATE LANDS COMMISSION OF A COMMON RESERVOIR AGREEMENT BETWEEN THE STATE AND UNION OIL FOR DEVELOPMENT OF UNION'S OCS P-0202 LEASE. SHOULD THE COMMISSION NOT APPROVE A RESERVOIR AGREEMENT BY JUNE 1, 1981, THEN THIS AUTHORIZATION SHALL BE CONSIDERED RESCINDED AND THE SUBJECT LEASE SHALL BE VOID.

EXHIBIT "A"

LAND DESCRIPTION W 21986

Two strips of tide and submerged land 20 feet in width in the Santa Barbara Channel, Ventura County, California, lying 10 feet on each side of the following described center lines:

PARCEL 1

BEGINNING at a point having California Zone 6 coordinates of X = 1,092,700.16, Y = 754,227.80; thence S 67°10'06"W 3100 feet to a point designated "A"; thence along a curve to the left having a radius of 2500 feet through a central angle of 25°00'00" an arc distance of 1090.83 feet; thence S 42°10'06"W 499.41 feet, thence along a tangent curve to the left having a radius of 2300 feet through a central angle of 34°00'00" an arc distance of 1364.85 feet; thence S 08°10'06"W 26,206 feet, more or less, to the offshore boundary of the State of California.

PARCEL 2

BEGINNING at the point designated "A" in Parcel 1 above, thence along a curve to the left having a radius of 2500 feet through a central angle of 25°00'00" an arc distance of 1090.83 feet; thence S 42°10'06"W 520.15 feet, thence along a curve to the right having a radius of 10,000 feet through a central angle of 46°45'00" an arc distance of 8107.05 feet, thence S 88°55'07"W 6295.97 feet to the offshore boundary of the State of California.

EXCEPTING THEREFROM any portion lying landward of the ordinary high water mark of the Pacific Ocean.

Bearings, distances, and coordinates are based on the California Coordinate System, Zone 6.

END OF DESCRIPTION

PREPARED FEBRUARY 24, 1981 BY TECHNICAL SERVICES UNIT, ROY MINNICK, SUPERVISOR.

Show parcel and parcel

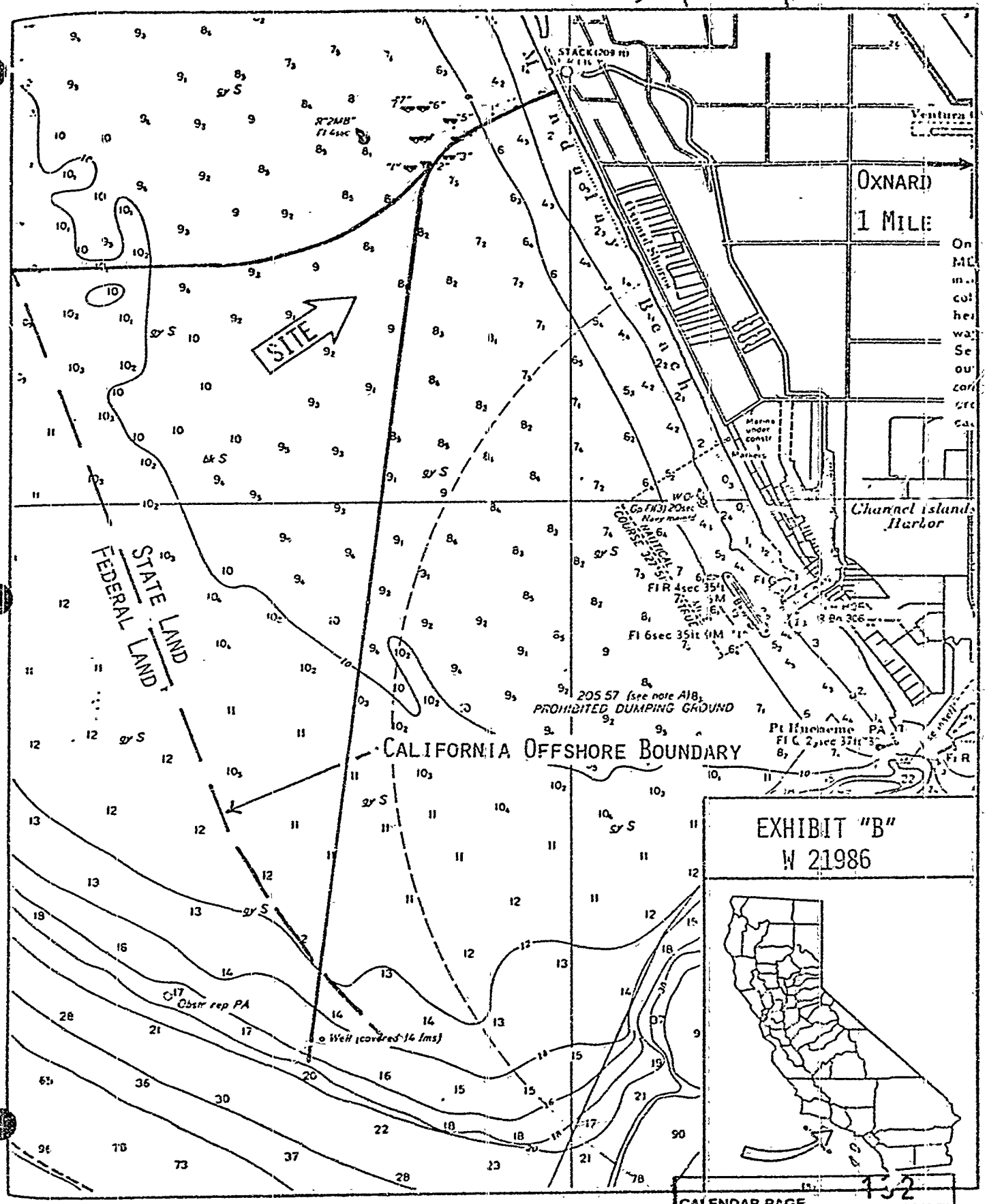


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EXHIBIT "C"

Environmental Impact Report Summary W21986

# 2.0 EXECUTIVE SUMMARY

## 2.1 PROJECT DESCRIPTION

### 2.1.1 Project Elements

Union Oil Company of California (Union) proposes to develop Outer Continental Shelf (OCS) oil and gas leases OCS P-0202, OCS P-0203, and OCS P-0216 in the eastern Santa Barbara Channel, offshore California. The major elements of the proposed project are:

- two offshore drilling and production platforms, Gina and Gilda, located approximately 4.5 miles (7.2 km) west-southwest of Port Hueneme and 10 miles (16 km) west of Oxnard, California, respectively.

