

**CALIFORNIA COASTAL COMMISSION**

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**W 6.a**

## ENERGY AND OCEAN RESOURCES UNIT

Date Filed: .....January 9, 1998  
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 Staff Report: .....January 21, 1998  
 Hearing Date: .....February 4, 1998  
 Item No.: .....W 6.a  
 Commission Action: .....  
 Commission Vote: .....

**STAFF REPORT: REGULAR CALENDAR**

Permit Number: **E-96-28**

Applicant: **Windward Associates  
 (Macpherson Oil Company, General Partner)**

Agent: David Gautschy, David E. Gautschy, Inc.

Project Location: 555 Valley Drive, City of Hermosa Beach,  
 County of Los Angeles.

Project Description: Drill 30 oil and gas production wells; convert one existing oil well to a water disposal well; drill three additional water disposal wells; construct and operate a production tank farm; construct a 30-foot high sound attenuation wall around perimeter of property; and construct and operate a crude oil and a natural gas pipeline — each ½-mile long.

Approvals Received: City of Hermosa Beach: Condition Use Permit 95-5632 approved August 12, 1993; EIR No. 89060701 certified May 8, 1990; addendum certified August 12, 1993. California State Lands Commission approval, June 30, 1992. South Coast Air Quality Management District: Permits to Construct 306267, 306268, 306269, 306270, 306271, 306272, 306273, 306274, 306275, extended through October 13, 1998.

Substantive File Documents: See Appendix A.

**MACPHERSON OIL COMPANY — PROJECT TIMELINE**

- 1919**..... The Legislature of the State of California grants to the City of Hermosa Beach the tidelands and submerged lands within the City boundaries, in trust.
- 1932**..... The City of Hermosa Beach institutes a citywide ban on oil development.
- 1976**..... The Macpherson Oil Company initially proposes developing oil in the tidelands of Hermosa Beach from the City-owned “Biltmore” site. Proposal subsequently withdrawn.
- 1981**..... The City of Hermosa Beach submits draft Coastal Land Use Plan to the Coastal Commission for certification. The City requests that the Commission postpone consideration of land use designation for city-owned “Biltmore” site and associated energy policies. Oil development is still a potential, but locally controversial, option for development.
- 1982**..... Hermosa Beach LUP certified without incorporating energy policies.
- 1984**..... Ballot Measures P and Q are passed, granting exceptions to the drilling ban, authorizing oil development on two city-owned parcels.
- 1985**..... The Hermosa Beach City Council adopts an oil and gas code within the city zoning ordinances which establishes terms and conditions governing oil drilling and development in the city.
- 1986**..... The City of Hermosa Beach enters into a lease with Macpherson Oil Company to allow Macpherson to drill for onshore oil from the City Maintenance Yard site.
- 1986**..... The City of Hermosa Beach files an application with the California State Lands Commission (CSLC) to allow drilling for oil, gas and other hydrocarbons in the tidelands area. The CSLC requires the preparation of an Environmental Impact Report (EIR).
- 1989**..... The City of Hermosa Beach changes the General Plan designation of the City Maintenance Yard site from “open space” to “industrial.” The City does not amend the certified LUP designation of “open space.”
- May, 1990**..... The Hermosa Beach City Council certifies the EIR and adopts a Statement of Overriding Considerations for the project.
- May, 1990**..... The Hermosa Beach City Council adopts amendments to Hermosa Beach’s zoning ordinance to add oil drilling as a permitted use for an M-1 (light manufacturing) zone, and allowing oil and gas facilities to temporarily exceed the City’s maximum height limit of 35 feet.
- January, 1992**..... The California State Lands Commission approves the oil and gas lease between the City of Hermosa Beach and Macpherson Oil Company.

- January, 1992** ..... The City of Hermosa Beach executes a new lease with the applicant to authorize drilling for both onshore and offshore oil from the same site.
- August, 1993** ..... The Hermosa Beach City Council certifies an Addendum to the EIR and approves a Conditional Use Permit for the proposed project.
- August, 1993** ..... The Hermosa Beach Stop Oil Coalition files a petition for Writ of Mandate with the Los Angeles Superior Court against the California State Lands Commission (CSLC), challenging CSLC's decision to approve a tidelands lease agreement between the Macpherson Oil Company and the City of Hermosa Beach.
- September, 1993** ..... The Macpherson Oil Company submits an application to the Coastal Commission for a coastal development permit for the proposed project.
- September, 1993** ..... The Hermosa Beach Stop Oil Coalition files a lawsuit claiming: (a) a violation of the referendum measure that had limited oil wells to those "drilled from a site not exceeding an acre"; and (b) a variety of errors under the California Environmental Quality Act (CEQA) in the project EIR.
- January, 1994** ..... The Los Angeles court finds that the State, in approving the lease agreement between the Macpherson Oil Company and the City of Hermosa Beach, had not explicitly found that the leasing of the tidelands was in the best interest of the State. The California State Lands Commission (CSLC) at further public hearings reaffirms its decision and determines it was in the best interest of the State to approve the lease agreement.
- May, 1994** ..... The Los Angeles court finds that the CSLC had complied with the orders and directions of the court and the judge grants an order discharging the Peremptory Writ of Mandate filed by the Hermosa Beach Stop Oil Coalition in August, 1993.
- September, 1994** ..... The lawsuit filed by the Stop Oil Coalition in September, 1993, results in a determination by the court that the 1.3-acre oil drilling project violates the size restrictions in the referendum measure and the Conditional Use Permit is invalid.
- January, 1995** ..... Macpherson withdraws coastal development permit application.
- November, 1995** ..... Ballot Measure E passes in Hermosa Beach, stripping local ordinances of the provisions for the limited oil and gas development authorized by Measures P and Q, and effectively re-establishing the total ban on oil and gas development within city limits.
- June, 1996** ..... The Macpherson Oil Company and the City of Hermosa Beach appeal the court's decision in 1994 regarding the validity of the Conditional Use Permit. The Court of Appeals rules in their favor, reversing the decision of the trial

court and validating the Conditional Use Permit. The matter is sent back to trial court in Los Angeles for further proceedings on the CEQA issues.

- November, 1996**..... Macpherson submits a new application to the Coastal Commission for a coastal development permit.
- February, 1997** ..... The City of Hermosa Beach submits a draft LUP amendment package for preliminary, informal review by Coastal Commission staff. Commission staff suggest a LUP amendment defining and applying an appropriate energy or industrial land use designation for the proposed site, accompanied by the necessary policies to provide for such development.
- April, 1997**..... The Los Angeles trial court denies Writ of Mandate on the CEQA issues raised in 1994 by the Stop Oil Coalition.
- June, 1997**..... The Stop Oil Coalition files notice of appeal of judgment denying Writ of Mandate on the CEQA issues.
- June, 1997**..... Stop Oil Coalition files lawsuit asserting that Measure E applies retroactively to the proposed Macpherson Oil project. Lawsuit is still pending.
- June, 1997**..... City of Hermosa Beach staff notifies Coastal Commission staff that the City's history of various ballot measure approvals and general plan amendments must suffice as adequate policy consideration of the Macpherson proposal and that no further LUP amendments will be submitted by the City.
- July, 1997**..... Macpherson agrees to suspend further processing of application while the proposal undergoes a third-party review of the hazard risk analysis. Arthur D. Little, Inc., an independent engineering consulting firm, begins its assessment of the risks from the proposed project.
- September, 1997** ..... Arthur D. Little, Inc. preliminary review completed.
- September, 1997** ..... The Hermosa Beach Stop Oil Coalition abandons appeal of judgment denying Writ of Mandate on the CEQA issues.
- November, 1997**..... Macpherson revises coastal development permit application to state that no wells will be produced that exceed 40 ppm hydrogen sulfide and agrees to remove hydrogen sulfide treatment equipment from the project plans (added after the Conditional Use Permit was approved), keeping the project consistent with the City's CUP.
- December, 1997** ..... Final Arthur D. Little, Inc. review of hazard analysis is released.
- January, 1998** ..... Macpherson's coastal development permit application is filed. Commission staff report prepared.
- February, 1998** ..... Coastal Commission public hearing on permit application scheduled for February 4, 1998.

## SYNOPSIS

### Project Description and Background

Windward Associates (hereinafter “The Macpherson Oil Company” or “Macpherson”) proposes a 30-well oil and gas development project on City-owned property in the midst of a densely populated beach community in Hermosa Beach.

The proposed project includes:

- **Wells:** Maximum of 30 oil and gas wells using slant reach technology to tap offshore and onshore reservoirs. Wells will be drilled with a 135-foot drilling rig.
- **Production Tank Farm:** 5 tanks — 3 crude oil tanks, a water storage tank and a raw brine tank (12-16 feet high, two 2,000 barrel capacity, two 3,300 barrel capacity, and one 500 barrel capacity).
- **Production Equipment:** A range of oil and gas production equipment including compressors, scrubbers, dehydrators, a gas refrigeration unit, a thermal oxidizer, metering and filtration equipment.
- **Pipelines:** Construction and operation of a crude oil and natural gas pipeline, each ½-mile long. These pipelines will connect with an existing Southern California Edison pipeline system.
- **Enclosure Wall:** Construction of a 30-foot high sound attenuation wall around perimeter of property.

In 1986, the City of Hermosa Beach entered into a lease with the Macpherson Oil Company for development of the City’s tidelands oil reserves. The City performed an environmental impact analysis and issued a Conditional Use Permit (CUP) for the applicant’s project in 1993.

Oil development has been politically controversial in the City of Hermosa Beach for decades. Adverse effects of antiquated oil development practices led to eyesores and hazards in the community in the 1920s (rusting derricks abandoned in place, potholes opening on city streets, contaminated soils) and a ban on further oil development was passed by local residents in the 1930s. Oil revenues to the City were hard to overlook, however, and when local citizens were told that nearby Redondo Beach tidelands wells were draining Hermosa Beach tidelands, ballot Measures P and Q were passed in 1984 authorizing oil development from two City-owned parcels in Hermosa Beach.

These ballot measures were approved in large part because the City needed royalties to buy promised park and school lands. Macpherson led the campaign for passage of Measures P and Q promising \$1 million per year for the land purchases. The lands have since been purchased with funds from other sources. The City did not approve a permit for the proposed project until 1993, and lawsuits

subsequently added further delays. The local voters passed Measure E in 1995, which renews a citywide ban on oil and gas development in Hermosa Beach. City officials believe that Measure E does not apply to the Macpherson project, but that interpretation has not been definitively determined by the courts.

### **The Coastal Commission's Standard of Review**

The question of whether the proposed project is well suited for the proposed site turns in part on questions of overall community character that are, in many cases, more appropriately taken up with the local government that approved the project. The City sought and approved this project, and its main effects will be on the local community rather than publicly-used coastal facilities.

As industrial development, the project is not provided for in the City's certified coastal Land Use Plan. However, the City does not have a fully certified Local Coastal Program. Therefore, the LUP functions as guidance from the Commission in the local application of Coastal Act policies. The applicant has obtained local government approval for the project, has met the tests of adequacy for filing a coastal development permit application, and thus is entitled to the Coastal Commission's consideration of a permit application. Where there is not a fully certified LCP, the Commission's legal standard of review for permit consideration is whether the proposed project:

- (a) is consistent with the Chapter 3 policies of the Coastal Act,
- (b) will not prejudice the City's ability to prepare a Local Coastal Program, and
- (c) is consistent with the requirements of the California Environmental Quality Act.

Significant Chapter 3 issues are summarized in the table below, and as explained hereinafter, significant impacts the proposed project may pose to coastal resources are mitigated either through measures incorporated into the project by the applicant or by measures imposed by means of the applicable special conditions set forth below.

### **Staff Recommendation: Approval with Extensive Conditions**

The staff recommends that the Commission adopt the proposed findings stating that as extensively conditioned to mitigate project impacts to less than significant levels, the proposed project is consistent with the applicable policies of Chapter 3 of the Coastal Act. On this basis, the staff recommends that the Commission approve the proposed project, as conditioned.

**Table 1. Issue Summary: Potential Project-Related Impacts**

<b>Significant Issue Area</b>	<b>Coastal Act Analysis</b>
<b>Siting of Industrial Development</b>	<p><b>Issue:</b> The applicant proposes to locate a hazardous oil and gas industrial development in a fully developed urban area with nearby residences.</p> <p><b>Conclusion:</b></p> <ul style="list-style-type: none"> <li>• The Coastal Act requires that, where feasible, hazardous industrial development be located away from existing development. No alternative sites are permissible in Hermosa Beach because a 1995 ballot measure bans oil development citywide. The applicant evaluated alternative sites in Redondo Beach. Sites on or near the Southern California Edison power plant property could technically accomplish the project's objectives. Oil and gas development is not currently authorized by the City of Redondo Beach ordinances, however. Redondo Beach revised its zoning ordinances in 1992 to limit permissible uses strictly to those listed in the relevant zoning districts. Oil and gas development is not listed in any zone district. Therefore, Redondo Beach staff have determined that the Macpherson project could not obtain local approval there. For these reasons, no legally feasible alternatives to the applicant's proposed site exist.</li> </ul>
<b>Hazards</b>	<p><b>Issue:</b> While the applicant believes that hydrogen sulfide will not be encountered in the oil and gas stream, the applicant sought a permit to treat unspecified concentrations of hydrogen sulfide that might be encountered in the future. Commission staff did not believe the applicant had fully analyzed the potential worst-case accidental release of hydrogen sulfide that might occur. In addition, some nearby wells have historically produced significant amounts of hydrogen sulfide. As a result, the applicant agreed to fund an independent, third party review of its hazard risk analysis. The consultant, Arthur D. Little, Inc., working under the direction of Commission staff, determined that hydrogen sulfide, an acutely toxic gas, could be encountered during drilling and/or production and could pose a significant safety risk to offsite populations.</p> <p>Hydrogen sulfide is lethal within a few breaths at concentrations of 1,000 parts per million (ppm), and kills within ½-hour at concentrations of 300 ppm. Injuries may occur at lower concentrations and occupational safety standards are triggered at 10 ppm.</p>
<b>Hazards</b>	<b>Mitigation Measures:</b>

Significant Issue Area	Coastal Act Analysis
(continued)	<ul style="list-style-type: none"> <li>• After reviewing Arthur D. Little Inc.'s preliminary report, Macpherson modified its project to operate wells only so long as untreated (downcasing) hydrogen sulfide concentrations do not exceed 40 parts per million (ppm) in any well. Wells in excess of 40 ppm hydrogen sulfide shall either be re-completed to avoid hydrogen sulfide or permanently shut-in (<b>Special Condition M-1</b>). The applicant shall also delete from project plans all hydrogen sulfide treatment equipment (<b>Special Condition M-4</b>). Under a worst-case release scenario, the 40 ppm of hydrogen sulfide would begin mixing almost immediately with the open air, and would be diluted to insignificant concentrations before offsite exposure, if any, would occur.</li> <li>• The applicant shall maintain a 360-degree perimeter hydrogen sulfide detection and alarm system that detects hydrogen sulfide at concentrations of 5 ppm and automatically alerts police and fire departments. At 10 ppm, visible and audible alarms are activated at the site boundaries (<b>Special Condition M-2</b>).</li> </ul> <p><b>Issue:</b> The project poses a risk of fire and explosion.</p> <p><b>Mitigation Measures:</b></p> <ul style="list-style-type: none"> <li>• The applicant shall make use of best available technology for equipment design, valve placement and specifications, well blowout preventers, etc..</li> <li>• The applicant shall install a Supervisory Control and Data Acquisition automatic safety and alarm system to provide optimal emergency response capabilities.</li> <li>• Qualified staff shall be present onsite 24 hours per day to oversee operations.</li> <li>• <b>Special Condition M-7</b> requires the applicant to prepare a Fire Protection Plan for California State Lands Commission and local Fire Department review and approval, with required annual updates.</li> <li>• <b>Special Condition M-6</b> requires preparation of Hazard and Operability Studies before construction of Phase I (testing) and before Phase II (production). The applicant must implement any safety improvements identified during final design review.</li> <li>• <b>Special Condition A-9</b> requires independent monitoring and oversight by the California State Lands Commission for the life of the project, thus ensuring strict enforcement of all safety requirements.</li> </ul> <p><b>Issue:</b> Withdrawal of reservoir fluids and associated changes in reservoir pressures may lead to subsidence. Subsidence of the nearshore area could lead to changes in beach profiles and result in loss of sandy beach. Subsidence can also cause increase seismic activity.</p>
<b>Hazards</b>	<b>Mitigation Measures:</b>



Significant Issue Area	Coastal Act Analysis
(continued)	<ul style="list-style-type: none"> <li>• <b>Special Condition M-35</b> requires implementation of a Subsidence Monitoring and Control Program. The program in part provides for Commission intervention if subsidence is detected.</li> </ul> <p><b>Issue:</b> Re-injection of produced fluids poses a remote risk of increased earthquake activity.</p> <p><b>Mitigation Measures:</b></p> <ul style="list-style-type: none"> <li>• <b>Special Condition M-36</b> requires preparation of a Seismic Monitoring Plan that provides for monitoring by a qualified, independent entity and intervention by the Commission if project-induced seismicity is detected.</li> </ul>
Oil Spills	<p><b>Issue:</b> Project-related operations could result in an accidental oil spill from the production facility/drilling site (a maximum 2,800-barrel spill), a tanker truck (a maximum 175-barrel spill), and/or a pipeline (a maximum 141-barrel spill).</p> <p><b>Mitigation Measures:</b></p> <ul style="list-style-type: none"> <li>• <b>Special Condition M-13</b> requires membership in Clean Coastal Waters, Inc., or an equivalent Oil Spill Response Organization.</li> <li>• <b>Special Condition M-14</b> requires the applicant to keep 500 sandbags dedicated exclusively to oil spill response stored within ½- mile of the project production facility. The sandbags would be deployed immediately to prevent oil from entering the storm drain system, which drains to the sea.</li> <li>• The facility will be designed to contain a worst-case spill on site.</li> <li>• The applicant will use back-up computer systems and automatic controls, such as leak detection systems and automatic shut-off valves, to shut down operations and to isolate and reduce the size of any spills.</li> <li>• The applicant is required to routinely inspect the production facility, storage tanks, pipelines and drilling rigs pursuant to state and federal requirements (<b>Special Condition M-15</b>).</li> <li>• The applicant is required to have an OSPR-approved oil spill contingency plan in place.</li> </ul>
Visual	<p><b>Issue:</b> Drilling and well work-over activities require a 110 to 135-foot tall drilling rig which (a) contrasts sharply with existing neighborhood building heights, (b) will be somewhat visible from several coastal public viewing areas, and (c) is incompatible with the low-profile visual character of this beach community.</p>
Visual (continued)	<p><b>Mitigation Measures:</b></p> <ul style="list-style-type: none"> <li>• The 135-foot tall drilling rig will be removed after all wells are drilled — no later than four years after the first well is drilled. Thereafter, a 110-foot tall</li> </ul>

<b>Significant Issue Area</b>	<b>Coastal Act Analysis</b>
	<p>workover rig may be onsite for up to 90 days per year.</p> <ul style="list-style-type: none"><li>• To compensate for adverse visual impacts that cannot be fully mitigated, the applicant proposes to pay \$1,000 per month (adjusted for inflation), or a sum pro-rated based on the numbers of days per month that a rig is standing onsite for any reason, into the City's Coastal Resource Enhancement Fund.</li></ul> <p><b>Special Condition M-30</b> requires, through execution of a Memorandum of Understanding with the City, that the mitigation fees be spent exclusively for projects to visually enhance public coastal open spaces and recreation areas from which the project is visible.</p>
<b>Recreation / Public Access</b>	<p><b>Issue:</b> The applicant proposes to remove 12 parking spaces, six of which are currently available to the public on weekends for beach access.</p> <p><b>Mitigation Measures:</b></p> <ul style="list-style-type: none"><li>• The applicant proposes to provide six new free public parking spaces for public use seven days a week.</li></ul>

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## **1.0 STAFF RECOMMENDATION**

### Approval With Conditions

The staff recommends Conditional Approval of Coastal Development Permit Application E-96-28.

### Motion:

I move to approve Coastal Development Permit E-96-28 subject to the conditions specified in the staff recommendation dated January 21, 1998.

The staff recommends a **YES** vote. To pass the motion, a majority vote of the Commissioners present is required. Approval of the motion will result in the adoption of the following resolution and findings:

### Resolution:

The Coastal Commission hereby grants Coastal Development Permit E-96-28, subject to the conditions specified below, on the grounds that:

- (1) the development as conditioned will be in conformity with the provisions of Chapter 3 of the California Coastal Act of 1976;
- (2) the development as conditioned would not prejudice the ability of the local government having jurisdiction over the area to prepare a Local Coastal Program conforming to the provisions of the Coastal Act; and
- (3) there are no feasible alternatives or feasible mitigation measures available, other than those specified in this permit, which would substantially lessen any significant adverse impact which the activity may have on the environment within the meaning of the California Environmental Quality Act.

## **2.0 STANDARD CONDITIONS — SEE APPENDIX B.**

### **3.0 SPECIAL CONDITIONS**

This permit is granted subject to the following special conditions:

#### **ADMINISTRATIVE**

A-1 In addition to any immunities provided for by law, in exercising this permit, the permittee agrees to hold harmless and indemnify the Commission, its officers, employees, agents, successors and assigns from any claims, demands, costs, expenses, and liabilities for any damage to public or private property or personal injury that may result directly or indirectly from the project.

The permittee shall be jointly and severally liable without regard to fault for all legally compensable damages or injuries suffered by any property or person that result from or arise out of any hydrocarbon, brine or water spillage, fire, explosion, subsidence, induced seismicity, odor, noise, or air pollution, or in any way involving petroleum or gas or the impurities contained therein or removed therefrom which arise out of the Hermosa Beach Urban Slant Drilling operation. For the purpose of this condition, the “operation” shall be deemed to include the construction and operation of all facilities described herein and any subsequent approved revisions or modifications. “Operation” shall also include all project-associated transportation activities, including deliverance of supplies containing hazardous materials, hydrocarbon or hydrocarbon byproduct transportation to or from the site, or transportation of hydrocarbon or hydrocarbon byproducts from the site to receiving entities. “Operation” shall also include all activities necessary to remediate pre-existing contaminated soils on the project site. This declaration of strict liability and the limitations upon it shall be governed by the applicable law of California on strict liability.

A-2 The permittee shall reimburse the Commission in full for all costs and attorneys fees — including (1) those charged by the Office of the Attorney General, and (2) any court costs and attorneys fees that the Commission may be required by a court to pay — that the Commission incurs in connection with the defense of any action brought against the Commission, its officers, employees, agents, successors and assigns challenging the approval or issuance of this permit, the interpretation and/or enforcement of permit conditions, or any other matter related to this permit.

A-3 Acceptance of this permit shall be deemed acceptance of all conditions of this permit. In accepting this permit, the permittee agrees that it shall not challenge the limitations on the operation of the project provided in the conditions to this permit and agrees to waive any and all rights to challenge this permit under any legal theory, including but not limited to those based on abuse of discretion, lack of support by evidence in the record, and inverse condemnation.

- A-4 In accepting this permit, the permittee acknowledges that authority to conduct development activities under this permit is contingent upon full and continuing compliance with every condition of this permit. In addition to all other remedies, failure to comply fully with the requirements of any condition of this permit shall constitute grounds for a cease and desist order issued by the executive director or the Commission (Coastal Act §§30809 and 30810).
- A-5 As to any condition that requires for its effective enforcement the inspection of records or facilities by the Coastal Commission or its agents, the permittee shall make all relevant records available and provide access to such facilities upon reasonable notice from the Coastal Commission. For inspection of the physical project facility, reasonable notice shall be by telephone or letter received by the permittee or the permittee's designated representative at least twenty-four (24) hours in advance of the pending inspection. For inspection of written or computer-stored records, if such records are maintained on the project site, reasonable notice shall be the same as for inspection of the physical project facility; for records that are maintained elsewhere by the permittee, reasonable notice shall be by telephone or letter received by the permittee at least five (5) working days in advance of the pending inspection and such records shall be made available to the Coastal Commission or its agents either at the project site or at a Coastal Commission office designated by the executive director.
- A-6 The project facility shall be staffed by qualified employees twenty-four (24) hours per day for the life of the project. The designated employee(s) shall be trained in all aspects of facility safety procedures and informed of all public safety and emergency response plans and procedures. The onsite employee(s) shall at all times have available the following communications equipment: a minimum of two land line telephone extensions (including at least one extension in the well cellar), a portable cellular telephone; and backup radio equipment. All applicable emergency response telephone numbers shall be prominently posted at each communications station.
- A-7 In the event that the permittee seeks any new permit for additional proposed development materially related to the development authorized pursuant to this permit, or seeks any material modification to the City of Hermosa Beach's Conditional Use Permit 93-5632, the permittee shall submit a copy of the relevant application to the executive director within ten (10) days of such submittal to the permitting authority. Any additional materials subsequently submitted in association with such application shall also be submitted to the executive director within ten (10) days of such submittal to the permitting authority.
- A-8 Prior to issuance of this permit, or according to other specified timelines, the permittee shall submit a complete set of project plans (for Phase I prior to permit issuance, and for Phase II, prior to commencement of Phase II activities), including final engineered project plans and designs, and a copy of the permittee's Compliance Plan (as specified below) to the executive director, State Division of Oil and Gas and Geothermal Resources (DOGGR), the California

State Lands Commission (CSLC), the State Fire Marshal's Pipeline Safety Division (PSD), the Federal Department of Transportation, and the City of Hermosa Beach Fire Department. The executive director shall review the Compliance Plan in consultation with these agencies and departments and determine whether the plan is adequate to ensure the effective implementation of the special conditions applicable to this permit. If the permittee and the executive director do not agree on Compliance Plan adequacy, the Compliance Plan shall be submitted to the Coastal Commission for a determination as to its adequacy. The Compliance Plan is intended to provide a monitoring and reporting framework for compliance with all conditions, programs and plans specified by these conditions.

The Compliance Plan shall identify the necessary documentation and appropriate reporting periods to enable the Coastal Commission to determine that the permittee remains in compliance with all conditions of this permit. The project shall not commence until the Compliance Plan is approved. All costs to implement the approved Compliance Plan for the life of the project shall be the responsibility of the permittee.

The permittee shall provide a copy of each monthly Compliance Plan report to the City of Hermosa Beach Community Development Department at the same time such reports are submitted to the executive director. The copy submitted to the City of Hermosa Beach shall be placed in the public file associated with the City's Conditional Use Permit 93-5632, to ensure that local citizens may inspect the reports at a convenient location and at no charge.

The Compliance Plan shall include but not be limited to the following:

1. a complete set of all approved plans, as specified by these conditions, relevant to construction and operation of the permitted facilities. If separate plans exist, they may be referenced rather than physically included in the Compliance Plan submittal;
2. provisions for onsite monitoring by the California State Lands Commission (CSLC), or as otherwise specified and approved by the executive director pursuant to **Special Condition A-9**, during Phase I and Phase II construction and production operations. The onsite monitor shall have overall responsibility for monitoring the permittee's compliance with the conditions of this permit and ongoing reporting of the status of compliance to the executive director. The monitor shall be selected by and responsible to the executive director, and to the extent that the CSLC is willing and able to perform this function pursuant to **Special Condition A-9** set forth below, the executive director shall assign responsibility for onsite monitoring to the CSLC. Onsite monitoring shall be funded by the permittee for the life of the project;
3. provisions to ensure contractor knowledge of and compliance with these conditions;
4. provisions for the submittal to the Coastal Commission or to the Commission's designated representative of monthly reports throughout construction and annual summary reports during operations unless more frequent reporting is deemed necessary by the executive director or required pursuant to other applicable Special Conditions set



- forth herein. Upon receipt of compliance reports, the executive director shall advise the permittee if additional compliance items require reporting prior to the next report. The regularly scheduled monthly reports shall describe:
- (a) Project status, including but not necessarily limited to:
    - i. extent to which construction has been completed,
    - ii. the rate of production/throughput during operation,
    - iii. monthly report of maximum hydrogen sulfide concentrations detected in each producing well,
    - iv. identification of any incident in which the downcasing hydrogen sulfide limitation of forty (40) parts per million was exceeded in any well,
    - v. any revised time schedules or timetables of construction and/or operation that will occur in the next one (1)-year period.
  - (b) Permit condition compliance including but not necessarily limited to the results of the specific mitigation requirements identified in these conditions and compliance plans.
  - (c) Results and analyses of all tests conducted by the permittee pursuant to these permit conditions including, or in addition to, any analyses set forth in any applicable condition herein. The reports shall also include the results and analyses of samples collected by a qualified party approved by the executive director and funded by the permittee. In addition to analyses that may be required by other applicable permits and conditions, independent sampling to test for hydrogen sulfide levels in each well shall be performed, and split samples tested by laboratories selected by the executive director. Such tests shall be required a minimum of once per quarter for wells with less than thirty-five (35) parts per million of hydrogen sulfide and monthly for wells exceeding thirty-five (35) parts per million of hydrogen sulfide. Independent sampling reports shall be provided directly to the executive director, to the project monitor, and to the permittee. Standard chain-of-custody protocols shall be strictly observed during sample withdrawal, transport, and analysis.
  - (d) Subsidence and induced seismicity monitoring and/or mitigation program reports or analyses required pursuant to **Special Conditions M-34** through **M-36** set forth herein.
  - (e) Pipeline testing and maintenance results and reports.
  - (f) Results of monthly tests and inspections conducted by the CSLC, shown by way of example in Exhibit 22.
  - (g) Notice of any violation of local, state, or federal standards, permit conditions, or other applicable regulations.
- A-9 (a) The Coastal Commission hereby designates the California State Lands Commission to undertake the oversight and monitoring required pursuant to the approved Compliance

- Plan described in **Special Condition A-8** herein and other applicable provisions of this permit. If at any time the CSLC proves unwilling, or, in the opinion of the executive director, unable, to carry out the responsibilities set forth herein, the executive director shall schedule a noticed public hearing at a regularly scheduled Commission meeting and make recommendations to the Commission for designation of an alternative, qualified entity or agency to undertake this responsibility. The alternative project monitor shall be chosen by the Commission and funded by the permittee.
- (b) The costs incurred by the monitoring and oversight entity pursuant to the requirements of this permit shall be at the permittee's expense. Compensation by the permittee shall be made pursuant to a Memorandum of Understanding between the permittee, the City of Hermosa Beach, and the executive director, in a form and content acceptable to the executive director. Compensable expenses to be funded by the permittee shall include all necessary costs for condition compliance and the enforcement of this permit, including necessary consultations with qualified experts, reasonable studies and/or field tests and analyses, project monitoring, equipment, travel, and associated operating costs incurred by the Coastal Commission or its designated monitor to ensure compliance with and/or to enforce the conditions of this permit.
- A-10 Within sixty (60) days of the conclusion of the Phase I testing, the permittee shall notify the executive director of its determination as to the feasibility of Phase II (production). The permittee shall commence Phase II no later than one calendar year after the conclusion of Phase I testing. The combined length of Phase I and Phase II activities shall not exceed thirty-five (35) years from the commencement of Phase I (testing). No extension of this development period shall be authorized without an approved amendment to this permit pursuant to §13166 of the Commission's regulations.
- Notwithstanding the above, if any cause beyond the control of the applicant shall enforce a delay of project construction or operation, other than the risks attendant to the exploration and development of the project itself, an extension of time for any such cause shall be for the period of the enforced delay and shall commence to run from the time of the commencement of the cause, if notice by the party claiming the extension is sent to the executive director in writing, by certified mail, within thirty (30) days of the commencement of the cause.
- A-11 Prior to construction, the permittee shall demonstrate to the executive director that it carries a minimum of \$15,000,000 in General Liability Insurance, and \$15,000,000 in Well Control Drilling Insurance on the subject oil and gas project with a company rated "A" or better. The General Liability Insurance policy shall be in effect prior to construction and shall be maintained for the life of the project, through abandonment of the facility. The Well Control Drilling Insurance policy shall only be required to be in effect while drilling or workover drilling operations are being conducted. The permittee may satisfy this requirement by having its drilling contractor or subcontractors supply the required insurance, so long as the

aggregate insurance maintains the totals required. The policy(s) shall specify that the amount and/or extent of coverage may not be modified or canceled without sixty (60) days prior written notice to the Coastal Commission.

- A-12 The permittee shall furnish the executive director with copies of all local, state, and federal permits relative to the project authorized by this permit within thirty (30) days of receipt by the permittee.
- A-13 Any reference to any public agency or private entity contained in these special conditions shall be deemed also to be a reference to any successor public agency or successor private entity.
- A-14 Prior to issuance of this permit, the permittee shall submit an executed letter of intent from Southern California Edison's pipeline subsidiary indicating that Edison Pipeline and Terminal Company (EPTC) intends to allow the permittee to connect the crude oil and natural gas liquid (NGL) pipeline authorized by this permit to the EPTC pipeline system at the Southern California Edison Redondo Beach Terminal and Generating Station for purposes of accepting the crude oil and natural gas liquids produced during Phase II of the permittee's project. The subject letter of intent shall contain evidence that the EPTC pipeline system has adequate capacity to accept the maximum crude oil and natural gas liquid (NGL) production anticipated by the permittee over the life of the project (maximum rate of 9,410 barrels per day or 3,350,000 barrels per year) for the term of this permit (up to 35 years).
- A-15 Prior to commencement of Phase II activities, the permittee shall demonstrate to the executive director's satisfaction that it has entered into a binding agreement with Edison Pipeline and Terminal Company (EPTC) for connection to and use of the EPTC pipeline system for the project's anticipated crude oil and natural gas liquid production volumes and throughput rates. The subject agreement shall contain evidence that the EPTC pipeline system has adequate capacity to accept the maximum crude oil and natural gas liquid (NGL) production anticipated by the permittee over the life of the project (maximum rate of 9,410 barrels per day or 3,350,000 barrels per year) for the term of this permit (up to 35 years).
- A-16 Prior to commencement of Phase II activities, the permittee shall submit an executed letter of intent from Southern California Edison indicating that SCE intends to allow the permittee to connect the natural gas pipeline authorized by this permit to the Edison pipeline system for the purpose of shipping the estimated volume and production rate of the project's produced natural gas to the Edison Redondo Beach Power Plant. The letter of intent shall acknowledge that the produced gas may contain hydrogen sulfide concentrations of up to forty (40) parts per million and that Edison is authorized and willing to purchase the anticipated volumes of natural gas produced pursuant to the oil and gas extraction activities authorized by this permit. If the permittee intends to substitute a different sales destination for the produced gas, and if no attendant physical change in the project authorized by this permit is required to

accommodate the alternative buyer, the same provisions of this condition shall apply to an executed letter of intent from the alternative buyer.

- A-17 No later than thirty-five (35) years following commencement of construction for Phase II, the permittee shall submit a complete application for a new coastal development permit from the Coastal Commission for the abandonment of the project. In accepting this permit, the permittee acknowledges that it shall be responsible for full project abandonment and site restoration in accordance with all laws, regulations, and policies applicable at that time. The applicant shall obtain all necessary permits and approvals and shall remove any and all abandoned processing facilities and portions of unburied pipeline, constructed and/or operated under this permit, excavate and/or remediate any contaminated soils, and re-contour and revegetate the site in accordance with an approved abandonment and restoration plan within two (2) years of the expiration of the term of this permit.
- A-18 Prior to commencement of construction for Phase I, the permittee shall post a performance bond, cash, or other security device in an amount and form acceptable to the executive director, with the City of Hermosa Beach, for the estimated costs of abandoning Phase I facilities. In addition, prior to commencement of construction for Phase II, the permittee shall post a performance bond, cash, or other security device in an amount and form acceptable to the executive director, with the City of Hermosa Beach, for the estimated costs of abandoning Phase II facilities.