- two offshore pipeline systems (one for each platform) to convey produced crude oil/water/natural gas to an onshore treating facility, and to return produced water to the platforms for injection.

- an onshore treating facility where produced water and natural gas would be separated from the crude oil.

- an onshore pipeline system to convey the product crude oil and product natural gas to existing oil and gas distribution systems within the Oxnard/Ventura area.

Union's primary objective in the proposed project is to produce crude oil and natural gas for sale and receive an equitable return on their invested capital. They also believe that this project is consistent with the objectives of the National Energy Plan in reducing American dependence on foreign oil and vulnerability to supply interruptions.

### 2.1.2 Proposed and Alternative Project Configurations

#### 2.1.2.1 Proposed Mandalay Configuration

As proposed by Union, the onshore treating facility would be located on a 1.8-acre (0.73-ha) parcel of land located immediately south of and adjacent to



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the Southern California Edison Company (SCE) Mandalay Generating Station in Oxnard. The offshore pipeline systems and power cables for Platforms Gina and Gilda would extend from the platforms to a landfall point adjacent to the proposed Mandalay onshore treating facility. The proposed product crude oil pipeline would proceed east from the site and then extend northward along the east side of Harbor Boulevard to the Union Oil Marine Terminal at Ventura Harbor. At the marine terminal, the crude oil would directly enter Union's existing pipeline system for transport to Los Angeles area refineries. Natural gas from the onshore treating facility would be piped to an existing natural gas pipeline distribution system, having a tie-in point immediately east of the proposed onshore treating facility site across Harbor Boulevard. This configuration is shown on Figure 3.0-2 in Section 3.0.

### 2.1.2.2 Primary Alternative Configurations

The City of Oxnard has identified three primary alternative locations for the onshore treating facility site. These are designated the East Mandalay, Union Oil Marine Terminal, and Ormond Beach alternatives. Emplacement of the onshore treating facility at any of the alternative sites would require alterations in the proposed alignment of the offshore and/or onshore pipeline systems. However, the locations of the two platforms would be identical for the proposed Mandalay configuration and the three primary alternatives. Therefore, the greatest differences between the proposed and alternative configurations would result from the construction requirements. There would be no differences between the possible configurations during the drilling phase because all activities would take place at the platforms. There would be slight differences between the possible configurations during the production phase.

#### 2.1.2.2.1 East Mandalay Alternative Configuration

The East Mandalay alternative onshore treating facility site is located across Harbor Boulevard from the Mandalay Generating Station, southeast of an existing SCE substation, and north of the Edison Canal. The onshore pipeline corridor would follow the same route as that for the proposed Mandalay configuration, except for a short additional segment extending from Harbor

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Boulevard to the site. However, portions of the corridor from Mandalay Beach to the site would be wider than for the proposed configuration to accommodate a greater number of pipelines. Tie-in points for the product crude oil and natural gas lines would be the same as for the proposed Mandalay configuration.

The platform locations and offshore pipeline corridors for the East Mandalay alternative would be identical to those for the proposed Mandalay configuration. This configuration is shown on Figure 3.0-3 in Section 3.0.

2.1.2.2.2 Union Oil Marine Terminal Alternative Configuration

The Union Oil Marine Terminal alternative site is located within Union's existing facility at the Ventura Marina. This alternative configuration would utilize the same onshore pipeline corridor route as the proposed Mandalay configuration. However, this corridor would be substantially wider to accommodate the five pipelines to/from Platforms Gina and Gilda and would require a direct crossing of the Santa Clara River. In addition, this alternative would require installation of a pumping-heating-compression station (booster station) near the landfall point at Mandalay Beach. Product crude oil and natural gas would directly enter existing pipeline distribution systems near the marine terminal.

The platform locations and offshore pipeline corridors for the Union Oil Marine Terminal alternative would be identical to those for the proposed project configuration. This configuration is shown on Figure 3.0-4 in Section 3.0.

2.1.2.2.3 Ormond Beach Alternative Configuration

The Ormond Beach alternative site is located on Perkins Road inland from Ormond Beach and south of Hueneme Road. The Ormond Beach alternative site would require two onshore pipeline corridors. The first would accommodate the two pipelines to/from Platform Gina and would extend along the coast from a landfall point at Silver Strand Beach to the onshore treating facility. A second corridor would be required to link the treating facility with points in



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the Mandalay Beach and Ventura Marina areas. This corridor would contain the three p lines to/from Platform Gilda and the product crude oil and natural gas lin . The City of Oxnard has identified two alternative routes for this corridor (Option A and Option B). Option A follows Ventura Road, Channel Islands Boulevard, and Harbor Boulevard. Option B follows Pleasant Valley Road, Rice Road, Gonzales Road, and Harbor Boulevard.

Selection of the Option A pipeline corridor would necessitate two booster stations while the Option B pipeline corridor would require three booster stations. Tie-in points for the product crude oil and natural gas lines would be the same as for the proposed Mandalay configuration.

The platform locations associated with the Ormond Beach alternative would be identical to those for the proposed Mandalay configuration. However, the Platform Gina offshore pipeline corridor would be different. The offshore pipelines associated with Platform Gina would be emplaced in a corridor extending from the platform to a landfall point at Silver Strand Beach. The power cable for Platform Gina would be installed in a corridor identical to that for the proposed Mandalay configuration. The offshore pipeline corridor associated with Platform Gilda would be the same as for the proposed Mandalay configuration. The Option A and Option B variations of this configuration are shown on Figures 3.0-5 and 3.0-6, respectively, in Section 3.0.

### 2.1.3 Construction

The principal components of both Platform Gina and Platform Gilda would be fabricated outside Ventura County and transported to the sites. Each jacket would be launched from a barge and lowered to the ocean floor, and pilings would be driven and welded to each of the jacket legs. Once the decks had been secured in place, drilling and production equipment, support facilities, and safety and protection systems would be installed and finish work completed.