## MITIGATION MEASURES

### Public Safety/Hazards

- M-1 The permittee is only authorized to operate wells developed pursuant to this permit so long as untreated (downcasing) hydrogen sulfide concentrations do not exceed forty (40) parts per million (ppm) in any well. If untreated concentrations of hydrogen sulfide in any well are determined pursuant to **Special Condition A-8** to exceed forty (40) ppm, that well shall be immediately shut in and the executive director shall be notified within twenty-four (24) hours of detection of the exceedance. The permittee shall either re-complete the well to avoid excessive hydrogen sulfide concentration, or abandon the well to State Division of Oil and Gas and Geothermal Resources standards within six (6) months of detection of the exceedance of 40 ppm of hydrogen sulfide.
- M-2 The permittee shall install and continuously maintain a 360-degree perimeter hydrogen sulfide detection and alarm system. The system shall be calibrated to trigger alarms, transmit automatic telephone warnings, and otherwise be operated according to the following requirements:
- (a) the system shall be calibrated to detect ambient air concentrations of hydrogen sulfide at five (5) ppm in onsite drilling and production areas and shall trigger visual and audible

- alarms detectable by the onsite project operator if this concentration is detected;
- (b) the system shall be calibrated to detect ambient air concentrations of hydrogen sulfide at five (5) ppm at the site boundaries and shall activate an automatic telephone warning system if this concentration is detected. The telephone warning system shall use dedicated line separate from other required communications lines and equipment on site. The telephone warning system shall automatically call the Hermosa Beach police and fire departments and if they are not dispatched twenty-four (24) hours per day, the system shall additionally telephone the emergency 9-1-1 operator after regular department hours. The telephone warning system shall be designed to continue calling the designated parties in sequence until the parties acknowledge the call;
  - (c) the system shall be calibrated to detect ambient air concentrations of hydrogen sulfide at ten (10) ppm at the site boundaries and shall activate flashing hazard warning lights, next to which explanatory hazard warning signs shall be placed, on all sides of the site and at project entrances. The ten (10) ppm hydrogen sulfide threshold shall also trigger audible alarms;
  - (d) the system shall not be disabled for any reason without prior notice to the executive director's designated project monitor and to the Hermosa Beach police and fire departments. Notice shall also be given to these parties when the system is placed back in service. The dates, times, duration, and cause of such interruptions shall be noted in a permanent log maintained onsite and in the monthly Compliance Plan required pursuant to **Special Condition A-8**; and
  - (e) tests of the perimeter detection and alarm system, including the telephone warning system, shall be made once per month, at a minimum, for the life of the project. Tests shall be conducted by the independent monitor and results shall be logged in the monthly Compliance Plan reports required pursuant to **Special Condition A-8**.
- M-3 Prior to issuance of this permit, the permittee shall execute and record a lease restriction, in a form and content acceptable to the executive director, stating that the subject permit is only for the development described in Coastal Development Permit E-96-28 and that any future additions or improvements to the property that might otherwise be exempt from permit requirements under PRC § 30610(b) will require a permit from the Coastal Commission. The document shall run with the lease, binding all successors and assigns, and shall be recorded free of prior liens and any other encumbrances which the executive director determines may affect the interest being conveyed.
- M-4
- (a) Prior to issuance of this permit, the permittee shall submit for the review and approval of the executive director, revised plans showing the deletion of all previously proposed hydrogen sulfide treatment equipment.

- (b) Prior to construction of Phase I and prior to construction of Phase II the permittee shall submit evidence to the executive director's satisfaction that the applicable final designs and engineering drawings incorporate all recommendations contained in the "Geologic Hazards Investigation" prepared for the permittee's project by Ryland Associates, dated June 10, 1994. The final plans shall be stamped as approved by a registered engineering geologist familiar with the referenced land reports.
- M-5 Prior to placing the natural gas liquids (NGL) processing system in service, the permittee shall provide for a comprehensive safety and reliability analysis of the NGL processing system. The analysis shall be performed by a qualified agency or consultant approved by the executive director and funded by the permittee. The analysis shall be submitted to the executive director, the California State Lands Commission, and the City of Hermosa Beach Fire Department within ten (10) days of completion. Any deficiencies detected during the analysis, or suggestions for safety improvements made by reviewing agencies, shall be implemented by the permittee prior to placing the systems in service. Any additional inspections or testing necessary to confirm the efficacy of these modifications or improvements shall be completed prior to placing the NGL processing system in service. The permittee shall provide the executive director with evidence of the successful final clearance of the NGL processing system. The NGL processing system shall not be placed in service until the executive director notifies the permittee that this special condition has been fully satisfied.
- M-6 Prior to construction of Phase I, and again prior to construction of Phase II, the permittee shall provide for the executive director's review and approval a comprehensive Hazard and Operability Study (HAZOP) for the proposed facility and ancillary equipment. Each HAZOP shall be performed by a qualified consultant approved by the executive director and funded by the permittee. The HAZOPs shall identify likely sources of potential accidental releases and shall recommend mitigation measures to prevent or reduce the likelihood of the identified potential accidental release scenarios. The HAZOPs shall be reviewed and approved by the California State Lands Commission (CSLC) and the Fire Chief of the City of Hermosa Beach, and evidence of such approval shall be submitted to the satisfaction of the executive director. Additional mitigation measures that may be recommended as a result of the HAZOPs, or by the reviewing entities, that require material changes to the proposed project may require an amendment to this permit. New mitigation measures required as the result of a HAZOP(s) shall become additional enforceable special conditions of this permit.
- M-7 Prior to commencement of Phase I construction, the permittee shall provide a letter from the Fire Chief of the City of Hermosa Beach to the executive director confirming that the following requirements have been satisfied:
- (a) that the Arthur D. Little, Inc. final risk analysis for the proposed project has been reviewed by the Fire Chief and that any additional equipment or training (for example, but not limited to, confined space rescue training) the Fire Department finds necessary to

- respond effectively to potential hazards associated with the project have been provided by the permittee;
- (b) that a dedicated fire fighting water source with adequate volume and pressure, and/or a chemical suppression system, designed to effectively control a worst case release and ignition of flammable gases, or other fire risk posed by the project, is available at the site perimeter or in an adjacent location readily accessible by fire department personnel; and
  - (c) that the permittee has prepared and the City of Hermosa Beach Fire Chief has approved, a Fire Protection Plan (FPP), including specific components set forth below, demonstrating that all facilities, construction activities, process equipment, and fire protection equipment associated with the project approved pursuant to this permit comply with the standards of the National Fire Protection Association (NFPA), the American Petroleum Institute, and the applicable standards of the City of Hermosa Beach. Should these standards conflict, the standard most protective of public safety shall prevail.

The FPP shall include at minimum, but shall not be limited to, discussions of and specific measures to address the following:

- (a) Onsite fire fighting equipment and systems;
- (b) Fire and gas detection;
- (c) Access;
- (d) Site management to control ignition and fuel sources;
- (e) Employee training and safe practices;
- (f) Drainage and containment;
- (g) Safety inspection;
- (h) Maintenance practices; and
- (i) Identification, storage, use, and disposal of flammable and/or hazardous materials and wastes.

Phase I construction shall not commence until the executive director receives evidence of California State Lands Commission approval of the FPP.

The permittee shall update the FPP by January 1 of each year. The updated FPP shall reflect current project operating conditions and practices. The permittee shall submit the updated FPP to the Fire Chief of the City of Hermosa Beach and to the California State Lands Commission for review by January 1 of each year and shall submit evidence of the satisfactory review of the updated FPP by these agencies, together with evidence that any reasonable additional fire protection measures recommended by the California State Lands Commission or Fire Chief have been implemented, to the executive director by May 1 of each

year. In addition, the permittee shall furnish a copy of the FPP, including the comments of the reviewing agencies, to the City of Hermosa Beach Community Development Department by May 1 of each year. The City copy shall be placed in the public file for the permittee's project.

- M-8 Non-emergency flaring of produced natural gas shall be permitted during Phase I only. The permittee shall keep records of all emergency flaring incidents, including the cause of the emergency, the duration of flaring, and any other pertinent information. This information shall be included in the reports required pursuant to **Special Condition A-8**.

### **Oil Spill Prevention and Response**

- M-9 If at any time the executive director determines that new proven technological advances not previously available could substantially improve the prevention or effective clean up of potential oil spills associated with the permittee's project, then the executive director shall schedule a hearing before the Coastal Commission and recommend additional reasonable conditions for the consideration of, and possible imposition by, the Coastal Commission. Reasonable technical consultation and analysis by qualified experts shall be made available to the executive director at the permittee's expense for the purpose of evaluating relevant technological advances and providing a recommendation to the Commission. Such additional consideration by the Coastal Commission shall be made at a noticed public hearing during the Commission's regular monthly meeting.
- M-10 Prior to placing the crude oil and natural gas lines in service, the permittee shall submit to the executive director evidence that all tests required by state and federal regulations have been performed and that the results have been reviewed and approved by the State Fire Marshal and/or the Federal Department of Transportation, as appropriate.
- M-11 Transportation of crude oil produced in accordance with this permit shall be by truck during Phase I only. During Phase II, crude oil and natural gas shall be transported to its refinery destination via pipeline only. No truck transportation of crude oil after Phase I shall be permitted.
- M-12 Prior to construction of the proposed oil and gas pipelines, the permittee shall demonstrate to the executive director's satisfaction that it has submitted the final pipeline design and construction plans to the State Fire Marshal's office, the Federal Department of Transportation, and the California State Lands Commission for review. The permittee shall also submit evidence to the executive director's satisfaction that any suggestions for improved pipeline testing or design made during the course of such review have been incorporated into the final project plans and pipeline testing program. The project plans shall verify the safety design compatibility with the Southern California Edison oil and gas pipeline systems or any other receiving party proposed by the permittee with potentially interactive or



affected safety systems. Notations of compatibility requirements shall be included on final project plans.

In addition, final project plans shall include pipeline valves designed to be operated by the permittee's pipeline Supervisory Control and Data Acquisition (SCADA) system and shall be designed to fail in a closed position. In addition to other requirements, (a) a fail-closed block valve shall be installed at the intersection of the permittee's and the Southern California Edison oil and gas pipelines, and (b) block/check valve combinations shall be installed at the Herondo Storm Drain and at any fault crossing.

- M-13 Prior to drilling wells authorized pursuant to this permit, the permittee shall demonstrate to the executive director's satisfaction that the permittee is a member of a federal and California-approved offshore Oil Spill Response Organization (OSRO) such as Clean Coastal Waters, Inc. The permittee shall maintain such membership continuously throughout the life of the project.
- M-14 Prior to commencement of Phase I construction, the permittee shall demonstrate to the executive director's satisfaction that the permittee has arranged to make available at all times 500 filled sandbags either onsite or at a permanently designated site within ½ mile or less of the proposed site. The sandbags shall be constantly available for immediate deployment to protect the public storm drain system in the event of an oil spill originating from production or transportation of oil associated with this project. Access to the designated site shall be available 24 hours per day to emergency response agencies, to the trucking company transporting the permittee's oil, and to the permittee's designated Macpherson onsite employee.
- M-15 The permittee shall implement routinely scheduled pigging of the gas pipeline to remove pockets of accumulated fluids that contribute to internal corrosion, and for both the oil and gas pipelines shall use corrosion inhibitors and corrosion coupons, and conduct periodic testing by a state-of-the-art "smart pig" as specified below. The permittee shall ensure that:
- (a) Whenever any section of a pipe is removed for any reason, it shall be inspected for possible internal corrosion and records of the inspection results retained for inspection by the State Fire Marshal or the Federal Department of Transportation, as applicable. Prior to returning the pipeline to service, the permittee shall submit evidence to the satisfaction of the executive director's designated monitor that the applicable regulatory agency has confirmed that all necessary repairs or replacement have been performed to that agency's satisfaction; and
  - (b) The pipelines shall be routinely tested with state-of-the-art "smart pig" technology to identify areas where corrosion, pipewall thinning, dents, cracks and other defects have occurred. State-of-the-art pigging shall be defined as technology capable of defining wall-thickness contours around any area of reduced wall thickness. Smart pigging shall be

- done prior to initial use of the oil and gas pipelines and at subsequent intervals as recommended by the State Fire Marshal or the Federal Department of Transportation, as applicable. The permittee shall provide the executive director's designated monitor with copies of all smart pigging results, and shall demonstrate to the satisfaction of the executive director's designated monitor that any deficiencies identified pursuant to the required testing have been remediated to the satisfaction of the State Fire Marshal or Federal Department of Transportation, as applicable.
- M-16 The permittee shall undertake the following provisions to avoid external pipeline corrosion:
- (a) The permittee shall demonstrate to the executive director that oil and gas pipelines shall be coated with an external coating designed to reduce the potential for external corrosion in accordance with the requirements of the State Fire Marshal or the Federal Department of Transportation, as applicable; and
  - (b) A baseline pipe-to-soil cathodic profile and reading shall be obtained after the pipelines have been installed, but before any cathodic protection facilities are connected. Other utilities shall disconnect their bonds, as well, prior to taking the necessary readings. This measure shall be included on the construction plans which shall be reviewed by the State Fire Marshal and the Federal Department of Transportation, as applicable.
- M-17 The permittee shall provide structural support for underground utilities in and near the construction area during work in the trench and backfilling operations to prevent damage to such facilities during construction activities.
- M-18 The permittee shall use hand tools (that is, non-motor operated equipment) in utility intensive areas and within twenty-four (24) inches of underground structures. Any soil remediation or excavation work in the vicinity of the pipeline shall also require the use of hand tools within twenty-four (24) inches of the pipeline.
- M-19 If damage to an underground utility occurs during the course of project construction or operations, the permittee shall halt work in the immediate vicinity until the owner of the utility has been contacted and repairs made. The permittee shall not leave the affected site unattended until a representative of the utility is present.
- M-20 A plastic ribbon or other suitable material shall be buried twelve (12) to eighteen (18) inches above the pipeline and shall cover the length of the pipelines. The material shall be brightly colored and labeled with a warning that this area contains a hazardous pipeline trench. This measure shall be noted on the design and construction plans and included in the Compliance Plan.
- M-21 The permittee shall notify owners through the office of Underground Service Alert of any underground facilities (including but not limited to electrical, water, gas, petroleum pipelines,

fiber-optics, or drainage pipes) forty-eight (48) hours in advance of excavation in the vicinity of these facilities. The permittee shall have an electrical contractor on-call at all times during construction near the potentially affected facility to repair any circuits if required by the owner in the event that such circuits may be damaged during construction. The appropriate response to hazards associated with damage to natural gas pipelines shall be determined in consultation with the Southern California Gas Company. The Fire Departments of the Cities of Redondo Beach and Hermosa Beach shall be notified at least ten (10) days in advance of the schedule for construction activities in the vicinity of natural gas and other oil pipelines in their jurisdictions.

- M-22 Upon completion of pipeline construction the permittee shall provide all potentially affected emergency response agencies identified in the permittee's Compliance Plan, and utility owners sharing the as-built pipeline corridors, with at least two copies of maps showing the finished pipeline route and the locations accessible by fire department emergency response vehicles.
- M-23 Prior to commencement of Phase II production, the permittee shall demonstrate to the executive director's satisfaction that the pipeline and operating facility Supervisory Control and Data Acquisition (SCADA) and Emergency Shutdown (ESD) systems, including inspection, maintenance and quality assurance procedures for SCADA and ESD systems, use best available technology and have been reviewed and approved by the California State Fire Marshal and the Federal Department of Transportation, as applicable. The pipeline SCADA and ESD systems shall be linked to the Edison Pipeline and Terminal Company and Edison Redondo Beach Power Plant gas transmission systems so that an upset on the permittee's pipeline(s) is noted automatically at the applicable control center. In addition, a red phone "hot line" and an intercompany radio, or equivalent emergency communications equipment, shall be installed in each control room and onsite at the permittee's facility. These measures shall be included in the construction, emergency and compliance plans. The permittee shall demonstrate to the satisfaction of the executive director or the executive director's designated representative the successful performance of the SCADA system, system interconnections, and emergency communications systems prior to commencement of Phase II production.
- M-24 Within six (6) months following Phase I and Phase II construction, respectively, and within six (6) months of any significant additional construction or modification of the project or related facilities thereafter, the permittee shall submit as-built or revised as-built drawings of the entire facility or related structures (such as pipelines), to the executive director. Duplicate sets of the as-built drawings shall be submitted to the California State Lands Commission, the California State Fire Marshal (for oil pipeline or pipeline-related construction or modifications only), the Federal Department of Transportation (gas pipeline or pipeline-related construction or modifications only), and to the Hermosa Beach Fire Department.

## **Remediation of Contaminated Soils**

M-25 Upon completion of all remediation activities to abate existing site contamination, the permittee shall notify the executive director that all applicable California Regional Water Quality Control Board standards have been satisfied and shall indicate the scope of work completed and identify the site where contaminated soils have been disposed.

## **Visual**

M-26 No unobstructed or unshielded beam of exterior lighting except as required by the Federal Aviation Administration for safety purposes shall be directed toward any area outside the exterior boundaries of the project drilling and production site. Any lighting along roadways within the project shall use low intensity, ground level, shielded fixtures.

M-27 No glare or other light emissions resulting from facilities constructed pursuant to this permit, other than lighting fixtures, gas flares, and heat exchangers shall be detectable at any point along or outside the exterior project boundaries.

M-28 Prior to issuance of this permit, the permittee shall submit a detailed final landscaping and fence installation plan to the executive director. The plan shall screen or soften the visual impact of the development to the maximum extent feasible. The permittee shall maintain the fencing and landscaping in acceptable condition to achieve the continuous screening and softening effects provided for by the approved plans for the duration of the project, and the responsibility for such maintenance shall be solely that of the applicant. The permittee shall be required to replace landscape plants that perish or fail to attain adequate height or scale to achieve the necessary mitigation of the project's visual impacts.

M-29 All permanent structures onsite, and to the extent feasible, all drilling rigs, shall be painted or covered in a neutral color designed to blend into the background and to minimize the visual impact of the project as viewed from public coastal recreational areas.

M-30 Prior to issuance of this permit, the permittee shall enter into a Memorandum of Understanding (MOU) with the City of Hermosa Beach and with the Coastal Commission. Pursuant to the MOU the permittee shall deposit \$1,000 per month, or a sum pro-rated based on the number of days per month for any month or portion thereof that a rig is standing onsite for any reason, adjusted annually for inflation according to the Consumer Price Index or alternative published federal index acceptable to the executive director, into the City's Coastal Resource Enhancement Fund (CREF). The applicant's contributions to the CREF shall be used to mitigate the residual adverse impacts of the project on coastal visual resources.

The MOU shall specify the following:

- (a) the funds may, at the City's discretion, accrue for up to five (5) years at a time for application to larger projects than the monthly amounts alone could fund;
- (b) the unspent balance of deposited funds, and all accumulated interest from unspent visual impact mitigation deposits, must be applied exclusively to permanent projects that visually enhance the City's public recreational areas from which the project's drilling rig is visible (particularly the greenbelt corridor adjacent to the project);
- (c) funds paid by the permittee into the CREF pursuant to this special condition shall not be used to fund repair and maintenance activities or other short-term activities from which no lasting benefit is realized. An exception to this requirement may be made for the care of tree plantings or other permanent landscape plantations that may be necessary to ensure their establishment;
- (d) the funds deposited pursuant to this special condition shall only be awarded to projects proposed by public agencies or registered non-profit organizations;
- (e) all projects receiving funds pursuant to this special condition shall be approved by the City Council of Hermosa Beach at a publicly noticed hearing; and
- (f) the City of Hermosa Beach shall annually notify the executive director of new projects funded by the permittee's CREF deposits, the status of previously funded projects under development, and the amount of remaining balances and accumulated interest.

### **Coastal Access Public Parking**

M-31 All replacement public parking stalls as shown on the City-approved "Replacement Public Parking Plan," Sheet No. PK-1, shown herein as Exhibit 23, shall be installed either (1) before drilling of the first test well, or (2) no later than six months from the time the City of Hermosa Beach vacates the subject property to allow project development, whichever occurs first. The permittee shall notify the executive director within ten (10) days of the City's complete vacation of the property. If the permittee is unable to install the replacement parking as shown on Exhibit 23 and 24 within the time specified above, through no fault of the permittee, the executive director may extend the time allowed to comply with this condition. On-street public parking provided pursuant to Exhibit 23 and 24 shall not be used for parking by the permittee's employees, contractors, or representatives. Public parking provided pursuant to this special condition shall remain available for public coastal access parking for the life of the development authorized pursuant to this permit. If the City of Hermosa Beach re-designates such parking to another use beyond the control of the permittee, the permittee shall develop a proposal for providing equivalent replacement public parking within the City of Hermosa Beach within sixty (60) days of such re-designation. If replacement public parking within the City of Hermosa Beach cannot be provided for any reason during the life of the project, the Commission shall, at a regularly noticed public

hearing, impose additional mitigation measures to compensate for the loss of coastal access parking.

### **Energy and Water Conservation**

- M-32 The design of all new and/or modified onsite facilities shall incorporate the use of cost-effective water-conserving fixtures and practices. If water injection into the produced zones of the proposed oil and gas extraction sites in excess of the amount produced as wastewater by the project becomes necessary in the future (to control subsidence, for example), the permittee shall apply for an amendment to this permit to secure approval for increased water injection. Such amendment request shall demonstrate that reclaimed water will be used to the maximum extent feasible, shall identify the source of the water, and shall provide plans demonstrating the use of the most energy-efficient means of transporting the water proposed for injection.
- M-33 Throughout the project life, as equipment is added or replaced, cost-effective energy conservation techniques shall be incorporated into project design.

### **Subsidence**

- M-34 This permit incorporates all subsidence-related conditions imposed pursuant to the City of Hermosa Beach Conditional Use Permit 95-5632.
- M-35 The subsidence monitoring and control program described in *Subsidence Monitoring and Control Plan* prepared for the City of Hermosa Beach dated August 1, 1994, by Leonard W. Brock and the *Offshore Subsidence Monitoring Program Hermosa Beach, California*, dated January 14, 1998, prepared by Coastal Environments, shall be implemented by the applicant throughout the life of the project.

### **Induced Seismicity**

- M-36 Prior to issuance of this permit, the permittee shall submit for the executive director approval of a Seismicity Monitoring Plan that provides for:
- (1) Monitoring of seismic activity for a sufficient time period prior to the Phase II production (at least one year) to establish the pre-production baseline seismic pattern in the vicinity of the project;
  - (2) Ongoing monitoring of seismic activity during Phase II production to detect any and all changes from the pre-project seismic pattern;
  - (3) The monitoring stations shall be of sufficient quantity and quality to detect all events of magnitude two and greater, and to locate the hypocenter of these events to within one kilometer, both horizontal and vertical;

- (4) The collection and analysis of monitoring data by a qualified, independent entity approved by the executive director;
- (5) submittal by the independent seismicity monitor of annual reports to the executive director's designated project monitor (California State Lands Commission pursuant to **Special Conditions A-8** and **A-9**), or more frequently if warranted by monitoring results; and
- (6) establishment of indicators of induced seismicity (these may not occur simultaneously), including but not necessarily limited to:
  - a. an increase in the number of events, 50% above background;
  - b. the occurrence of swarms (hundreds of small events over several days);
  - c. shallow events at depths near the depths of production and re injection;
  - d. casing breaks.

If independent monitoring results indicate that project-induced seismicity may be occurring, the independent monitor shall notify the executive director immediately and provide the executive director with all applicable monitoring data. The executive director shall thereafter schedule a public hearing on the matter before the Coastal Commission at the earliest practicable regularly scheduled Commission hearing. The Coastal Commission shall consider the evidence of project-induced seismicity, take recommendations from staff, and determine whether project operations should cease altogether or whether modified project operations may be implemented to abate the increased seismicity. Any project changes or additional mitigation measures required by the Commission shall be imposed as additional special conditions to this permit and shall be enforceable as such.

If data suggesting project-induced seismicity is obtained, the permittee shall fund peer review by a minimum of three qualified experts jointly selected by the permittee and the executive director to review the monitoring data. In addition, the permittee shall fund reasonable expert consultations and/or additional studies that the executive director may find necessary to prepare an adequate staff recommendation to the Commission pursuant to the above requirements. If a disagreement among experts arises as to the interpretation of the monitoring data, the required hearing before the Commission shall not be delayed and the Commission shall, to the extent of its jurisdiction, make the final determination as to the implications of the monitoring data.

The preparation and implementation of the Seismicity Monitoring Plan, and implementation of any related mitigation measures required by the Commission through applicable special conditions shall be at the sole expense of the permittee.

## **Air Quality**

M-37 Prior to commencement of Phase II construction, the permittee shall provide to the executive director copies of all required Permits to Operate from the South Coast Air Quality Management District (SCAQMD).

## **4.0 FINDINGS AND DECLARATIONS**

The Commission finds and declares as follows:

### **4.1 PROJECT BACKGROUND**

#### **4.1.1 History of Macpherson Proposal**

Windward Associates (hereinafter “Macpherson”) initially proposed developing oil in the tidelands of Hermosa Beach in 1976, from a City of Hermosa Beach site known as the old Biltmore Hotel property at 15th Street and The Strand. That proposal was withdrawn in the face of strong local support for the continuance of a citywide ban on oil development dating back to the 1930s. The 1976 proposal was the first attempt to overcome the ban since 1958. At that time Shell Oil proposed new oil development during a time of financial distress for the City of Hermosa Beach. Despite the prospect of needed royalties, local voters rejected the project.

In 1981, the City submitted its draft Coastal Land Use Plan (LUP) to the Coastal Commission for certification (the LUP was certified on April 21, 1982). Commission staff recommended that policies guiding energy development, consistent with Chapter 3 of the Coastal Act, be added to the LUP. The City was still unsettled, however, about what to do with the Biltmore site, and although energy development remained an option, there was significant controversy within the City about whether to allow oil development there. City officials requested that the Commission postpone consideration of the LUP modifications containing energy policies while the City decided on the most desirable use of the Biltmore site. The energy development policies were deleted from the modifications required to obtain LUP certification.<sup>1</sup>

In 1984, however, just two years after the Commission certified the City’s LUP, the City again faced significant financial constraints because City officials had committed to purchasing lands for schools and parks only to discover that the City did not have adequate funds. Macpherson Oil Company led a successful campaign that year for ballot measures authorizing oil development on two city-owned parcels (Exhibit 1). Macpherson pledged up to \$1 million per year in royalty payments to the City for the purchase of open space and school lands<sup>2</sup>. The supporters of Measures P and Q claimed that

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<sup>1</sup> Pursuant to a subsequent LUP amendment (1-84) certified by the Commission, a specific plan was approved for the Biltmore site and a hotel was later constructed.

<sup>2</sup> The lands have since been purchased with funds from other sources.



Hermosa Beach tidelands were being drained of oil by wells drilled from nearby Redondo Beach and that some of the most profitable Redondo Beach wells were on Hermosa Beach tidelands boundaries. The supporters said that Redondo Beach had recovered \$270 million in oil since 1955 — some, they claimed — from Hermosa Beach tidelands.<sup>3</sup>

In 1995, in part due to mixed local reaction to the applicant's present proposal, the voters of Hermosa Beach passed another oil-related ballot measure — Measure E (Exhibit 2). Measure E strips local ordinances of the provisions for the limited oil and gas development authorized by Measures P and Q, effectively re-establishing the total ban on oil and gas development within city limits.

The local Hermosa Beach Stop Oil Coalition, a citizen's group opposed to the applicant's proposal, is pursuing a lawsuit asserting that Measure E applies not only to future oil development but also retroactively to the Macpherson project and thus precludes City issuance of land use approvals for the project. The City Attorney of Hermosa Beach has written an opinion that Measure E probably does not apply to the Macpherson proposal (Exhibit 4). Regardless, the pending litigation does not affect the Coastal Commission's authority to consider this application for a coastal development permit at this time.

#### **4.1.2 Local Government Review**

In 1985, after the voters of Hermosa Beach authorized oil development on two city parcels the previous year, the City Council adopted an oil and gas code within the city zoning ordinances (Ordinance No. 85-5315) and established terms and conditions governing oil drilling and development in the city.

In 1986, the City of Hermosa Beach entered into a lease with the Macpherson Oil Company to allow Macpherson to drill for onshore oil from the presently proposed site (the city maintenance yard).

In 1989, by way of Resolution No. 89-5315, the City changed the General Plan designation of the project site from "open space" to "industrial," thereby making it consistent with the preexisting "manufacturing" zoning designation of the site. The City did not amend the certified LUP designation of "open space," however.

On May 8, 1990, the City Council certified an Environmental Impact Report (EIR) and adopted a Statement of Overriding Considerations for the project, pursuant to the requirements of the California Environmental Quality Act.

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<sup>3</sup> The California State Lands Commission staff did not concur that the wells drilled into the Redondo Beach tidelands were draining the Hermosa Beach tidelands; however, on June 30, 1992, the CSLC found, contrary to its staff's recommendation, that drainage was occurring (Exhibit 3) even though the Redondo Beach operator (Triton Oil Company) had plugged and abandoned all Redondo Beach tidelands wells by 1991. See also Section 4.3.2 of this report.

In 1992, the City executed a new lease with the applicant to additionally authorize Macpherson to drill for both onshore and offshore oil from the same site. A plan to build a tank farm at a nearby site (the former “School Site” now developed as the public “School Park”) was dropped and the project modified to concentrate the project on the presently-proposed site.

On August 12, 1993, the City Council certified an addendum to the project EIR, and passed Resolution No. 93-5632, thereby approving a Conditional Use Permit for the proposed project.

### **4.1.3 Coastal Permit Review**

The review of various iterations of the Macpherson proposal by Commission staff has taken, cumulatively, more than four years. As explained below, filing review of the most recent proposal has taken more than a year, mostly to resolve concerns about:

- (1) the project’s seeming inconsistency with the open space designation presently applied to the proposed site in the City’s LUP, and
- (2) the adequacy of the risk analysis submitted by the applicant.

#### **4.1.3.1 Previous Macpherson Application**

In September, 1993, Macpherson submitted the first application for a coastal development permit to the Coastal Commission for the proposed project. While Commission staff reviewed the application for filing, the Hermosa Beach Stop Oil Coalition filed a lawsuit challenging the City’s approval of the project and the adequacy of the EIR. In September, 1994, the court found that the City’s approval of the 1.3-acre oil drilling project must be set aside because it violated the Municipal Code which limits oil drilling at the City’s maintenance yard site to one acre only. Macpherson subsequently withdrew its permit application in January, 1995. Macpherson submitted a new application in 1996, after the lower court’s ruling was overturned on appeal.

#### **4.1.3.2 Present Macpherson Application Filing Review**

On November 26, 1996, Macpherson submitted a new application for a coastal development permit. During filing review the Commission staff identified two particularly significant issues:

- (1) the apparent inconsistency of the proposed project with the open space land use designation of the proposed site in the City’s certified LUP, and
- (2) questions concerning the adequacy of the applicant’s risk analysis.

A third potential filing issue — whether the applicant’s addition of hydrogen sulfide treatment equipment to the project plans after the City’s Conditional Use Permit for the project was approved in 1993 — meant that the applicant needed a CUP amendment to demonstrate the required local

approval,<sup>4</sup> was resolved in November, 1997. The applicant agreed to remove the hydrogen sulfide treatment equipment from the project plans and to revise the project to shut-in and re-complete or abandon wells encountering concentrations of hydrogen sulfide at untreated levels of no more than 40 parts per million, per well.

### *Land Use Plan Inconsistencies*

The first issue Commission staff identified during the filing review of the proposed project was the question of whether an amendment to the City's Coastal Land Use Plan would be advisable either prior to, or concurrently with, the Commission's consideration of the Macpherson application for a coastal development permit. The City's LUP designates the proposed site as open space, and as explained in Section 4.1.1, the LUP specifically excludes provisions for energy development. The LUP lacks either energy or industrial land use designations that would typically be applied to a site considered for oil and gas development and production, and contains no policies to guide oil and gas development. In 1981, the City asked the Coastal Commission to suspend the inclusion of such policies in its LUP until or unless the City resolved to allow oil drilling on the old Biltmore site. A hotel was built instead, and the LUP remains silent on energy development.

City staff explained that the City had overlooked the need to amend the coastal LUP when the General Plan was amended in 1989 to accommodate the project. They requested that the Commission staff consider the City's general plan amendment re-designating the site from "Open Space" to "Industrial," and the voter approval of ballot Measures P and Q authorizing oil and gas development on two city parcels, as "de facto" LUP amendments.

Commission staff determined that even if the City's actions could be considered "de facto" LUP amendments, such amendments have no force or effect in the coastal zone until or unless certified by the Coastal Commission. The City Council had not submitted any of these actions for Commission certification review.

While Commission and City staff, as well as the applicant, always understood that the Commission's legal standard of review for a project in an area without a fully certified Local Coastal Program is whether a proposed project is consistent with the Chapter 3 policies of the Coastal Act, the applicant was concerned that to the extent unresolved land use questions might place the project in an unfavorable light, these concerns should be addressed if possible. Therefore, the applicant voluntarily agreed to the suspension of further application processing while the City staff prepared an LUP amendment submittal for Commission staff consideration.

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<sup>4</sup> The Hermosa Beach City Manager, Stephen Burrell, confirmed in an October 17, 1997, meeting with Commission staff, California State Lands Commission staff, and the applicant, that the City's 1993 CUP for the Macpherson project did not approve the installation of hydrogen sulfide equipment nor did the project EIR address potential public safety risks arising from hydrogen sulfide produced during project activities. Mr. Burrell clarified that the potential to produce hydrogen sulfide concentrations of concern, or the need to treat hydrogen sulfide, had not been identified previously.

In February, 1997, the City staff submitted a draft LUP amendment package for preliminary, informal review by Commission staff. Commission staff responded that the City's submittal would likely require substantial modifications — most importantly the addition of a LUP amendment defining and applying an appropriate energy or industrial land use designation for the proposed site, accompanied by the necessary policies to provide for such development. Commission staff also noted that LUP amendments must be submitted to the Coastal Commission for formal consideration by a resolution of the City Council and that a submittal from the City staff would not be adequate to secure filing of an amendment submittal.

While City staff was willing to prepare the LUP amendments recommended, they were also concerned that since the effect of the amendments would be to authorize oil and gas development, the amendment could not be approved by the City Council without violating the provisions of Measure E.

After further consideration, on June 11, 1997, the City staff notified Commission staff that the Measure P and Q approvals and the City's general plan amendments constituted adequate policy consideration of the Macpherson proposal and that no further LUP amendments would be prepared by the City (see letter, Exhibit 5). The City staff did not believe that approval of the Macpherson proposal would undermine the City's ability to prepare a Local Coastal Program pursuant to Coastal Act Section 30604. The City staff thereby declined to pursue further development of a project-related LUP amendment package, and the Commission staff review of the Macpherson application continued. For further discussion of local land use restrictions and the implications for project siting and alternatives, see Section 4.4.1.

### *Adequacy of Hazard Risk Analysis*

The second significant issue identified by Commission staff during filing review was the adequacy of the applicant's hazard risk analysis. Staff determined that Macpherson had added hydrogen sulfide treatment equipment to the project plans but that the equipment had not appeared in the plans at the time of the City's Conditional Use Permit approval.<sup>5</sup> In part because the EIR for the proposed project did not evaluate any public safety risks that might arise from hydrogen sulfide production or treatment onsite, questions arose as to whether significant concentrations of the toxic gas might be encountered in the produced oil and gas, and if so, what public safety risks could result from a worst-case accidental release from the project.<sup>6</sup>

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<sup>5</sup> The applicant's agent, David Gautschy, states that the hydrogen sulfide treatment equipment was added in response to questions raised by Commission staff during filing review in 1994.

<sup>6</sup> Commission staff research indicated that occupational safety standards for adult exposure to hydrogen sulfide in the workplace were generally triggered at concentrations of ten (10) parts per million, that death could occur after ½-hour of exposure to concentrations as low as 300 ppm, and that injuries or lasting health effects could be caused by exposures at much lower concentrations.

Commission staff, in consultation with the California State Lands Commission staff, determined that nearby tidelands wells in Redondo Beach had produced concentrations of hydrogen sulfide of at least 1,500 ppm.<sup>7</sup> Subsequently, the applicant determined that about ten percent of the Redondo Beach tidelands wells produced hydrogen sulfide, with one well reportedly producing concentrations as high as 5,500 ppm.

The applicant contended that the hydrogen sulfide produced in Redondo Beach occurred as the avoidable consequence of faulty wastewater disposal practices that would not be repeated by the Macpherson project. Macpherson argued that its wastewater disposal practices would be superior, and would not result in hydrogen sulfide production. Macpherson conceded, however, that treatment of re-injected wastewater to kill bacteria responsible for producing hydrogen sulfide is too expensive to undertake preventatively and that the necessary chemicals would only be added upon the detection of rising levels of hydrogen sulfide in the produced gas. Whether treatment measures implemented after hydrogen sulfide production occurs would effectively retard the bacterial decomposition processes already underway in the reservoir is uncertain.