The offshore portions of the pipelines extending between each of the two platforms and the onshore treating facility would be fabricated in sections



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onshore. As sections are completed, they would be pulled offshore using a barge and a tugboat. From MLLW to a water depth of 20 feet (6 m), the pipelines would be buried. From a water depth of 20 feet (6 m) to the platforms, they would rest unanchored on the ocean bottom. The power cables would be emplaced in the same corridor as the pipelines to each platform. (A separate corridor for the power cable would be necessary for the Ormond Beach alternative configuration.)

After surveying, the onshore site would be cleared and graded. Upon completion of grading, foundations would be poured. Major components of the treating facility would be manufactured offsite, trucked to the location, and placed on the prepared foundations. Valves, fittings, and other connecting hardware would be installed and the facility would be electrically wired. Areas within the site would be surfaced and landscaping would be provided in conformance with applicable regulatory requirements. The right-of-way would be cleared and graded and debris would be disposed of at an approved dumpsite. Pipeline construction activities would include ditching, stringing the pipe, bending pipe for changes in direction, cleaning, welding, inspection, coating, lowering the pipe into the ditch, hydrostatic testing, backfilling, and cleanup.

### 2.1.4 Drilling

At Platform Gina, Union plans to recover hydrocarbon fluids from the Hueneme sand of the Miocene Rincon Formation and the Oligocene Sespe Formation. Reservoir simulation studies and other tests indicate that six crude oil producing wells and six water injector wells would maximize recovery from the producing zones. Union would submit final detailed drilling plans to the U.S. Geological Survey (USGS) for approval prior to commencing drilling operations.

At Platform Gilda, Union plans to recover hydrocarbon fluids from the Pliocene Repetto and the Miocene Monterey formations. Hydrocarbon accumulations in these two formations would be recovered through separate



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drilling programs. Studies of the Repetto Formation indicate that maximum recovery would be achieved by drilling 40 crude oil production wells on approximately 20-acre (8-ha) spacing. In addition, computer modeling showed that although some peripheral water injection would be advantageous, full pressure maintenance could reduce recovery. Initial development drilling would be done on approximately 40-acre (16-ha) spacing, with the earliest wells designed to delineate the field and yield more complete geological and production data. Wells would be drilled as required to inject produced water back into the formation.

Since currently available data concerning the Monterey Formation are limited, no significant determination of reservoir characteristics and performance has been made. For this reason, further test drilling from Platform Gilda would be required to evaluate and optimize development of this formation. Test drilling of the Monterey Formation would be performed as an extension of the Repetto Formation production well drilling program. A minimum of three test wells would be drilled. Should Union determine during test drilling that sufficient recoverable reserves exist in the Monterey Formation, as many as 30 wells could be drilled on 40-acre (16-ha) spacing to develop the producing zone(s). Treated produced gas probably would be injected to maintain reservoir pressure. There are currently no plans to inject produced water.

### 2.1.5 Production

Union estimates that Platform Gina would produce 15.5° to 16.0° API crude oil with a gas: oil ratio of approximately 200. Peak oil production is estimated to be 6,450 barrels of oil per day (BOPD) (1.025 $m^3$/day). Ultimate estimated recovery would be 9.5 million barrels (1.5 million $m^3$) of oil and 1.7 billion SCF (48 million $m^3$) of gas during the field lifetime of 18 years. The fluid produced at Platform Gina would be a mixture of crude oil, natural gas, and water. This fluid would be pumped from the formations and sent directly via an offshore pipeline to the onshore treating facility. For the first three years, seawater would be injected into producing formations to



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maintain reservoir pressure. After this time, sufficient produced water would be available for this purpose and seawater injection would be discontinued.

At Platform Gilda, the initial production rate from the Repetto Formation would be approximately 400 BOPD (64 $m^3$/day) of 16° to 20° oil per well with a gas:oil ratio of approximately 400 SCF/bbl. The peak production rate from the Repetto Formation is expected to be approximately 18,000 BOPD (2,880 $m^3$/day). The ultimate estimated recovery in 20 years from the Repetto Formation is estimated by Union to be 43 million barrels (6.9 million $m^3$) of crude oil and 40 billion SCF (1.1 billion $m^3$) of natural gas. Peak oil recovery rates from the Monterey Formation have been estimated by Union to be approximately 8,000 bbl/day (1,280 $m^3$/day) with a gas:oil ratio of approximately 1,000 SCF/bbl. Ultimate oil and natural gas recovery estimates from the Monterey Formation have not been made.

The fluid from the wellheads on Platform Gilda would first flow to a header system linking all of the wells associated with either Repetto or Monterey production. Each header system would be connected to a separator unit for initial separation of the natural gas from the crude oil/water stream. The crude oil/water streams leaving the separator units would flow to a shipping surge tank. Produced crude oil/water from the Repetto and Monterey formations would be commingled in the surge tank, and then pumped via the offshore pipeline to the onshore treating facility. After about 5 years of production, the water content of produced fluids from the Repetto Formation would be sufficiently high to require gross oil/water separation at the platform. Produced water would be treated and injected into the Repetto Formation. The natural gas produced from the Repetto Formation would be dehydrated and sent to the onshore treating facility through the offshore pipeline. Produced gas from the Monterey Formation may be reinjected into the formation. Union has indicated that this might be desirable to achieve maximum hydrocarbon recovery. If the gas contains $H_2S$, additional facilities would be installed on the platform to remove it.





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The function of the onshore treating facility would be to separate the fluids produced at Platforms Gina and Gilda into crude oil, natural gas, and water streams. A three-phase separator would split the produced fluids into these three streams. The oil stream would flow to a heater treater, where heat is used to further separate water from the crude oil. The resultant oil stream would then flow to a free water knock out vessel for further heating and additional oil/water separation. The separated crude oil and gas would be sent to customers via onshore pipeline systems. The separated water would be sent back to the platforms via the offshore pipeline system return water pipelines.

The purpose of the onshore pipelines is to convey the product crude oil and natural gas between the onshore treating facility and the existing distribution systems in the Oxnard-Ventura area. For the purposes of this EIR/EA, the portions of the pipelines to/from both platforms from MLLW to the treating facility were considered part of the onshore pipeline system.

### 2.1.6 Safety Procedures

The proposed project includes several provisions designed to minimize the possiblity of personal harm or environmental damage occurring. Among these are:

- U.S. Coast Guard-approved navigation aids;
- Fire detection and suppression equipment;
- Red Cross first aid training and certification for all platform operating personnel;
- Well drilling and casing programs (including blowout prevention equipment), subject to USGS approval;
- Various detection and alarm systems connected to a centrally controlled, automatic shutdown system; and,
- Oil spill and hydrogen sulfide contingency plans, subject to USGS approval.

### 2.1.7 Project Termination and Abandonment

Upon cessation of production from Platforms Gina and Gilda, all wells would be plugged and abandoned in conformance with USGS regulations. Such



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activities would not be commenced prior to obtaining approval from the USGS. All equipment would be removed from the platforms. The jackets and decks would be dismantled and transported to shore for disposal, salvage, or reuse. All obstructions would be removed from the ocean floor. The offshore pipelines would be purged and abandoned in place.

Assuming it could not be utilized with other projects existing at the time, the onshore treating facility would be dismantled. Equipment would be salvaged or reused to the extent possible. Union would restore and revegetate the site in accordance with applicable regulations in effect at that time. Onshore pipelines would be purged and abandoned in place unless regulations existing at the time required their removal.

## 2.2 ENVIRONMENTAL CONSEQUENCES

Detailed discussions of the potential environmental impacts that would result from implementation of the proposed Mandalay configuration or the primary alternatives are provided in Section 4.0. A comparative analysis of the impacts associated with the possible project configurations can be found in Section 7.2. The following sections provide a summarization of the principal findings from these analyses.

### 2.2.1 Proposed Mandalay Configuration

Potential environmental impacts that would result from construction activities for the proposed Mandalay configuration are summarized in Table 2.0-1. These impacts are generally minor in magnitude and of low significance. Three exceptions that may be of moderate significance and are typical impacts associated with construction-type activities include: (1) sound level increases generated by use of equipment, vehicles, boats, and human activity; (2) visual effects on offsite viewers near areas where construction is occurring; and, (3) increased dollars generated for the local economy, local governments, and the State of California.

Table 2.0-2 provides a summary of potential impacts that would occur during the drilling phase. These impacts are generally expected to be of minor magnitude and low significance, except as indicated below:



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## TABLE 2.0-1

## POTENTIAL CONSTRUCTION IMPACTS - PROPOSED MANDALAY CONFIGURATION

| Environmental Factor | Nature of Impact | Significance[1] |
|---|---|---|
| GEOTECHNICAL (Section 4.1) | 1. Localized minor alteration of topography and bathymetry. | L |
| | 2. Localized minor disturbance of soils. | L |
| | 3. Localized minor disturbance of sediments in beach/nearshore areas. | L |
| | 4. Consumptive use of fresh water (0.6 acre-feet). | L |
| AIR QUALITY (Section 4.2.1) | 1. Minor increases offshore and onshore in emissions of nitrogen oxides, sulfur dioxide, carbon monoxide, total hydrocarbons, and particulate matter. | L |
| ACOUSTICS (Section 4.2.2) | 1. Localized sound level increases at offshore and onshore locations. | L-M |
| OCEANOGRAPHY (Section 4.3) | 1. Localized minor increases in water column turbidity. | L |
| | 2. Localized minor alteration of ocean water quality resulting from discharges of treated sanitary wastes (5.7 bbl/day), brine wastewater (12,250 bbl total), and seawater used for hydrostatic testing (16,700 bbl). | L |
| MARINE BIOLOGY (Section 4.4) | 1. Temporary disturbance of sedimentary habitat (320,000 $ft^2$) and associated marine organisms. | L |
| | 2. Elimination of sedimentary habitat (210,000 $ft^2$) and associated marine organisms. | L |
| | 3. Localized minor alteration of phytoplankton productivity. | L |
| | 4. Entrainment of zooplankton (6,500 lbs). | L |
| | 5. Temporary loss of commercial fishing area (4.7 $mi^2$). | L |
| TERRESTRIAL BIOLOGY (Section 4.5) | 1. Removal of vegetation and temporary or permanent loss of following habitat: foredune (2.3 acres); dune scrub (8.7 acres); ruderal (6.6 acres); and, urban (0.4 acres). | L |
| | 2. Displacement, or elimination, of individuals of animal species associated with the disturbed habitats. | L |
| LAND USE (Section 4.6) | 1. Temporary interference with local land uses. | L |
| | 2. Minor temporary interference with recreational activities. | L |
| | 3. Temporary visual intrusion affecting offsite viewers. | L-M |
| | 4. Short-term increased traffic volumes on the local road system. | L |
| SOCIOECONOMICS (Section 4.7) | 1. Negligible to minor increased demand for transient housing, services, and utilities. | L |
| | 2. Minor increase in employment opportunities. | L |
| | 3. Increased sales and use tax revenues accruing to local governments ($106,900) and the State of California ($534,000). | L-M |
| | 4. New taxable retail sales ($10.49 million) in Ventura County. | L |
| CULTURAL RESOURCES (Section 4.8) | 1. Possible disturbance of an onshore ethnographic site (basketry materials) and three potential offshore shipwreck locations. | L |