Moreover, Commission staff was concerned that if the contaminated Redondo Beach wells were draining oil from the Hermosa Beach tidelands, as the California State Lands Commission had confirmed they were, then the proposed Macpherson wells could eventually drain the contaminated portions of the reservoir in Redondo Beach, in reverse.<sup>8</sup>

By mid-July, 1997, to resolve the impasse between the applicant and Commission staff over the adequacy of the applicant's hazard risk analysis, the applicant agreed to allow a qualified third-party to perform an independent review. Arthur D. Little, Inc., was jointly selected by the applicant and the Commission staff, and funded by the applicant.

On September 8, 1997, Arthur D. Little, Inc., released a preliminary review of the applicant's hazard risk analysis showing that the project posed significant risks to public safety. The risk profile calculated by Arthur D. Little, Inc. showed that project risks were an order of magnitude higher than the estimate of risk contained in the applicant's analysis (which contained a graphing error that plotted the project's risk profile incorrectly). The preliminary review also confirmed that hydrogen sulfide could potentially be encountered during project production.

The preliminary report determined that additional analysis of hydrogen sulfide risks offsite should be performed based on the characteristics of the reservoir (sulfur content, production history), and in light of the applicant's proposal to install hydrogen sulfide treatment equipment. The report also

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<sup>7</sup> The Redondo Beach wells, last operated by Triton Energy, were shut-in by 1991. Macpherson asserts that the Redondo Beach wells were draining the Hermosa Beach tidelands oil reserves.

<sup>8</sup> The staff of the State Division of Oil and Gas and Geothermal Resources disputes the CSLC findings that such drainage has occurred and asserts that a hydraulic connection between the Redondo Beach tidelands and the Hermosa Beach tidelands is unlikely. DOGGR staff postulates the existence of subterranean fractures that may function as barriers between the two areas.

determined that the worst case analysis of an accidental release should evaluate a well casing failure and a simultaneous failure of the hydrogen sulfide treatment system. Arthur D. Little, Inc. also identified additional information and analyses necessary to fully evaluate other project risks, and identified potential mitigation measures to reduce some project risks (most notably, an alternative oil pipeline system that subsequently proved to be a far better option for the applicant than its proposal to reactivate the abandoned Chevron pipeline).

After reviewing the recommendations of the preliminary report, the applicant asked to suspend preparation of the final report and further processing of the application by Commission staff. The applicant asked for additional time to consider possible changes to the project description, conduct additional analyses, and pursue the possible use of the alternative crude oil pipeline suggested by Arthur D. Little, Inc.

Between September, 1997, and the publication of the final Arthur D. Little, Inc. report in December, 1997, the applicant, in consultation with Arthur D. Little, Inc., Commission staff, City of Hermosa Beach staff, California State Lands Commission staff, and the staff of the State Division of Oil and Gas and Geothermal Resources, (a) developed supplemental risk assessments, (b) revised the project to cap produced (untreated) casing gas concentrations of hydrogen sulfide at forty (40) parts per million, per well, (c) deleted the proposed installation of hydrogen sulfide treatment equipment, and (d) amended the application to propose the use of the Edison Pipeline Transmission Company crude oil pipeline transportation system. As the result, the applicant resolved many of the Commission staff concerns. The independent review by Arthur D. Little, Inc., proved to be an effective analytical tool that increased staff confidence in the adequacy of the project review and in the usefulness of the proposed mitigation measures.

The final conclusions of the Arthur D. Little, Inc. report are evaluated further in Section 4.4.2 of these findings. The final report is included in the exhibit packet (Exhibit 7).

## **4.2 PROJECT DESCRIPTION**

### **4.2.1 Overview**

Macpherson proposes to develop crude oil and natural gas reserves in tidelands reserves granted by the State of California to the City of Hermosa Beach and subsequently leased to the applicant, as well as oil under onshore lands. The applicant proposes to develop these reserves from an onshore drilling and production site via “slant drilling” technology, in two phases. Phase I includes drilling and testing of up to three wells to prove the project’s commercial value, and Phase II entails full project development of up to thirty oil and gas producing wells. If Phase I is successful, the total project term would last a maximum of thirty-five years.

The proposed onshore site is located at 555 Valley Drive, at the northwest intersection of Valley Drive and Sixth Street, seven blocks east of the beach, in the City of Hermosa Beach. The 1.3-acre

(60,129 sq. ft.) parcel is owned by the City and presently used as a maintenance yard. The site is designated Open Space in the City's certified Coastal Land Use Plan (LUP); however, the City amended its General Plan to redesignate the project site from Open Space to Industrial. The area surrounding the project site is fully developed and adjacent land uses include light manufacturing on three sides, and a public greenbelt/open space on the east (inland) side. Within two blocks of the proposed site, land uses are primarily residential (see Exhibits 8-10).

The applicant proposes to re-grade the site, remediate existing contaminated soil, install new electrical service equipment, a 30-foot sound attenuation wall, fencing and landscaping, remove one existing tree and twelve existing parking spaces presently used on weekdays by City employees and on weekends by the public as beach access parking, construct six employee parking spaces onsite and six new on-street public parking spaces for permanent, public parking available seven days per week.

The applicant proposes to remove several small, existing structures onsite, including a 7,500 square foot Butler-type metal industrial building, a 4,400 square foot wood frame and stucco shop building, a 484 square foot kennel, and a gasoline pump and underground storage tanks.

#### **4.2.2 Phase I — Exploration**

Phase I — exploration and testing — will last approximately one year. During this time, the applicant proposes to drill up to three exploratory wells to prove the commercial value of the development. The applicant also proposes to convert an existing, idle oil well onsite to a wastewater disposal well. The electrically-operated drill rig onsite for the one year exploratory phase will stand approximately 135 feet above grade and will operate continuously during Phase I.

Prior to drilling, the applicant will demolish all existing maintenance yard facilities (except for a metal building located on the northeast corner of the property), and remove all paving, concrete slabs, retaining walls and debris. Phase I preliminary construction will include re-grading of the site (3,000 cubic yards of cut; 1,000 cubic yards of fill)<sup>9</sup>, installation of a nine (9)-foot concrete block retaining wall on the west side of the parcel, a six (6)-foot chainlink fence topped by three-strand barbed wire on the remaining three sides of the project (these sides are separated from other development by a street's width), and a 30-foot-above-grade sound attenuation wall, a concrete well cellar, new electrical service equipment, and temporary treatment and production facilities.

If Phase I is unsuccessful, the applicant will remove all above-ground facilities, abandon the test wells in accordance with the requirements of the State Division of Oil, Gas and Geothermal Resources, and otherwise restore the site to its pre-project condition. The applicant must also seek a new coastal development permit for post-Phase I abandonment.

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<sup>9</sup> The applicant states that contaminated soils scheduled for removal during Phase II will not be disturbed by grading activities or other aspects of project construction during Phase I.

During Phase I, the produced emulsion (oil and water mixture) will be processed onsite using portable equipment. All produced water will be re-injected; produced water will not be disposed via the public sewer or storm drain systems. Oil will be stored onsite in portable tanks, and the oil will be trucked offsite to a refinery via three to four tanker truck trips per day, each carrying 175 barrels of oil. Trucks will not deviate from the route designated in Exhibit 11.

The applicant proposes to flare the produced gas during Phase I and has obtained the necessary approvals for flaring from the South Coast Air Quality Management District. The applicant also agrees that permissible concentrations of hydrogen sulfide in raw gas (that is, gas in an untreated state as it is drawn into the well casing) will be restricted to a maximum of 40 parts per million (ppm) in any well, during both phases of the project. The applicant agrees to stop production of any well that exceeds the hydrogen sulfide threshold authorized by this permit.

The applicant estimates that Phase I crude oil production from the (up to) three test wells will be a maximum of approximately 600 barrels per day and natural gas production will be approximately 125,000 standard cubic feet per day.

#### **4.2.3 Phase II — Soil Remediation**

The proposed project site presently contains two areas of contaminated soils which the applicant proposes to remediate as part of the project. A pocket of soils contaminated by petroleum hydrocarbons is located concomitantly with the former City dump. A second area contains elevated lead residues from an undisclosed source. In accordance with the requirements of the applicant's lease with the City of Hermosa Beach, the applicant proposes to remove and dispose of approximately 700 cubic yards of soil and clean up the contaminated areas of the site to a standard acceptable to the Regional Water Quality Control Board.

Soil remediation will occur after the conclusion of Phase I activities, but before commencement of Phase II non-remediation construction. The applicant will perform the required remediation whether Phase II commercial construction and production proceeds or not.

#### **4.2.4 Phase II — Production**

Phase II includes the installation of up to 27 additional oil and gas wells, three waste water disposal wells, a subterranean tank farm with five oil storage tanks, permanent processing equipment (to separate oil, NGLs, natural gas, and water), additional fencing and landscape elements, electrical transformers and switches, and other ancillary structures (see Exhibit 12, site plans).

The drill rig for Phase II will be of the same height as the drill rig proposed for use during Phase I (approximately 135 feet above grade) and will be onsite continuously for up to three years during well completion. Workover rigs of approximately 110 feet in height will be used for well maintenance up to three months of every year thereafter for the life of the project. Thus, drilling and



workover rigs of this general scale would be onsite for a cumulative total of approximately twelve years during the project's 35-year projected economic life.

The 9-foot concrete block wall constructed during Phase I will be augmented during Phase II by a 12-foot decorative masonry perimeter wall, installation of permanent landscape plantings, and the removal of the chain link fencing.

During Phase II, the applicant will install two new pipelines — a six-inch crude oil line and a four-inch gas line — each approximately ½ mile (2,500 feet) long. The pipelines will connect to crude oil and natural gas transportation systems owned by Southern California Edison. The applicant proposes to transport all produced oil and gas offsite via these pipelines during Phase II. The applicant does not propose to continue truck transportation of oil, gas, or natural gas liquids (NGLs), or the non-emergency flaring of gas during Phase II.

The crude oil and NGLs will be commingled and delivered via pipeline to the Southern California Edison (SCE) Redondo Beach storage facility and pipeline system. The applicant proposes to construct onsite oil storage facilities of sufficient capacity to contain produced oil onsite during routine or emergency interruptions of the pipeline. Therefore, truck transport of produced oil and NGLs would not occur under any circumstances during Phase II.

The natural gas will be transported via pipeline to SCE's Redondo Beach power plant.<sup>10</sup> The power plant is permitted by the South Coast Air Quality Management District (SCAQMD) to burn gas containing up to 40 ppm of hydrogen sulfide. The applicant is authorized under the special conditions of this permit to produce gas with concentrations of up to 40 ppm or less of hydrogen sulfide; therefore, the applicant does not propose to install hydrogen sulfide treatment equipment as part of the project.

The applicant proposes continued re-injection of all produced fluids and wastewater during Phase II. No disposal of produced liquid wastes by any means other than re-injection would be authorized by this permit.

The applicant estimates that the total Phase II crude oil production of 30 wells will be approximately 30 million barrels (less production during Phase I) and that peak production will be approximately 8,000 barrels per day. Throughput for the oil pipeline during peak production will be approximately

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<sup>10</sup> The SCE Redondo Beach power plant is proposed for divestiture pursuant to California Public Utilities Commission requirements. If the plant is sold, the applicant must negotiate natural gas sales with the new owner. If the plant is eventually abandoned as uneconomic to operate further, and if the applicant's produced natural gas contains more than 4–6 ppm of hydrogen sulfide (the limit for sales to Southern California Gas), treatment of the gas to reduce levels of hydrogen sulfide may be required. If the applicant proposes to install hydrogen sulfide treatment equipment for these reasons, a new coastal development permit will be required. The 40 ppm hydrogen sulfide restriction would still be appropriate, however, as discussed in section 4.4.2.

175 gallons per minute, on average. The applicant estimates that natural gas production will be approximately 2,500,000 standard cubic feet per day.

Abandonment and remediation of the site are not part of the proposed project. Site conditions, applicable technology, and adjacent land uses may change dramatically and in unpredictable ways over the 35-year projected economic life of the project. For these reasons, development of abandonment plans and applicable standards and conditions of approval for eventual abandonment activities would be premature at this time. The Commission typically requires subsequent coastal development permits for abandonment of energy projects. Therefore, the applicant will be required to obtain a new coastal development permit, in addition to all other necessary approvals, as completion of Phase II nears. Abandonment activities will include the removal of all above-ground facilities, and the re-grading and remediation of the site in accordance with an abandonment and restoration plan acceptable to the City of Hermosa Beach<sup>11</sup> and approved by the Coastal Commission. Wells will be abandoned in accordance with the requirements of the State Division of Oil and Gas and Geothermal Resources. The oil and gas pipelines will be purged, capped and abandoned in place in accordance with the standards of the State Fire Marshall and the Federal Department of Transportation.

#### **4.3 OTHER AGENCY APPROVALS**

##### **4.3.1 City of Hermosa Beach**

In May 1990, the City of Hermosa Beach certified Environmental Impact Report (“EIR”) No. 89060701 for the proposed project. In August, 1993, the City certified an Addendum to the Hermosa Beach Urban Slant Drilling Project EIR and granted to Macpherson Oil Company Conditional Use Permit 93-5632.

##### **4.3.2 California State Lands Commission**

In 1919, the legislature of the State of California granted to the City of Hermosa Beach the tidelands and submerged lands within the City boundaries, in trust. Public Resources Code (PRC) § 7057 requires that “... no tide or submerged lands owned or under the jurisdiction of any city shall be leased for the exploration for, drilling for or production of petroleum products within the boundaries of the areas of the County of Los Angeles ... unless such lands are within one nautical mile of the ordinary high water mark....”

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<sup>11</sup> The applicant’s lease with the City of Hermosa Beach specifies that “at the expiration of this Lease or upon its sooner quitclaim or termination, the Lessee shall surrender the Leased Lands and the Drill Site and all improvements on them in good condition, or the City may provide that the Lessee shall remove some or all of the structures and other fixtures placed upon the Drill Site and transfer to City, in whole or in part, the Drill Site in a clean, cleared and suitable condition for reuse at no cost to the City.”

In January, 1992, when the California State Lands Commission (“CSLC”) eventually considered the proposed Macpherson slant drilling project, the Hermosa Beach tidelands were part of an oil and gas sanctuary that could be leased only if pursuant to PRC § 6872 the CSLC determined that (1) oil or gas deposits are believed to be contained in the sanctuary lands; (2) these deposits are being drained by means of wells on adjacent lands; and (3) the leasing for the production of oil and/or gas will be in the best interests of the State.

### ***Drainage of Hermosa Beach Tidelands***

The main issue here was whether wells drilled from neighboring Redondo Beach were draining oil deposits from Hermosa Beach’s tidelands. For many years, wells drilled into the adjacent Redondo Beach tidelands from an onshore drillsite produced substantial amounts of oil. The City of Hermosa Beach claimed that these wells were draining oil from its tidelands.

Although Redondo Beach oil production had ceased in 1990, the CSLC found on June 30, 1992 that oil was draining from the Hermosa Beach tidelands to the Redondo Beach tidelands as a result of a reservoir pressure differential caused by past production from the Redondo Beach wells.

### ***Oil Leasing in Best Interests of the State***

In August, 1993, the Hermosa Beach Stop Oil Coalition filed a petition for Writ of Mandate with the Los Angeles Superior Court challenging the validity of the CSLC decision. The superior court held that substantial evidence in the record supported the CSLC finding that oil deposits were being drained from the Hermosa Beach tidelands by means of wells on adjacent lands. However, the court also found that the CSLC had failed to make a necessary finding that the leasing of Hermosa Beach tidelands for the production of oil and gas was in the best interests of the state and remanded the matter to the CSLC for further consideration. In April, 1994, the CSLC reaffirmed its earlier findings that drainage of Hermosa Beach tidelands was occurring and additionally found that the leasing of these lands was in the best interests of the State, thus resolving all outstanding issues regarding the adequacy of CSLC approval.

### **4.3.3 South Coast Air Quality Management District**

In 1991, the South Coast Air Quality Management District (SCAQMD) issued to the applicant Permits to Construct for the exploration and production phases of the proposed project. These permits were extended yearly until 1995, when the applicant was required to resubmit permit applications to be reviewed under amended SCAQMD rules and regulations. In 1995, the SCAQMD issued to Macpherson Oil Company new Permits to Construct (permit nos. 306267, 306268, 206269, 306270, 306271, 306272, 306273, 306274 and 306275), imposing all current, applicable SCAQMD standards. The applicant has obtained extensions for all of the Permits to Construct through October 13, 1998.

The site remediation phase of the proposed project does not require any discretionary permits from the SCAQMD. However, the construction contractor hired by the applicant to excavate the contaminated soil must have a general SCAQMD Rule 1146 excavation permit.

**Special Condition M-37** requires Macpherson to submit all necessary Permits to Operate from the SCAQMD prior to commencement of Phase II construction.

#### **4.4 COASTAL ACT ISSUES**

##### **4.4.1 Siting of Industrial Development**

Coastal Act § 30250(a) and (b) state in part:

*(a) New residential, commercial, or industrial development ... shall be located within, or contiguous with, or in close proximity to, existing developed areas able to accommodate it or, where such areas are not able to accommodate it, in other areas with adequate public services and where it will not have significant adverse effects, either individually or cumulatively, on coastal resources....*

*(b) Where feasible, new hazardous industrial development shall be located away from existing developed areas.*

Coastal Act § 30108 (definitions):

*“Feasible” means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.*

The applicant proposes to located the project on a 1.3-acre parcel in a fully developed area of Hermosa Beach. Light manufacturing uses (such as the Bodyglove wetsuit factory) surround the project site for approximately one block on three sides, with a narrow public greenbelt flanking the site opposite Valley Drive to the East (see Exhibit 9 and 10). Coastal Act Section 30250 guides the location of new development in relation to existing development according to four considerations: (1) Can the proposed development be accommodated within or near other compatible, existing development? (2) If not, will there be adequate public services for the project in the proposed location? (3) If the project is developed in the proposed location, will it have significant adverse effects on coastal resources? and (4) If the development is hazardous, can it be feasibly located away from existing development? The four tests of Section 30250 are considered in the following sections.

#### **4.4.1.1 Can the proposed development be located within, contiguous to, or in close proximity to existing areas able to accommodate it?**

An area of similar energy-related development exists in nearby Redondo Beach. The following analysis of alternatives sites, and of the feasibility of re-locating the proposed project, explains why the project cannot be located near the identified area of existing industrial development.