[1] L = Low
M = Moderate



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## TABLE 2.0-2

## POTENTIAL DRILLING IMPACTS - PROPOSED MANDALAY CONFIGURATION

| Environmental Factor | Nature of Impact | Significance[1] |
|---|---|---|
| GEOTECHNICAL (Section 4.1) | 1. Minor alteration of seafloor topography resulting from formation of cuttings mounds at the two platforms. | L |
| | 2. Consumptive use of fresh water (44.1 acre-feet over the 1.5-year drilling period). | L-M |
| AIR QUALITY (Section 4.2.1) | 1. Minor increases in emissions of nitrogen oxides, sulfur dioxide, carbon monoxide, total hydrocarbons, and particulate matter. | L |
| ACOUSTICS (Section 4.2.2) | 1. Localized sound level increases at the two platforms. | L |
| OCEANOGRAPHY (Section 4.3) | 1. Localized minor increases in water column turbidity. | L |
| | 2. Localized minor alteration of ocean water quality resulting from discharges of treated sanitary wastes (32.4 bbl/day). | L |
| MARINE BIOLOGY (Section 4.4) | 1. Increase in biomass and species diversity near platforms. | L-M |
| | 2. Elimination of sedimentary habitat (83,000 $ft^2$) and associated marine organisms beneath cuttings mounds near platforms. | L |
| | 3. Localized minor alteration of phytoplankton productivity. | L |
| | 4. Possible effects on marine mammals from presence of platforms, increased noise, and human activity. | L |
| TERRESTRIAL BIOLOGY (Section 4.5) | No impacts anticipated | |
| LAND USE (Section 4.6) | 1. Visual intrusion of two platforms. | L-M |
| | 2. Minor increases in traffic volumes on the local road system. | L |
| SOCIOECONOMICS (Section 4.7) | 1. Negligible to minor increased demand for transient housing, services, and utilities. | L |
| | 2. Negligible increase in employment opportunities. | L |
| | 3. Increased sales and use tax revenues accruing to local governments ($885,000) and the State of California ($4.425 million). | M |
| | 4. New taxable retail sales ($88.5 million) in Ventura County. | M |
| CULTURAL RESOURCES (Section 4.8) | No impacts anticipated | |
| ACCIDENTS | 1. Accidental oil spills could have effects on various environmental resources and uses. The magnitude of effects would depend on spill size, location, time of year, and other variables, and could range from negligible to major. | L-H |

[1] L = Low
M = Moderate
H = High



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- Consumptive use of fresh water may have a low to moderate effect on regional water supplies.

- The presence of the platforms as artificial substrate would result in local increases in biomass and species diversity for marine biota, which could be a beneficial effect of low to moderate significance.

- Platform Gina would be visible from numerous coastal vantage points and could have a moderately significant visual impact.

- Increased sales and use tax revenue accruing to local governments and the State of California, as well as new taxable retail sales in Ventura County, would have a moderate beneficial economic impact.

Potential environmental impacts that would result during the production phase are summarized in Table 2.0-3. These impacts are generally considered to be minor in magnitude and low in significance. Possible exceptions to the latter include:

- Localized sound level increases onshore that may be of low to moderate significance.

- Local increases in biomass and species diversity offshore near the platforms and pipelines that could be a beneficial impact of low to moderate significance.

- Platform Gina would be visible from numerous coastal vantage points and could have a moderately significant visual impact.

Accidental crude oil spills could potentially occur during the drilling or production phases. Areas that could be affected by spills would depend on the spill source location, volume of oil released, meteorological conditions, oceanographic conditions, and other factors (see Section 4.9.3 and Appendix B.2). Effects on environmental resources and uses could range from negligible to high in significance.

### 2.2.2 Primary Alternative Configurations

Should either the East Mandalay, Union Oil Marine Terminal, or Ormond Beach (Option A or Option B) alternative configurations be selected, potential environmental impacts would result from the same types of activities and would



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## TABLE 2.0-3

## POTENTIAL PRODUCTION IMPACTS - PROPOSED MANDALAY CONFIGURATION

| Environmental Factor | Nature of Impact | Significance[1] |
|---|---|---|
| GEOTECHNICAL (Section 4.2) | 1. Depletion of nonrenewable resources (52.5 million bbl of oil; 61.7 billion SCF of natural gas.) | L |
| | 2. Consumptive use of fresh water (9.4 acre-feet over the 20-year production period). | L |
| AIR QUALITY (Section 4.2.1) | 1. Minor increases offshore and onshore in emissions of nitrogen oxides, sulfur dioxide, carbon monoxide, total hydrocarbons, and particulate matter. | L |
| ACOUSTICS (Section 4.2.2) | 1. Localized sound level increases at offshore and onshore locations. | L-M |
| OCEANOGRAPHY (Section 4.3) | 1. Localized minor alteration of ocean water quality resulting from treated sanitary waste discharges (3.6 bbl/day) and leaching of metals from sacrificial anodes. | L |
| | 2. Negligible water temperature alteration caused by heat dissipation from offshore pipelines. | L |
| MARINE BIOLOGY (Section 4.4) | 1. Increased biomass and species diversity related to new substrate (platforms, pipelines, cutting mounds). | L-M |
| | 3. Localized minor alteration of phytoplankton productivity. | L |
| | 3. Entrainment of zooplankton (1,300 lbs/day) for 3-year period at Platform Gina related to seawater intake for reservoir pressure maintenance program. | L |
| | 4. Loss of potential commercial fishing area (0.6 $mi^2$). | L |
| | 5. Possible effects on marine mammals from presence of platforms, increased noise, and human activity. | L |
| TERRESTRIAL BIOLOGY (Section 4.5) | 1. Negligible secondary effects related to increased noise and air pollutant emissions. | L |
| LAND USE (Section 4.6) | 1. Commitment of land to industrial use. | L |
| | 2. Visual intrusion of onshore treating facility and two platforms. | L-M |
| | 3. Negligible increases in traffic volumes on the local road system. | L |
| SOCIOECONOMICS (Section 4.7) | 1. Negligible to minor increased demand on housing, services, and utilities. | L |
| | 2. Negligible increase in employment opportunities. | L |
| | 3. New property tax revenues (first year estimated at $99,700). | L |
| | 4. Sales and use tax revenues accruing annually to local governments ($25,400) and the State of California ($127,000). | L |
| | 5. New taxable retail sales ($2.54 million annually) in Ventura County. | L |
| | 6. New royalty payments to U.S. government (total estimated at $212.8 million). | L |
| CULTURAL RESOURCES (Section 4.8) | No impacts anticipated. | |
| ACCIDENTS | 1. Accidental oil, gas, or produced water spills could have effects on various environmental resources and uses. The magnitude of effects would depend on spill size, location, time of year, and other variables, and could range from negligible to major. | L-H |

1. L = Low
M = Moderate
H = High



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generally be of the same nature as those discussed in Section 2.2.1 for the proposed Mandalay configuration. The alternative configurations differ from the proposed configuration principally with respect to potential impacts that would result from construction activities. Table 2.0-4 provides a summary of potential construction phase impacts for each of the alternative configurations. Drilling activities would only involve the offshore platforms; consequently, the potential impacts would be identical for the proposed and each of the alternative configurations (see Table 2.0-2). Some differences in potential impacts between the possible configurations would occur during the production phase. The effects of possible accidental crude oil spills would be the same for all of the configurations (see Section 2.2.1 and Tables 2.0-2 and 2.0-3). In the sections that follow, key differences in potential construction and production impacts between each alternative and the proposed Mandalay configuration are summarized.

2.2.2.1 East Mandalay Alternative Configuration

During construction, the principal difference between this alternative and the proposed configuration is that about 1.5 acres (0.6 ha) more terrestrial biological habitat (principally foredunes and dune scrub) would be temporarily disturbed with related displacement, or elimination, of associated animals.

There would be slightly greater visual intrusion effects during production related to the location of the onshore treating facility. About $3,700 in additional estimated first year property tax revenues would also occur.

Total energy required for implementation of the East Mandalay alternative configuration would be the same as for the proposed configuration.

2.2.2.2 Union Oil Marine Terminal Alternative Configuration

During construction the principal differences between this alternative and the proposed configuration would be:

- Consumptive use of 0.5 acre-feet (616 $m^3$) more fresh water.
- Temporary disturbance of 13.4 acres (5.4 ha) more of terrestrial biological habitat (including riparian and agricultural) and displacement, or elimination, of associated animals.



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## POTENTIAL CONSTRUCTION IMPACTS - PROPOSED MANDALAY AND PRIMARY ALTERNATIVE CONFIGURATIONS

| Environmental Factor | Nature of Impact | Magnitude/Significance[2] | | | | |
|---|---|---|---|---|---|---|
| | | Mandalay | Back Mandalay | Union Oil Marine Terminal | Ormond Beach Option A | Ormond Beach Option B |
| GEOTECHNICAL (Section 4.1) | 1. Localized alteration of topography and bathymetry. | Minor/L | Minor/L | Minor/L | Minor/L | Minor/L |
| | 2. Localized disturbance of soils | | | | | |
| | (a) Agricultural (acres) | -- | -- | 5.1/L | 1.0/L | 33.9/L-M |
| | (b) Nonagricultural | Minor/L | Minor/L | Minor/L | Minor/L | Minor |
| | 3. Localized disturbance of sediments in beach/nearshore areas. | Minor/L | Minor/L | Minor/L | Minor/L | Minor/L |
| | 4. Consumptive use of fresh water (acre feet). | 0.6/L | 0.6/L | 1.1/L | 2.6/L | 4.3/L |
| AIR QUALITY (Section 4.2.1) | 1. Offshore and onshore increases in emissions of nitrogen oxides, sulfur dioxide, carbon monoxide, total hydrocarbons, and particulate matter. | Minor/L | Minor/L | Minor/L | Minor/L | Minor/L |
| ACOUSTICS (Section 4.2.2) | 1. Localized sound level increases at offshore and onshore locations. | Minor-Moderate/L-M | Minor-Moderate/L-M | Minor-Moderate/L-M | Moderate/M | Moderate/M |
| OCEANOGRAPHY (Section 4.3) | 1. Localized increases in water column turbidity. | Minor/L | Minor/L | Minor/L | Minor/L | Minor/L |
| | 2. Localized alteration of ocean water quality from discharges of: | | | | | |
| | (a) treated sanitary wastes (bbl/day) | 5.7/L | 5.7/L | 5.7/L | 5.7/L | 5.7/L |
| | (b) brine wastewater (bbl) | 12,250/L | 12,250/L | 12,250/L | 12,250/L | 12,250/L |
| | (c) seawater used for hydrostatic testing (bbl) | 16,700/L | 16,700/L | 16,700/L | 15,100/L | 15,100/L |
| MARINE BIOLOGY (Section 4.4) | 1. Temporary disturbance of sedimentary habitat and associated organisms ($ft^2$) | 320,000/L | 320,000/L | 320,000/L | 335,000/L | 375,000/L |
| | 2. Elimination of sedimentary habitat and associated organisms ($ft^3$) | 210,000/L | 210,000/L | 210,000/L | 195,000/L | 195,000/L |
| | 3. Localized alteration of phytoplankton productivity. | Minor/L | Minor/L | Minor/L | Minor/L | Minor/L |
| | 4. Entrainment of zooplankton (lbs). | 6,500/L | 6,500/L | 6,500/L | 6,000/L | 6,000/L |
| | 5. Temporary loss of commercial fishing area ($mi^2$). | 4.7/L | 4.7/L | 4.7/L | 6.0/L | 6.0/L |
| TERRESTRIAL BIOLOGY (Section 4.5) | 1. Removal of vegetation and temporary or permanent loss of following habitat: | | | | | |
| | (a) foredune (acres) | 2.3/L | 1.0/L | 1.4/L | 12.8/L | 12.9/L |
| | (b) dune scrub (acres) | 8.7/L-M | 11.5/L-M | 10.8/L-M | 14.1/L-M | 9.1/L-M |
| | (c) riparian (acres) | -- | -- | 3.6/L-M | -- | -- |
| | (d) ruderal (acres) | 6.6/L | 6.6/L | 7.6/L | 13.2/L | 38.8/L |
| | (e) agricultural (acres) | -- | -- | 5.1/L | 1.0/L | 33.9/L-M |
| | (f) urban (acres) | 0.4/L | 0.4/L | 2.9/L | 35.6/L | 26.3/L |



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## TABLE 2.0-4 (Concluded)