##### *Alternatives Analysis*

The range of technically feasible alternative project sites generally extends approximately three miles from the drilling takeoff point, in the direction of the oil reserves of interest. This distance may vary, depending on the characteristics of the geologic formations penetrated by the drill bit, the vertical distance required to achieve an adequate horizontal reach, and upon the characteristics of the reservoir itself. An adequate alternative site would accommodate the approximately 30 new oil and gas wells proposed by the applicant at a distance from the reservoir that would reasonably achieve the project's goals.

The Environmental Impact Report (EIR) prepared for the project evaluated the "no project" alternative and two scaled-down versions of the project at the proposed site or at a nearby site known as the "School Site" (since developed as a public park). The EIR did not evaluate other locations outside of the City limits as potential alternatives. As explained in the following sections, there are no other feasible sites within Hermosa Beach due to the oil ban restored by Measure E in 1995.

A review of recent aerial photographs (see Exhibit 13), together with site visits by Commission staff, show that the general area behind Southern California Edison's Redondo Beach generating station contains alternative sites that would potentially consolidate the proposed development with other like development. A location within or adjacent to the generating station property would consolidate the proposed development with similar industrial development of even greater height, scale, and potential to pose risks to public safety. The generating station is also the target sales destination for the applicant's produced gas and ties into the pipeline system proposed by the applicant for transportation of its crude oil. Thus, a location near the power plant would not only reduce the project's visual and public safety impacts, but would also minimize the need to construct pipelines, as compared to the construction of the project at the proposed location.

At the request of Commission staff, the applicant evaluated eight alternative locations in Redondo Beach in a document titled, "*Alternative Land Use Site Analysis for Macpherson Oil Company Project*," dated August 22, 1997 (Exhibit 14). The alternatives analysis concludes that none of the eight sites are feasible alternatives to the proposed site. The applicant's analysis does not dispute that drilling from the Redondo Beach sites is technically feasible but argues that economic and legal constraints preclude use of any of the sites for the proposed project. The following sections evaluate the economic and legal feasibility of the alternative sites.

*Economic Feasibility of Alternative Sites*

The applicant asserts that alternative locations even ¼ mile further from the oil reserves of interest, as compared to the proposed project, are economically infeasible. The applicant states that these sites would result in an approximately 15% reduction in the volume of projected oil recovery (a 4 million barrel loss of recoverable oil). However, according to a separate financial analysis submitted by the applicant (Exhibit 15), the recovery of 15 million barrels of oil would pay for project development and provide an approximately 30% return on investment. The applicant has stated that the proposed site, with 100 % recovery baseline for comparison, is projected to yield 30 million barrels of oil. Thus, even a site returning only 50% of the projected recovery should, according to the applicant's analysis, provide recovery of the 15 million barrels of oil necessary to generate an adequate return on investment.

Therefore, 85% recovery from an alternative Redondo Beach site would render that site an economically feasible alternative, as the following Table shows:

Table 2. Economic Comparison of Proposed and Hypothetical Site (¼ mile inland).

	<b>PERCENT RECOVERY</b>	<b>BARRELS OF OIL</b> (MILLIONS)	<b>DEVELOPMENT COSTS<sup>12</sup></b> (MILLIONS)	<b>REVENUES<sup>13</sup></b> (MILLIONS)	<b>NET REVENUES</b> (MILLIONS)
Proposed Project	100 %	30	\$ 50	\$ 569	\$ 519
Alternative Site	85 %	25.6	\$ 50	\$ 486	\$ 436.4
Alternate Site	50 %	15	\$ 50	\$ 284	\$ 234

(SOURCE OF ECONOMIC DATA: MACPHERSON OIL COMPANY, 1997.)

<sup>12</sup> Development cost estimates supplied by the applicant include: \$15.6 million for cost of proposed development including project initiation costs, test phase (exploration and testing), final phase (production, including development of permanent drill site and tank farm). Drilling and pumping equipment installation for 30 oil and gas wells, 3 new water disposal wells, and conversion of one existing oil well to a water disposal well total an additional \$34 million in costs, for a final total of \$50 million, which is assumed to be the same for the hypothetical alternative locations.

<sup>13</sup> The applicant's submittal projects oil revenues of approximately \$18 per barrel.

### ***Legal Feasibility of Alternative Sites***

The applicant further asserts that permits for the proposed project cannot be obtained from the applicable local government jurisdictions at any location within the Cities of Hermosa Beach or Redondo Beach except for the site the applicant proposes.

### ***Hermosa Beach Restrictions***

In the case of Hermosa Beach, voters approved an exception to the City's long-standing ban on oil development in 1984 (ballot Measures P and Q). The exception authorized oil development, but only on two City-owned parcels. One site (the "School Site") has since been developed as a public park, and the other ("City Maintenance Yard") is the applicant's proposed site. After the City of Hermosa Beach approved the applicant's Conditional Use Permit in 1993, local voters passed another ballot measure (Measure E, 1995) restoring the former citywide ban on all oil development. Therefore, otherwise feasible alternative sites in Hermosa Beach have been rendered impermissible by Measure E. Therefore, no legally feasible alternative sites exist in Hermosa Beach.

### ***Redondo Beach Alternatives***

As noted above, Redondo Beach contains alternative sites which (1) "would ... attain most of the basic purposes of the project" (14 CFR § 15126(d)), (2) "would avoid or substantially lessen [certain] of the significant effects of the project" (*Id.*), and 3) are both technologically and financially feasible.

Under the California Environmental Quality Act (CEQA), consideration of less environmentally-damaging project alternatives is qualified by the issue of feasibility. (PRC § 21080.5(d)(2)(i).) "Legal" considerations are factors that need to be taken into account in evaluating the feasibility of project alternatives. (14 CCR § 15126(d)(5)(A).) The degree of consistency of the proposed project with existing governmental land use designations as found in provisions of applicable general plans and zoning ordinances is one of the factors to be considered in assessing "legal feasibility" (*Id.*)

The City of Redondo Beach Coastal Land Use Plan (LUP), as certified by the Commission in 1982, functions as the City's general plan for the portion of the City located within the coastal zone. (PRC §§ 30108.5; 30108.55.) In the view of the Commission, oil and gas development is a permissible use of land that the Redondo Beach LUP designates as "Industrial." The Industrial Land Use Designation states:

#### ***Industrial***

*This is a relatively light industrial district intended to accommodate small to medium-size industrial operations that do not result in obnoxious output that would detrimentally impact surrounding districts. Performance standards will be designed as part of the implementation*

*phase of the Local Coastal Program to encourage and ensure quality industrial developments on the limited amount of land within the Coastal Zone suitable for industrial development. Adequate buffering between the industrial districts and the surrounding land uses will be included in the development standards. Additionally, pursuant to Ordinance No. 1467 adopted March 28, 1955, **oil drilling will be permitted within this land use classification.** (Emphasis added.)*

Former Triton Oil Company (the “Portofino Site”) wells (found by the California State Lands Commission in 1992 to be draining oil from Hermosa Beach tidelands reserves), were drilled from lands within the City of Redondo Beach. Therefore, it is obviously feasible to tap the tidelands reservoirs of interest to the applicant from Redondo Beach.

Despite the Triton Oil Company land use precedent, the City of Redondo Beach planning staff states that oil and gas development is no longer provided for in the Industrial land use designation. The City’s staff has explained that Ordinance No. 1467 (referenced in the industrial land use designation above) provided for oil leasing to Shell Oil in 1955 (and subsequently, after a series of operators, to Triton Oil Company). The lease expired in 1990, and with it, according to the City, the LUP’s provision for oil drilling.

The City of Redondo Beach revised its zoning ordinances in 1992 to incorporate a provision that limits permissible development explicitly to uses listed in the ordinances. Because oil and gas development is not a listed use, City staff interprets the ordinances to prohibit all oil and gas development. In the City’s opinion, the rezoning is not inconsistent with the LUP industrial designation because the expiration of Ordinance No. 1467 extinguished all oil drilling from the industrial designation.

#### ***Legal Analysis — Redondo Beach Alternatives***

This presumption of legal infeasibility could be overcome by a showing that the applicant has the ability to compel the City of Redondo Beach to bring the provisions of its zoning into conformity with its LUP. Government Code §§ 65860 (a) and (c) require the zoning of cities and counties to be consistent with general plans of such local governments. However, Government Code § 65803 exempts charter cities from this requirement except insofar as the charter of any such city may include any such requirement. Redondo Beach is a charter city and its charter is silent with respect to any requirement for consistency between zoning and general plan provisions. Therefore, the presumption of legal infeasibility noted above is not overcome.

In the case of *Verdugo Woodlands v. City of Glendale* (1986) 179 Cal.App.3d 696, 704, the Court of Appeal invited the legislature to reconsider the wisdom of exempting charter cities from the general plan consistency requirement. Because, as is clearly illustrated by the circumstances of the present application, such an exemption frustrates sound land use planning, the Commission joins the Court of Appeal in this invitation.



Therefore, for the reasons set forth above, the Commission finds that despite the existence of technically feasible alternative sites adjacent to similar industrial development, the proposed project cannot be consolidated within these locations because of legal and permitting constraints. The Commission therefore finds that there are no feasible alternative locations to site this proposed development.

**4.4.1.2 If the proposed project cannot be consolidated with other development, will the proposed location have adequate public services?**

The applicant has provided a “will serve” letter from Southern California Edison assuring adequate capacity to provide electrical service to the proposed project. The project will not discharge wastewater into the City sewer system; all wastewater will be collected and re-injected into the producing formations. **Special Condition M-7** requires the applicant to prepare a Fire Protection Plan for review by the City of Hermosa Beach Fire Department. The approved plan must ensure adequate fire fighting resources and water supply, and adequate training and capability of the Fire Department to respond to the potential hazards posed by the proposed project. Therefore, the Commission finds that the proposed project meets the second test of Coastal Act Section 30250(a).

**4.4.1.3 Would the new development have significant adverse effects on coastal resources?**

The third test of Coastal Act Section 30250(a) requires that the proposed development be consistent with all other applicable Chapter 3 policies of the Coastal Act — that is, that all significant adverse impacts upon coastal resources be mitigated to less than significant levels. As noted below, unless mitigated pursuant to the applicable special conditions set forth in this report, the proposed project could have significant, adverse effects on coastal resources. Specifically, the project could (1) adversely affect public safety through fire, explosion, or exposure to hydrogen sulfide; (2) pose a risk of oil release into the marine environment, (3) cause subsidence or induced seismicity, and (4) adversely affect public coastal views and recreation.

As set forth in more detail in the subsequent sections, the Commission’s consideration and approval of the proposed project is contingent upon the imposition of extensive conditions requiring mitigation measures designed to protect public safety and coastal resources. Through the requirements in the special conditions, potentially significant impacts will be reduced to less than significant levels. For these reasons, the Commission finds that the proposed project, as conditioned, will not result in significant adverse impacts to coastal resources, and therefore meets the third test of Coastal Act Section 30250(a).

**4.4.1.4 Where feasible, new hazardous industrial development shall be located away from existing developed areas.**

The Commission finds for the reasons set forth in Section 4.4.2 of this report that the proposed development is hazardous. Coastal Act Section 30250 (b) requires that new hazardous industrial development be located away from existing developed areas, where feasible. Feasible, pursuant to Coastal Act Section 30108, means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.

As explained in the previous sections, legal constraints preclude siting the project at any of the otherwise feasible locations that have been identified. Legal constraints represent a social factor that must be taken into consideration. Therefore, the Commission finds that there are no feasible alternatives available to relocate the proposed project further away from existing development than in presently proposed. For this reason, the Commission finds that the project, as proposed, is consistent with Coastal Act Section 30250(b).

**4.4.2 Hazards**

Coastal Act § 30253(1) and (2) provides that:

*New development shall:*

- (1) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.*
- (2) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area....*

Coastal Act § 30262(a)(e) and (f) states:

*Oil and gas development shall be permitted in accordance with Section 30260, if the following conditions are met:*

- (a) The development is performed safely and consistent with the geologic conditions of the well site...*
- (e) Such development will not cause or contribute to subsidence hazards unless it is determined that adequate measures will be undertaken to prevent damage from such subsidence...*
- (f) With respect to new facilities, all oilfield brines are re-injected into oil-producing zones unless the Division of Oil and Gas of the Department of Conservation determines to do so*

*would adversely affect production of the reservoirs and unless injection into other subsurface zones will reduce environmental risks. Exceptions to re-injections will be granted consistent with the Ocean Waters Discharge Plan of the State Water Resources Control Board and where adequate provision is made for the elimination of petroleum odors and water quality problems.*

*Where appropriate, monitoring programs to record land surface and near-shore ocean floor movements shall be initiated in locations of new large-scale fluid extraction on land or near shore before operations begin and shall continue until surface conditions have stabilized. Costs of monitoring and mitigation programs shall be borne by liquid and gas extraction operators.*

#### **4.4.2.1 Public Safety/Hazards**

##### ***Independent review of applicant's risk analysis***

The Macpherson application contains a document entitled “*Macpherson Oil Company City of Hermosa Beach Project Hazard Footprint Analysis*” dated May 9, 1995, prepared by Reese-Chambers Systems Consultants, Inc.. (The report is an Appendix to Exhibit 7.) The Reese-Chambers report states that “...Any H<sub>2</sub>S (hydrogen sulfide) that might be in the [Macpherson project produced] gas will be removed at the Macpherson production facility and hence, the gas will not be toxic.” This statement together with other related comments in the analysis raised Commission staff questions concerning potential hydrogen sulfide production and related safety issues. In addition, the applicant's plans contained hydrogen sulfide treatment equipment that had not been included in the plans approved by the City of Hermosa Beach in 1993. The applicant sought an open-ended permit with respect to potential concentrations of hydrogen sulfide that would be authorized. The applicant subsequently suggested a 1,000 parts per million (ppm) limit in above ground gas processing facilities, but this proposal raised even more questions about the treatment equipment and project safety.

As discussed in Section 4.1.3.2, to resolve filing review concerns, Commission staff requested a third-party review of the applicant's risk analysis. The applicant agreed to fund the requested review. An independent, qualified third-party review of the applicant's hazard risk analysis was undertaken by Arthur D. Little, Inc., in August, 1997, and finalized in December, 1997. The final report, entitled “*Review of the Hazard Analysis For the Macpherson Oil Company Hermosa Beach Project — Final Report*,” is attached as Exhibit 7 and itself contains four attachments, which are the four iterative hazard footprint analyses prepared by the applicant's consulting risk analyst, Reese-Chambers Systems Consultants, Inc., between 1995 and 1997.

##### ***Scope of Review***

The Arthur D. Little, Inc. review of the applicant's hazard risk analysis evaluated potential hydrogen sulfide hazards, production and transportation hazards, and project risk profiles. Arthur D. Little, Inc. was not asked to prepare a new hazard risk analysis, but to review the assumptions, methods, and conclusions presented in the applicant's analysis.

### ***Hazard assessment methodology and presentation***

The hazard risk analysis prepared by Reese-Chambers used a risk assessment methodology outlined in Santa Barbara County's Environmental Thresholds for Public Safety. Arthur D. Little, Inc. concurred that the use of this methodology was appropriate to evaluate the Macpherson proposal. These thresholds, which were recently revised, specify levels of acceptable risk based on the likelihood for different numbers of potential fatalities. The Santa Barbara County thresholds are based on and are consistent with many national and international risk analysis thresholds, including the United States Nuclear Regulatory Commission, United Kingdom Health and Safety Executive, UK Atomic Energy Authority, the Netherlands, and the European Union. In addition, several companies and organizations, such as British Petroleum, Shell Oil, and the American Institute of Chemical Engineers, have adopted similar risk criteria. Using these generally accepted risk criteria, three general zones, or levels of risk, have been identified as follows:

**De Manifestis** — This classification is considered unacceptable, and the proposed development or activity should not proceed unless mitigation can be instituted that successfully reduces the risk to below this level.

**Grey Region** — This classification is considered significant but acceptable if mitigated to the maximum extent feasible, preferably to a level of insignificance.

**De Minimis** — Risk levels within this classification are considered tolerable; however, feasible mitigation is still recommended for possible catastrophic events at commensurate costs to keep their probability of occurrence sufficiently low to qualify as insignificant.

### ***Possible Hydrogen Sulfide Production: Basis for Concern***

The potential production of hydrogen sulfide during project operations warrants concern for two reasons: First, the gas is acutely hazardous, with a toxicity to humans similar to that of hydrogen cyanide, and second, the applicant proposes to locate the project in a fully developed urban area with a significant residential population close to the site.

### ***Characteristics of Hydrogen Sulfide***

Hydrogen sulfide is a colorless gas with a strong characteristic rotten egg odor at low concentrations. Created by the bacterial decomposition of metal sulfides and organic matter, hydrogen sulfide may occur naturally in oil and gas deposits or develop over time as a reservoir

contaminant produced by sulfur-reducing bacteria introduced via wastewater re-injection. The rotten egg odor is detectable at less than one part per million but is not always a reliable warning signal because at higher concentrations, olfactory fatigue and loss of odor occurs. In fact, the odor of hydrogen sulfide at dangerous concentrations can rarely be perceived.

### ***Toxicity***

Hydrogen sulfide is both a pulmonary irritant and a chemical asphyxiant. Hydrogen sulfide may kill healthy adults exposed to concentrations of approximately 1,000 ppm within a few breaths, within five minutes of exposure at 800 ppm, and within one-half hour of exposure at concentrations of 300 ppm. Inhalation of 1,000 to 2,000 ppm may cause coma after a single breath, giving rise to its description as a “knock-down” gas.

Emergency Response Planning Guidelines issued by the American Hygiene Association set 100 ppm as the maximum airborne concentration below which it is believed, that nearly all individuals could be exposed up to one hour without experiencing life-threatening consequences. This level is for use in emergency response planning and is not meant for use as an exposure threshold.

Injuries may be caused by exposure to hydrogen sulfide at sublethal concentrations. The organ systems affected by hydrogen sulfide include those with exposed mucous membranes or high oxygen demands, reflecting its irritant and chemical asphyxiant effects, respectively.

Evidence is accumulating that even one sublethal exposure may cause permanent health effects, including the onset of chronic asthma in children. A persistent asthma-like syndrome referred to as reactive airways syndrome (RADS) may develop after a single exposure to a respiratory irritant.