| Environmental Factor | Nature of Impact | Magnitude/Significance[2] | | | | |
|---|---|---|---|---|---|---|
| | | Mandalay | East Mandalay | Union Oil Marine Terminal | Ormond Beach Option A | Ormond Beach Option B |
| TERRESTRIAL BIOLOGY (cont.) | 2. Displacement, or elimination, of individuals of animal species associated with the disturbed habitat. | Minor/L | Minor/L | Minor/L | Minor/L | Minor/L |
| LAND USE (Section 4.6) | 1. Temporary interference with local land uses. | Minor/L | Minor/L | Minor/L | Moderate/M | Moderate/M |
| | 2. Temporary interference with recreational activities. | Minor/L | Minor/L | Minor/L | Moderate/M | Moderate/M |
| | 3. Temporary visual intrusion affecting offsite viewers. | Minor-Moderate/L-M | Minor-Moderate/L-M | Minor-Moderate/L-M | Moderate/M | Moderate/M |
| | 4. Short-term increased traffic volumes on the local road system. | Minor/L | Minor/L | Minor/L | Minor-Moderate/L-M | Minor-Moderate/L-M |
| SOCIOECONOMICS (Section 4.7) | 1. Increased demand for transient housing, services, and utilities. | Minor/L | Minor/L | Minor/L | Minor/L | Minor/L |
| | 2. Increase in employment opportunities. | Minor/L | Minor/L | Minor/L | Minor/L | Minor/L |
| | 3. Increased sales and use tax revenues accruing to: | | | | | |
| | (a) local governments | $106,900/L-M | $106,900/L-M | $167,300/M | $171,700/M | $177,700/M |
| | (b) State of California | $534,000/L-M | $534,000/L-M | $836,500/M | $858,500/M | $888,500/M |
| | 4. New taxable retail sales in Ventura County. | $10.69 million/L | $10.69 million/L | $16.73 million/M | $17.2 million/M | $17.8 million/M |
| CULTURAL RESOURCES (Section 4.8) | 1. Possible disturbance of: | | | | | |
| | (a) historic archaeological sites (number of sites) | — | — | — | 1/L | 1/L |
| | (b) prehistoric archaeological sites (number of sites) | — | — | — | 4/M-H | 4/M-H |
| | (c) historic landmarks (number of sites) | — | — | — | 2/M-H | 1/M-H |
| | (d) potential offshore shipwreck locations (number of sites) | 2/M-H | 3/M-H | 3/M-H | 8/M-H | 8/M-H |
| | (e) ethnographic sites (number of sites) | 1/L | 1/L | 1/L | 1/L | 1/L |

[1]Significance abbreviations:
L = Low
M = Moderate
H = High



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- About $362,900 more sales and use tax revenues to local governments and the State of California due to higher project costs.
- About $6.04 million more in new taxable retail sales in Ventura County.

The principal differences during the production phase would be:

- Slightly greater air pollutant emissions related to the need for a booster station.
- Additional visual intrusion because of the need for an onshore treating facility and booster station.
- About $151,700 in additional first year property tax revenues.
- Approximately $28,800 per year more sales and use tax revenues to local governments and the State of California.
- About $0.48 million more in new taxable retail sales in Ventura County.

Total energy required for implementation of the Union Oil Marine Terminal alternative configuration would be 30 percent higher than for the proposed configuration.

2.2.2.3 Ormond Beach Alternative Configuration (Option A)

During construction, the principal differences between this alternative and the proposed configuration would be:

- Consumptive use of 2.0 acre-feet (2,462 $m^3$) more fresh water.
- Increased sound levels occurring at more noise-sensitive locations (e.g., residential and recreational areas).
- About 3,600 bbl less seawater needed for hydrostatic testing of offshore pipelines.
- Approximately 15,000 $ft^2$ (1,395 $m^2$) less sedimentary habitat and associated organisms eliminated offshore.
- About 1.3 $m^2$ (3.4 $km^2$) more potential commercial fishing area temporarily lost.
- Temporary disturbance of 58.8 acres (23.8 ha) more terrestrial biological habitat (including foredunes, dune scrub, and agricultural) and displacement, or elimination, of associated animals.



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- Temporary interference with recreational land use in the vicinities of Mandalay, Silver Strand, and Port Hueneme City beaches; and, commercial and residential land uses and traffic along Hueneme Road, Ventura Road, Channel Islands Boulevard, and Harbor Boulevard.

- Temporary interference with commercial and industrial land use in the vicinity of Port Hueneme.

- Higher traffic volumes on the local road system.

- About $309,300 more sales and use tax revenues to local governments and the State of California due to higher project costs.

- About $6.51 million more in new taxable retail sales in Ventura County.

- Possible disturbance of 13 more confirmed or potential cultural resources sites.

The principal differences during the production phase would be:

- Slightly greater air pollutant emissions related to the need for two booster stations.

- Additional visual intrusion because of the need for an onshore treating facility and two booster stations (Mandalay and Silver Strand beaches).

- Industrial intrusion into a relatively high beach use area (Silver Strand Beach).

- About $237,600 in additional first year property tax revenues.

- Approximately $35,400 per year more sales and use tax revenues to local governments and the State of California.

- About $0.59 million more in new taxable retail sales in Ventura County.

Total energy required for implementation of the Ormond Beach Option A alternative configuration would be 63 percent higher than for the proposed configuration.

2.2.2.3 Ormond Beach Alternative Configuration (Option B)

During construction, the principal differences between this alternative and the proposed configuration would be:

- Consumptive use of 3.6 acre-feet (4,440 $m^3$) more fresh water.

- Disturbance of 34 acres (13.8 ha) of agricultural soils.



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- Increased sound levels occurring at more noise-sensitive locations (e.g., residential and recreational areas).

- About 1,600 bbl less seawater needed for hydrostatic testing of offshore pipelines.

- Approximately 15,000 $ft^2$ (1,395 $m^2$) less sedimentary habitat and associated organisms eliminated offshore.

- About 1.3 $m^2$ (3.4 $km^2$) more potential commercial fishing area temporarily lost.

- Temporary disturbance of 102.9 acres (41.7 ha) more terrestrial biological habitat (including foredune, dune scrub, and agricultural) and displacement, or elimination, of associated animals.

- Temporary interference with recreational land use in the vicinities of Mandalay, Silver Strand, and Port Hueneme City beaches; and, commercial, agricultural, and residential land uses and traffic along Hueneme Road, Pleasant Valley Road, Rice Road, Gonzales Road, and Harbor Boulevard.

- Temporary interference with commercial and industrial land use in the vicinity of Port Hueneme.

- Higher traffic volumes on the local road system.

- About $425,300 more sales and use tax revenues to local governments and the State of California due to higher project costs.

- About $7.11 million more in new taxable retail sales in Ventura County.

- Possible disturbance of 12 more confirmed or potential cultural resources sites.

The principal differences during the production phase would be:

- Slightly greater air pollutant emissions related to the need for three booster stations.

- Additional visual intrusion because of the need for an onshore treating facility and three booster stations (Mandalay Beach, Silver Strand Beach, and Rice Road/Gonzales Road intersection).

- Industrial intrusion into a relatively high beach use area (Silver Strand Beach).

- About $298,600 in additional first year property tax revenues.