At low concentrations (i.e., less than 10 ppm) hydrogen sulfide causes irritation of the eyes, mucous membranes, and upper respiratory system. Symptoms may include sore throat, rhinitis, and cough. When exposed to higher concentrations (10-50 ppm), persons tend to experience mild eye and upper respiratory irritation, headaches, and dizziness. Concentrations from about 50-200 ppm can cause severe eye and respiratory tract irritation, acute conjunctivitis, lacrimation, and difficulty breathing, as well as a sudden loss of consciousness. Prolonged exposure at these concentrations may lead to bronchitis, pneumonitis, and migraine headaches. At higher levels, hydrogen sulfide causes a severe loss of motor coordination, coma, pulmonary edema, respiratory paralysis, and ultimately death.

### ***Safe Thresholds of Exposure***

Upper limits of safe exposure to hydrogen sulfide are difficult to set with confidence. The acute toxicity thresholds described above result primarily from data derived from occupational exposures of healthy adult males. It is well known that infants, children, the elderly, pregnant women, and those with compromised immune systems or respiratory impairments may experience adverse health effects from exposure to toxic chemicals at much lower thresholds than would be expected in healthy adult

males suffering similar exposure. Occupational safety thresholds that trigger action to limit employee exposure to hydrogen sulfide are set at concentrations of 10 ppm. Allowable concentrations of hydrogen sulfide in natural gas pipelines connecting to residences, etc., are limited to concentrations of 4 ppm.

### ***Potential Consequences***

As noted, the proposed project could introduce a potentially lethal gas into the midst of a densely developed urban neighborhood with a significant residential population. Occupied structures exist approximately fifty feet offsite, and a public greenbelt heavily used by pedestrians and joggers borders the project opposite Valley Drive. Depending on the concentrations of hydrogen sulfide in an accidental release from the proposed project, the consequences to populations offsite could be catastrophic. Risk assessments performed for the project indicate that the meteorological conditions that would result in the largest hazard footprint in an accidental release occur late at night, when nearby residents could be expected to be sleeping and therefore unable to perceive or escape a lethal accidental release from the project site. Although the odor of hydrogen sulfide is detectable at very low concentrations, it rapidly causes olfactory fatigue at higher levels, and therefore is not considered to have adequate warning properties.

### ***Results of Preliminary Independent Hazard Risk Assessment***

The preliminary Arthur D. Little, Inc. analysis affirmed that the presence of hydrogen sulfide in the produced gas could be a concern during the life of the proposed project. The report stated that:

*While reservoir sulfur content is not an absolute indicator of produced gas hydrogen sulfide concentrations, reservoir fluid (crude oil and gas mixture) data indicate that onshore sulfur levels average approximately 1.4 percent while offshore levels average approximately 2.4 percent. While much of this sulfur would remain with the crude oil as elemental sulfur, the presence of sulfur in the reservoir fluids would tend to indicate the potential for elevated hydrogen sulfide levels in the produced gas. In addition other nearby wells in the same reservoir have shown elevated hydrogen sulfide concentrations, some greater than 5,000 ppm (MACPHERSON May 30, 1997 responses to CCC, page 8).*

*MACPHERSON has stated they do not expect to observe elevated H<sub>2</sub>S concentrations in the produced gas stream, and that proper management of the reservoir would prevent the formation of H<sub>2</sub>S, but the reservoir is not a virgin field that has never been produced. Even if no H<sub>2</sub>S is observed during the initial production stages, it is likely that sour gas will migrate from other nearby parts of the reservoir that have shown relatively high levels of H<sub>2</sub>S.*

The Arthur D. Little, Inc. draft review did not support the applicant's risk analysis characterizing the project's risk profile as "De Minimis." (De Minimis means a project poses no significant risks to

public safety.) The risk profile as corrected by Arthur D. Little, Inc. showed that the risk profile traversed the “Grey Region” (the project risk profile considers all aspects of the project’s risks and traverses the grey region with or without inclusion of risks due solely to the potential presence of hydrogen sulfide) which equates with a finding that the project poses significant risks to public safety. The independent consultant determined that the likely source of the Macpherson error was a graphing mistake, and that the incorrect graph led to the misinterpretation of the project’s risks. The difference in the resultant risk profile was substantial, and caused the applicant to underestimate the project’s potential risks by an order of magnitude.

### *Subsequent Analysis of Hydrogen Sulfide Hazards*

After the Arthur D. Little, Inc. draft report was released in September of 1997, the applicant requested time to consider the report’s implications and to perform additional analyses. During the requested hiatus in the report’s finalization, the applicant’s risk analyst, in consultation with Arthur D. Little, Inc., evaluated the hazard footprint for a worst case hydrogen sulfide release using 2,000 ppm of hydrogen sulfide as the concentration in the initial release. The resulting hazard zones for injuries and fatalities are shown on page 9 of Exhibit 7.

The 2,000 ppm analysis determined that potentially fatal concentrations of hydrogen sulfide would not reach residential areas under worst-case meteorological conditions at the time of an accidental release, but fatal concentrations could occur at the adjacent businesses. Since these businesses were likely to be closed late at night when the worst-case meteorological conditions would be expected to occur, the potential for fatalities at businesses under this scenario was considered unlikely. The analysis did confirm that injuries could be expected in residential areas under a worse-case release scenario at 2000 ppm, however.

### *Applicant Caps Permissible Hydrogen Sulfide Concentrations*

Before publication of the Arthur D. Little, Inc. final report, the applicant revised the project description to specify that if untreated oil and gas (downcasing) in any well authorized in accordance with its coastal development permit contained hydrogen sulfide concentrations in excess of forty (40) ppm, that well would be shut-in immediately and either re-completed to a different depth to avoid the contamination or abandoned.

The applicants’ Permits to Construct from the South Coast Air Quality Management District (SCAQMD) authorize production of natural gas containing up to 40 ppm hydrogen sulfide. In addition, the applicant proposed to sell natural gas containing up to 40 ppm of hydrogen sulfide to SCE’s Redondo beach power plant. The plant is authorized to burn natural gas containing up to 40 ppm of hydrogen sulfide. Therefore, 40 ppm per well of hydrogen sulfide represents an upper permit limit that does not require Macpherson to install hydrogen sulfide treatment equipment. **Special Condition M-4** deletes hydrogen sulfide equipment from the project plans. In addition, **Special Condition M-1** sets forth the 40 ppm per well restriction on hydrogen sulfide and **Special**

**Condition M-2** requires extensive monitoring, detection, and alarms to ensure that safe thresholds are not exceeded by the proposed project.

Under a worst-case release scenario, the authorized maximum concentration of 40 ppm of hydrogen sulfide would begin mixing almost immediately with the open air, and would be diluted to insignificant concentrations before offsite exposure, if any, would occur (Exhibit 16).

***Conclusion of Final Independent Report (Hydrogen Sulfide)***

The final Arthur D. Little, Inc. report confirmed that a 40 ppm per well limit on hydrogen sulfide levels would assure that no injuries or fatalities would occur offsite as the result of an accidental release from the proposed facility. The final Arthur D. Little, Inc., report states:

*As stated previously, the MACPHERSON project, as currently proposed, would not be permitted to produce or process gas with H<sub>2</sub>S levels of more than 40 ppm. Therefore, any potential risk to the public from exposure to H<sub>2</sub>S would be negligible under the currently proposed project. The project, as currently proposed, would not allow for any H<sub>2</sub>S in the produced gas at concentrations greater than 40 ppm. Potential toxic hazards to the population surrounding the proposed facility associated with a produced gas H<sub>2</sub>S concentration of 40 ppm would be considered negligible.*

***Advancements in Treatment Technology would not mitigate Worst-Case Release Scenario due to Seismic Risks***

The applicant states that if a concentration of hydrogen sulfide above 40 ppm is encountered in any well in the future, the affected well would (a) be shut-in and abandoned, (b) re-completed to avoid the contaminated formation, or (c) the applicant could seek an amended or new permit to treat the elevated levels of hydrogen sulfide. Option (c) would require the installation of hydrogen sulfide treatment equipment. Such equipment may treat much higher concentrations than the proposed 40 ppm limit. Thus, future installation of hydrogen sulfide treatment equipment could raise the question of whether higher hydrogen sulfide thresholds than 40 ppm per well might be acceptable.<sup>14</sup>

If hydrogen sulfide treatment is installed within a well, the worst case risk of hydrogen sulfide exposure to nearby populations arises from a release caused by the simultaneous failure of a well casing and the hydrogen sulfide treatment system in the well. The direct release of untreated gas into

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<sup>14</sup> The applicant's initial risk analysis, dated May 9, 1995, did not identify a worst-case release scenario triggered by an earthquake. The applicant's 1995 and March, 1997 risk analyses represented that a worst-case hydrogen sulfide exposure would arise from a two-inch diameter hole, equivalent to a faulty pipe connection or tank perforation, with gas containing hydrogen sulfide as a constituent escaping under high pressure from the theoretical point of release, and commingling (thus diluting) rapidly with the open air. The applicant's analysis modeled such a release with a hydrogen sulfide concentration of 6,000 parts per million (ppm) and concluded that due to expected dilution under assumed atmospheric conditions, the resultant vapor cloud at ground level would not be expected to exceed 300 ppm.



the air would result. This scenario is most likely to result from an earthquake. Therefore, no matter how reliable a hydrogen sulfide treatment system might be during ordinary operating circumstances, the system's complete failure during a strong earthquake must be considered.

The potential risk of a well casing and hydrogen treatment system failure due to an earthquake is underscored by a report submitted by the applicant, entitled "*Geologic Hazards Investigation*" prepared by Ryland Associates, Inc., dated June 10, 1994. The report states that the site of the proposed project is subject to the effects of major regional earthquakes on the Newport–Inglewood, Palos Verdes, San Andreas, Whittier, Norwalk, and various other regional faults. The report states that the site is dominated by its proximity to the Palos Verdes; and Newport–Inglewood Faults and that these fault systems are assigned maximum earthquakes of magnitude 7 and 7.5, respectively.

The Ryland report also states that the San Andreas Fault generated one of the largest earthquakes in California history in 1857 with a magnitude in excess of 8, and concludes that a recurrence of this event is quite possible or probable during the lifetime of the project. Based on dating studies, such earthquakes occur every 130 years, on the average.

The Commission finds that a seismically-induced worst-case release scenario means that future technological innovations in hydrogen sulfide treatment equipment would be unlikely to mitigate the public safety risks that could be posed by an increased hydrogen sulfide production limit. Moreover, under a worst case scenario triggered by a major earthquake, emergency response personnel and equipment could be overwhelmed by competing demands for assistance. As the result, the Commission finds that future technical innovations in hydrogen sulfide treatment systems are unlikely to eliminate the need for a 40 ppm per well limit on hydrogen sulfide concentrations.

As the Commission previously noted, most data concerning dose-response relationships between hydrogen sulfide exposure concentrations and resultant injuries or fatalities have been extrapolated from occupational exposures of generally healthy, adult male populations. Emerging data indicates that other populations, such as the elderly, those with respiratory system impairments, and most notably, children, may suffer adverse acute or chronic health effects at much lower thresholds than would be expected of generally more robust adult male populations. The Commission also notes that even in occupational settings, occupational safety restrictions and procedures associated with potential hydrogen sulfide exposures are generally triggered at thresholds as low as 10 ppm of hydrogen sulfide.

For all of these reasons, and because residential populations are located in close proximity to the project site, the Commission therefore finds that the permit limit of 40 parts per million per well of hydrogen sulfide is the likely upper concentration of hydrogen sulfide in untreated gas that would likely ever be approved for production at the proposed location.<sup>15</sup>

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<sup>15</sup>California State Lands Commission staff, and the applicant, have determined that elevated concentrations of hydrogen sulfide, ranging from 1,500 ppm to 5,500 ppm per well, were previously encountered in approximately ten percent of the onshore-to-offshore wells produced from nearby Redondo Beach Portofino project, last produced by

### ***Continuing Hydrogen Sulfide Restrictions; Economic Implications***

The Commission finds that in fairness to the applicant's need to make rational investment decisions,<sup>16</sup> the likely retention of this 40 ppm hydrogen sulfide permit limit must be disclosed. Thus, accepting the terms and limits of this permit approval, the applicant understands the likelihood of this continuing limitation and the implication that any well exceeding 40 ppm hydrogen sulfide in the future may be denied a higher hydrogen sulfide limit, thus requiring shut-in of the offending well if re-working is unsuccessful.

### ***Increased Buffers***

The Commission finds that one alternative mitigation measure exists for future consideration by the applicant in seeking an upward revision of the 40 ppm per well hydrogen sulfide limit: the applicant could elect to purchase and abandon sufficient surrounding properties to provide a buffer against the increased safety risks posed by a higher hydrogen sulfide limit in the future. The applicant estimates that the proposed project will generate revenues of approximately \$569 million (see Table 2, Section 4.4.1.1). The applicant may decide in the future that oil and gas recovery from wells showing increasing concentrations of hydrogen sulfide (should such increases occur) promise sufficient financial benefits to warrant the purchase of properties to provide the necessary buffer. On the other hand, as Table 2 in Section 4.4.1.1 shows, even if the applicant's projected recovery were reduced by 50%, due to hypothetical shut-ins in the wake of elevated hydrogen sulfide detection, the project would still produce a 30% return on investment and thus be economically feasible according to the applicant's own definition.<sup>17</sup>

### ***Independent Assessment of Additional Hazards***

In addition to questions about hydrogen sulfide risks posed by the Macpherson project, Arthur D. Little, Inc. also evaluated other aspects of potential risks posed by the project, including oil transportation and the potential for fire and explosion, as discussed below.

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Triton Oil Company. These wells tapped the same offshore reservoir Macpherson proposes to develop. The applicant has previously asserted that the Redondo Beach wells were draining the Hermosa Beach tidelands, which suggests the long-term potential for hydrogen sulfide to migrate into some Macpherson wells. On the other hand, the applicant claims, and CSLC staff have stated (Exhibit 17) that such migration is unlikely. The applicant further states that it does not believe concentrations of hydrogen sulfide actually produced will ever reach the 40 ppm per well limit during the 35-year projected economic life of the project. Therefore, the applicant asserts that the 40 ppm per well limit would not constrain the anticipated production over the life of the project.

<sup>16</sup> Information supplied by the applicant indicates that the total development costs for the proposed project will be approximately \$50 million.

<sup>17</sup> During filing review, Commission staff requested that the applicant disclose the proportion of the oil reserves that the applicant believes must be recovered for the project to be financially feasible. In response #19m page 10, dated March 14, 1997, the applicant states that the minimal production of 15 million barrels of oil (50% of the recovery projected from the proposed site) would pay for the cost of drilling and producing the necessary wells to recover such amount of oil with a 30% return on investment.

Most of the issues identified during the Arthur D. Little, Inc. review have been resolved through further analysis, clarification by the applicant, incorporation of additional mitigation measures into the proposed project, or revisions of the proposed project. The Arthur D. Little, Inc. review identified project changes that reduced potential safety problems and increased the economic viability of the project — most notably, the consultant identified an alternative crude oil pipeline transportation system owned by SCE that eliminated the need to reactivate a long-abandoned Chevron pipeline. The applicant subsequently amended the project description to take advantage of this option.

The Arthur D. Little, Inc. final report states that the Macpherson project, as revised after the issuance of the Arthur D. Little, Inc. preliminary report, is generally well designed and incorporates a wide variety of safety and mitigation measures to minimize potential hazards associated with the proposed project. The final report concludes that:

*The hazard analyses that have been prepared for the proposed MACPHERSON Hermosa Beach Project have evaluated a wide variety of potential hazards that could adversely affect the surrounding community as shown in Figure 5. A majority of the hazards are associated with fire and explosion hazards associated with crude oil and natural gas production, processing and transportation. Since MACPHERSON has committed to monitor their wells for hydrogen sulfide and would shut down wells containing more than 40 ppm hydrogen sulfide, potential acute toxic hazards associated with the proposed project would be considered minimal.*

*As summarized in the previous section, the risk associated with the proposed project falls mainly in the “Grey Region” which is classified as a significant impact “... but acceptable if mitigated to the maximum extent feasible, preferably to a level of insignificance (Santa Barbara County Risk Guidelines).” A review of the safety features that are included in the project’s design, as well as additional commitments made by the applicant for additional safety features, would indicate that the proposed project incorporates safety mitigation measures to the maximum extent feasible. However, potential fire and explosion hazards associated with the proposed project, especially given the location in close proximity to residential areas, would still be classified as a significant impact based on the generally accepted risk criteria used by the applicant. As a result, the detailed hazard and operability study recommended in this report may be able to identify additional design and operational hazards that could lead to the need for additional safety features or design/operational modifications.*

#### ***Recommendation for Hazard and Operability Study (HAZOP)***

The final report (page 13, Mitigation Measure 4-1) recommends the imposition of the following mitigation measure, which the Commission has hereby incorporated as **Special Condition M-6**, to require preparation of the recommended Hazard and Operability Study prior to Phase I and Phase II

of project construction and operations. This requirement ensures that the potential safety risks of the proposed project are reduced to the maximum extent feasible through final design analysis and refinement. The Arthur D. Little, Inc. final report recommends:

*A Hazard and Operability Study (HAZOP) for the proposed facility and ancillary equipment should be prepared by MACPHERSON prior to both Phase I and Phase II operations. The HAZOP should identify potential accidental release scenarios and mitigation measures that would prevent or reduce the likelihood of the release scenarios that are identified. The HAZOP should also be reviewed and approved by the California State Lands Commission prior to initiation of facility operations.*

The Commission emphasizes that a Hazard and Operability Study (HAZOP) is a final design review intended to ensure maximum project safety by providing an opportunity to “fine tune” the project at the final design stage. A HAZOP would not generally be expected to detect significant new problems and thus is not a deferred analysis of the project’s safety. Because a HAZOP does not defer significant impact assessment and resultant mitigation to the future, **Special Condition M-6** is structured to allow the HAZOP to be performed after permit issuance but before commencement of construction for Phase I and Phase II. In addition, **Special Condition M-5** ensures a safety review of the natural gas liquids processing system. **Special Condition M-7** ensures that an adequate Fire Prevention Plan is prepared and approved.