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- Approximately $52,800 per year more sales and use tax revenues to local governments and the State of California.
- About $0.88 million more in new taxable retail sales in Ventura County.

Total energy required for implementation of the Ormond Beach Option B alternative configuration would be 96 percent higher than for the proposed configuration.

### 2.2.3 Comparison of Proposed Mandalay and Primary Alternative Configurations

The preceding sections have outlined the principal differences in potential environmental impacts between the proposed Mandalay configuration and the primary alternatives. Emphasis was placed on those environmental considerations that provide a basis for differentiating between possible configurations during each project phase.

Either the proposed Mandalay or alternative East Mandalay configurations would have the least potential adverse environmental impacts. No substantial differences between these two configurations are apparent. The Union Oil Marine Terminal alternative exhibits a greater potential for adverse impacts, because of the more extensive construction requirements and higher total energy consumption related to the onshore pipelines and booster station. The Ormond Beach alternative configuration (Option A or B) shows the greatest potential for adverse impacts. It would involve the most extensive areas for onshore construction, longest duration of construction activities, and highest total energy consumption. The Option B configuration generally appears less desirable than Option A because of the more extensive onshore area that would be adversely affected.

## 2.3 MITIGATION OF ENVIRONMENTAL CONSEQUENCES

The proposed Platform Gina and Platform Gilda Project would be subject to applicable regulations of several federal, state, and local agencies. Compliance by Union with the conditions of required permits and strict enforcement of regulations by the agencies involved would help ensure that the



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magnitude and significance of potential environmental impacts were reduced to the lowest levels possible. Additional mitigative measures (see Section 5.0 for full details) would include (unless otherwise indicated, these measures would apply equally to the proposed and alternative project configurations):

- Consumptive use of fresh water should be reduced by reuse of hydrostatic test water.
- Evaluation of possible earthquake ground motion, surface fault rupture, liquefaction/differential settlement, and subsurface natural gas accumulations should be completed prior to finalization of engineering design.
- The findings and recommendations of the various geotechnical engineering studies reports should be incorporated in final engineering design.
- Use of water sprays (during construction), and specially designed burners on heater treaters and booster station heaters, a vapor compression system, and regular maintenance and inspection programs (during production) would be used to minimize emissions of air pollutants.
- All revegetation onshore should be accomplished using native or introduced species, as appropriate.
- Riparian habitat should be allowed to revegetate naturally (Union Oil Marine Terminal alternative configuration).
- Final pipeline alignment through the Port Hueneme area should be selected so as to minimize disruption of port activities (Ormond Beach alternative configuration—Options A and B).
- Confirmed, or potential, archaeological sites should be avoided. If avoidance is not possible, the detailed mitigative measures outlined in Section 5.8.1 should be implemented.
- Energy use should be reduced by appropriate selection, design, and operation of proposed facilities and equipment.
- All mitigative measures recommended by the U.S. Coast Guard concerning navigational safety should be implemented (Section 4.9.1).
- Consultation with local agencies (e.g., police and fire departments) regarding special requirements for project design.



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## 2.4 PROJECT ALTERNATIVES

### 2.4.1 No Project

Under this alternative, existing environmental conditions in the project area would be maintained and potential adverse impacts on the environment associated with implementation of the proposed project would not occur. However, selection of this alternative would not be consistent with current national energy policies which are directed toward increased development of domestic oil reserves to reduce U. S. dependence on foreign imports.

### 2.4.2 Primary Alternatives

Information concerning the primary alternatives to the proposed project is provided in Sections 2.2.2 and 2.2.3.

### 2.4.3 Secondary Alternatives

Several secondary alternatives to the proposed project were identified by regulatory agencies involved in the development of the Work Program that was used as a guide for preparation of this EIR/EA. Studies regarding the engineering and economic feasibility of these alternatives have been conducted by Union and various consulting firms (Section 7.3). The specific alternatives involved include the following:

| Alternative Number | Description |
|---|---|
| 1 | Pipeline the produced fluids to Platform A and then to the existing Mobil-Rincon onshore facility. |
| 2 | Pipeline the produced fluids to a subsea location and connect into the Dos Cuadras pipeline for transport to the existing Mobil-Rincon onshore facility. |
| 3 | Pipeline the produced fluids directly to the existing Mobil-Rincon onshore facility. |
| 4 | Pipeline the produced fluids to Platform Grace and then to the existing Chevron-Carpinteria onshore facility. |
| 5 | Use of subsea wellheads. |
| 6 | Offshore treating and tanker loading at platform. |
| 7 | Use of semisubmersible drillships. |



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The studies that were conducted indicate that implementation of Alternatives 1, 2, 3, or 4 would require construction of a third offshore platform to accommodate additional treating equipment. Initial treating offshore is considered necessary to facilitate transport of the produced fluids over the greater distances involved (compared to the proposed project). After the fluids were transported to the onshore treating facility (either Mobil-Rincon or Chevron-Carpinteria), the product crude oil would then be sent south via pipe- - to the Union Oil Marine Terminal at Ventura Marina for tie-in to the Torrey pipeline system. These alternatives are technically feasible. However, Union has indicated that the costs associated with their implementation would be prohibitive, given the estimated volume of crude oil and natural gas reserves for the proposed project.

The use of subsea wellheads for Alternative 5 would still require that Platforms Gina and Gilda be constructed to facilitate collection and transport of the produced fluids to shore. This alternative would add facilities and costs to the proposed project without any apparent benefit.

Alternative 6 would require a third platform for treating equipment and offshore storage of crude oil, tanker shipment of product crude oil, and reinjection of natural gas rather than sending it to customers. This alternative is considered less desirable than the proposed project because of: (1) increased material, construction, and production costs; (2) increased atmospheric emissions; (3) increased tanker traffic in the Santa Barbara Channel; and, (4) increased potential for accidental oil spills and associated effects.

Alternative 7 would involve the use of semisubmersible drillships rather than the two fixed platforms. The use of drillships requires a mooring system to maintain position during motion caused by waves, currents, and winds. This motion causes unavoidable flexing, resulting in fatigue of the risers (pipelines conducting produced fluids) and increased potential for accidental oil spills. In addition, the use of drillships would probably require use of subsea completions. These problems are avoided through the use of fixed platforms. For these reasons, this alternative is considered less desirable than the proposed project.



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