#### ***Applicant Agreement to Fund Independent Monitoring and Project Oversight***

To ensure that the standards and mitigation measures imposed by the Commission through the applicable Special Conditions will be strictly monitored and reliably enforced, the applicant has agreed to, and will fund, independent monitoring and oversight of all phases of the project. The California State Lands Commission staff, which has extensive oil and gas development oversight experience, has agreed to perform this function. **Special Conditions A-8** and **A-9** memorialize the applicant’s commitment and the specific requirements for the preparation of an associated Compliance Plan, etc.

#### ***Commission Conclusion: Project Safety***

As discussed above, the presence of an acutely toxic gas as a constituent of the geologic formation associated with the proposed project constitutes a potential hazard to life that must be considered by the Commission pursuant to Coastal Act Section 30253(1). This policy requires that new development minimize risks to life and property in areas of high geologic hazards. In addition, regional seismic risks discussed more fully below also illustrate that the project area is one of high geologic hazards. In addition, oil and gas development is specifically subject to the provisions of Coastal Act Section 30262(a) which requires the development to be performed safely and consistent with the geologic conditions of the well site.

The Commission notes that neither Coastal Act Section 30262 nor Section 30253 require that a project be completely risk-free. Rather, these Coastal Act provisions require in part that an oil and gas development be performed safely, and that new development minimize risks to life and property in areas of high geologic hazard.

The Commission further notes that the risk analysis methodology used by Arthur D. Little, Inc. and by the applicant's risk consultant, Reese-Chambers, Inc., conclude that the potential risks posed by the Macpherson project fall within the "Grey Region," defined previously as representing a level of risk that is considered significant but acceptable if mitigated to the maximum extent feasible, preferably to a level of insignificance.

The Commission finds that mitigation measures incorporated into the applicant's proposed project design substantially decrease the risks the project would otherwise pose to public safety. The mitigation measures incorporated by the applicant include (a) the use of blowout preventers to prevent uncontrolled high pressure releases of oil and gas from the proposed wells, (b) use of strategically placed block valves designed to fail in a closed position and thus limit the potential release of oil or gas from proposed pipelines, (c) use of best available technology for the proposed Supervisory Control and Data Acquisition System, (d) amendment of the proposed project to avoid risks posed by the production of hydrogen sulfide at concentrations above 40 ppm in any well on site, and commitment to shut-in and rework, or abandon altogether, any offending well, (e) amendment of the proposed project to delete hydrogen sulfide treatment equipment, (f) amendment of the project to use an alternative, active oil pipeline system instead of re-activating the aged, and presently abandoned Chevron pipeline, and (g) the applicant's agreement to fund comprehensive project monitoring and oversight pursuant to the administrative special conditions referenced above.

The Commission finds that as extensively conditioned to provide maximum feasible mitigation of potential public safety risks posed by the proposed project, the project is consistent with the public safety requirements of Coastal Act Sections 30262(a) and 30253(i).

#### **4.4.2.2 Active Faults and Seismicity**

The applicant has submitted a report entitled "*Geologic Hazards Investigation*," prepared by Ryland Associates, Inc., dated June 10, 1994. The Ryland report states that the site is subject to the effects of major regional earthquakes on the Newport–Inglewood, Palos Verdes, San Andreas, Whittier, Norwalk, and various other regional faults, and is dominated by its proximity to the Palos Verdes and Newport–Inglewood Faults. These systems are assigned maximum earthquakes of magnitude 7 and 7.5, respectively, for seismic design.

The Ryland report also notes that the San Andreas Fault generated one of the largest earthquakes in California history in 1857 with a magnitude in excess of 8; a recurrence of this event is quite possible or probable during the lifetime of the project. Based on dating studies such earthquakes occur every 130 years, on the average.

The Geologic Hazards Investigation concludes that the potential for tectonic fault rupture onsite is negligible, and further concludes that risk to the project from seismic-related hazards such as liquefaction, tsunami and soil failure do not pose special concerns. The investigation, on pages 5–7, sets forth specific recommendations for final seismic design parameters which, according to the consultant, if implemented would ensure the project's ability to withstand the maximum credible seismic or seismic-related hazard predicted for the project site. **Special Condition M-4** requires the applicant to ensure that these recommendations are incorporated into the final project design and requires that the final project plans and designs be reviewed and approved by a registered engineering geologist prior to permit issuance (for Phase I designs) and prior to implementation of construction (for Phase II designs). The Commission, in consideration of the information set forth above, finds that, as conditioned by **Special Condition M-4**, the proposed project is consistent with the applicable provisions of Coastal Act Sections 30252(i) and 30262(a), with respect to earthquake hazards that may affect the proposed project.

#### **4.4.2.3 Induced Seismicity**

Induced seismicity, an increase in seismic (earthquake) activity resulting from human actions, may result from any of the following: extracting fluid from the ground, injecting fluid into the ground, filling and/or draining reservoirs (dam impoundment), underground mining, and detonations. Induced earthquake activity caused by fluid withdrawal or the re-injection of fluids into the ground to mitigate subsidence is a potential geologic hazard associated with oil development, both onshore and offshore. The dangers that induced seismicity present include surface rupture, seismic shaking, earth material failure (i.e., mass movement and liquefaction), uplift, subsidence, and tsunamis.

Petroleum recovery operations may influence seismicity through both fluid extraction and fluid injection. Fluid extraction can cause subsidence and trigger seismic slip along existing and new fractures. Fluid injection for secondary recovery can increase the likelihood of fault movement, as well as create new fractures if injection pressure is too high. Induced seismicity presents a hazard during oil recovery operations even in areas of low historic seismicity; therefore, it is of special concern in seismically active areas such as the California coastal zone.

#### ***Examples of Injection-Induced Seismicity***

The possibility of causing increased seismic activity is the most significant geologic hazard associated with injection. Injection-induced seismicity is triggered by the pumping of fluids under pressure into the subsurface, which increases the underground fluid pressure and stimulates movement along faults and fractures. Increased seismicity in the Denver, Colorado, area in the early 1960s has been conclusively tied to waste water injection at the Rocky Mountain Arsenal northeast of the city. Increased seismicity in the Attica-Dale region of New York is attributed to fluid injection for the solution mining of salt. Some cases of injection induced seismicity involving water flooding for secondary petroleum recovery in the United States are in the Baldwin Hills section of the Inglewood

Oil field in southern California, and at Rangely, Colorado. Rangely was the site of a controlled experiment in injection induced seismicity.

### ***California Examples***

The California coastal zone is a seismically active geologic area and has undergone notably increased seismic activity for more than two decades. Seismicity is being monitored for its relation to oil production and water flooding in southern California. The monitoring programs have been operating in the onshore Los Angeles Basin 25 years, in the Dos Cuadras field for 18 years, and in the offshore Beta field for 15 years. While the results suggest that induced seismicity is occurring in the Inglewood oil field, they suggest that induced seismicity is not occurring in the Dos Cuadras and Beta fields.

### ***Applicant's Re-injection Program***

The applicant proposes to re-inject all wastewater and produced water during project construction and operations.<sup>18</sup> Re-injection is a currently accepted method to control subsidence. As discussed previously, subterranean injection of fluids has the potential to increase earthquake activity locally. This phenomenon is known as "induced seismicity." Because induced seismicity could adversely impact public safety, and jeopardize both life and property, an analysis of the proposed project's potential to induce seismicity is necessary. The applicant's disposal parameters are as follows:

The Stinnet #1 well, located onsite in the city yard, will be converted from an idle oil well to an injection well during the initial testing phase (Phase I). If Phase I is successful, three additional injection wells will be used during the life of the project. The Stinnet #1 well is completed in the Upper Main Zone. The additional wells will be completed in the Upper Main, Lower Main, and Del Amo Zones.

- The maximum injection volume will be 12,000 barrels per day.
- The maximum injection pressure will be less than 900 psi surface pressure (approximately 62 bars).
- The disposal wells will be monitored with standard industry radioactive tracer surveys annually, as required by the State Division of Oil and Gas, to ensure zonal isolation.

### ***Independent Monitoring of Seismicity Recommended***

The applicant has submitted a report dated July 29, 1994, prepared by Merrill E. Wright, a California registered geologist, entitled: "A Comparison of Induced Seismicity in Colorado, at the Rocky

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<sup>18</sup> The Commission notes that re-injection of water can prevent subsidence and the Coastal Act requires such re-injection.

*Mountain Arsenal and Rangely Oil Field, to the Planned Activities at the Proposed Hermosa Beach Oil Field.*” The report evaluates the potential for fluid injection as proposed by the applicant to induce seismic activity, and concludes that although project-induced seismicity is highly unlikely, independent monitoring is nevertheless recommended.

Coastal Commission staff has previously reviewed the potential for offshore oil and gas development to induce seismicity. Commission staff (*Local Assistance Notes #7*, McCarthy et al, 1989) also recommends that an independent seismic monitoring program be implemented for new offshore oil and gas development projects.

Based on the recommendations of the applicant’s consulting geologist and of the Commission’s technical staff, the Commission finds that a seismic monitoring program is necessary to ensure that the proposed fluid withdrawal and re-injection of wastewater and produced water do not increase seismic activity and that if evidence of seismicity triggered by project activities emerges, that with Commission approval the project shall be halted or modified to sufficiently abate the increased seismic activity. **Special Condition M-36** requires the applicant to submit a Seismicity Monitoring Plan (SMP) subject to the executive director’s review and approval. The SMP shall be designed to detect significant change in seismic activity that may be caused by the applicant. The SMP shall be prepared and implemented at the applicant’s expense, and shall provide for data acquisition and interpretation by a qualified, independent entity approved by the executive director. **Special Condition M-36** provides a mechanism to reopen the permit for additional Commission consideration and action, including permit revocation, required changes in project operations, or the imposition of additional mitigation measures.

### *Commission Conclusions*

For the reasons set forth above, the Commission finds that **Special Condition M-36**, to establish an independent Seismicity Monitoring Plan, is necessary to ensure public safety consistent with the requirements of the Coastal Act. The Commission therefore finds the proposed project is consistent with the applicable requirements of Coastal Act Sections 30253 and 30262.

#### **4.4.2.4 Subsidence**

Subsidence is the dropping or lowering of the earth’s surface, and has long been recognized as a potential concern with oil and gas extraction projects.

Subsidence can be extremely hazardous to shoreline areas. One of the more documented cases of subsidence occurred in the Wilmington oil field which showed over 29 feet of subsidence over a 53 year period. The associated impacts included inundated harbor facilities, oil wells and other property (Terminal Island needed to be diked to prevent flooding and parts of Long Beach were filled); ruptured oil well casings, pipelines, sewers and storm drains; separated or buckled railroad



tracks; a jammed drawbridge; and cracked walls and foundations of local buildings<sup>19</sup>. It should be noted that the Wilmington field had a total voidage<sup>20</sup> of 1045.9 MMbbls prior to re-pressuring, but once re-pressuring of the field began, no further subsidence-related surface damage was noted and approximately 1.5' of elevation gain (or rebound) occurred.

Many structures along the shore are designed to remain safe and effective for identified water elevations. For example, embedded in the design for many seawalls, breakwaters, etc. is a design water elevation and wave height. When water elevations are increased, the structure will provide less protection and may be damaged. These dangers are two-fold. First, subsidence of the offshore sea bottom effectively causes an elevation in water elevation for all existing structures and for the general beach area. A structure which was built to have a top elevation 10 feet above mean sea level will only be 9 feet above mean sea level if the land upon which the structure is built subsides by 1 foot. Second, water depth in front of the structure will increase by 1 foot, and this increase in depth will allow larger waves to break on the structure. Since the energy carried by a wave increases proportionally with the square of the wave height, a small increase in water depth can cause a much larger increase in the available wave energy.

The beach itself will also be affected by subsidence. Direct subsidence of the beach will inundate part of the beach and cause a loss of dry beach. Subsidence of the nearshore area will allow larger waves to come closer to the dry beach, increasing the wave energy expended on the beach and increasing sand movement. A gradual increase in beach erosion (or decrease in accretion) is a likely effect of this localized change in wave energy.

Subsidence occurs for a number of reasons, including oil and gas extraction. California is a tectonically active area and subsidence is frequently linked to earthquake events (seismically induced subsidence). These changes in elevation are sudden, with areas rising or dropping in a few seconds. Regional surface elevations also change gradually over time, due to long-term compaction of soils, adjustments to past seismic events, etc. Human caused subsidence comes mainly from fluid extraction — groundwater as well as oil and gas. Subsurface mining can also cause subsidence, but this is not a concern in the Hermosa Beach area.

### ***The City of Hermosa Beach's Required Subsidence Program***

The Conditional Use Permit issued by the City of Hermosa Beach has six conditions which address subsidence. In summary, they require:

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<sup>19</sup> From information provided in a letter Report prepared by R. K Baker, Division of Oil and Gas, to Ms. Lorena Margoles, July 30, 1982, entitled "Comments on the Various Subsidence Reports and Associated Criticisms for the Riviera Drilling Districts and Alternate Drill Site EIR."

<sup>20</sup> Voidage is the total amount of fluid withdrawn from a reservoir minus the total fluid injected back into the reservoir.

- The applicant shall hire an independent engineer to prepare a plan showing the potential zone of influence for all soil settlement, measured to 0.01 feet at any control point.
- The survey area to extend a minimum of 1,000 feet from the zone of influence and that an elevation baseline control survey be done before the drilling begins.
- The applicant shall prepare a plan outlining the method to monitor subsidence as well as any corrective measures for settlements in excess of 0.10 feet. The plan must be approved by an independent engineer and the Director of Public Works.
- The applicant shall undertake annual elevation surveys of the project area and monitor and evaluate any potential settlement.
- If the survey data indicates subsidence then the applicant must take such action as provided in the subsidence control plan as approved by the Director of Public Works, which shall include a program for more frequent monitoring, and monitoring subsidence along the pipeline route.

A *Subsidence Monitoring and Control Plan*, dated August 1, 1994, was prepared for the City of Hermosa Beach by Leonard W. Brock, petroleum engineer. This plan establishes a series of benchmarks that cover the area above the oil reservoirs that are tied into adjacent stable areas and stable benchmarks. The plan, as shown in Exhibit 18, proposes to use 13 existing benchmarks and 20 new benchmarks. There will be 10 benchmarks along the shoreline and three benchmarks located on the City of Hermosa Beach Pier. The only offshore benchmarks are the three which are located on the pier. All other benchmarks are on land. The plan recommends that this network be established as a base prior to oil production and then surveyed annually thereafter. The benchmarks will be surveyed by a qualified land surveyor using Class II specifications with an accuracy of 0.02 to 0.05 feet. The plan recommends that selected wells will have the casing measured to detect compaction in the producing intervals. The only control efforts identified in this plan require that “any evidence of subsidence attributable to the oil operations will be immediately followed by water injection.” **Special Condition M-34** incorporates into this permit all subsidence-related conditions imposed by the City of Hermosa Beach in CUP 95-5632.

### ***Subsidence Program Modifications***

Due to concerns raised by the Commission staff about offshore and nearshore subsidence, the applicant supplemented the 1994 *Subsidence Monitoring and Control Plan* with the *Offshore Subsidence Monitoring Program*, Hermosa Beach, California, dated January 14, 1998, prepared by Coastal Environments and attached as Exhibit 26. The applicant’s Subsidence Monitoring and Control Program, which incorporates modifications suggested by the Commission’s technical staff, is summarized below:

**Re-injection:** The applicant proposes to re-inject all produced water. Re-injection is the “state of the art” technique to halt or prevent subsidence. Re-injection at Wilmington was effective at halting

subsidence, and through a detailed re-pressuring program, the Wilmington area experienced approximately 1.5' of rebound. Re-injection of all produced water reduces the total voidage and tends to reduce the potential for subsidence to occur.

**Monitoring:** The applicant proposes to monitor for subsidence within the “zone of influence” of the entire project — both onshore and offshore. The survey techniques will be different for the onshore monitoring and the offshore monitoring. Monitoring onshore will be undertaken using standard survey techniques, with established benchmarks and reference points. Monitoring offshore will use Global Positioning combined with tautly anchored monitoring points. Since subsidence can occur for various reasons, the monitoring program must provide sufficient information on the area to allow the effects of this project to be isolated from other activities. This will be accomplished by establishing control points outside the zone of influence. Elements of the Subsidence Monitoring Plan include:

- Establishment of onshore benchmarks for annual surveys and determination of existing ground surface elevations before drilling begins. These ground surface elevations shall be used as a base of reference.
- Placement of offshore bench marks, monitoring of benchmarks, and baseline and background data collection<sup>21</sup> (semi-annual measurement taken at all identified survey locations, starting before or no later than the start of Phase II construction.)
- Preparation of a report summarizing all onshore and offshore baseline and background data collection, including a review of regional and local geologic conditions affecting ground movement in the Hermosa area; review of historic regional and local subsidence and settlement problems and related processes; review of historic changes effecting coastal sediments and projects; development of an agency and individual contact program; and quantification of background or baseline elevation changes without the full oil and gas extraction program and extrapolation of pre-production conditions, in five year increments, to establish the “without project” elevation changes against which the measured changes will be evaluated. This report shall be completed and made available to the executive director and the CSLC at least two months and no more that six months prior to planned commencement of Phase II Production.

If requested by the executive director, the applicant will fund a peer review of this report.

The applicant may, at any time update and add to the information available in the Phase II Development Phase Baseline and Background Conditions Report. If the applicant decides to re-examine the background study, the applicant shall notify the executive director that additional research is being undertaken. Such efforts shall be undertaken in a timely manner and shall not be used as a reason to delay any of the subsidence mitigation steps.

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<sup>21</sup> Baseline conditions are the surface elevations measured at the time of, or close to the time of initial production. Background conditions are the surface elevation changes measured prior to the commencement of production. These measurements shall be used as indicators of natural subsidence which is not influenced by the production phase of the project. The measured pre-production phase elevation changes shall be used to extrapolate future natural subsidence, without the project.

- Measuring of shoreline and offshore elevations shall continue annually through the life of the project, with annual summary reports provided to the executive director and CSLC within one month following the end of each annual cycle. If the measurements identify any onshore sites with elevation changes greater than 4" from the agreed upon baseline, or any offshore sites with subsidence greater than 1' from the agreed upon baseline, all reviewing agencies should be notified of these changes by phone at the same time that the reports are being transmitted. While these changes may be within the bounds of the anticipated natural conditions, these changes may be sufficient to require modifications to the extent or frequency of the monitoring effort.
- Selected wells will be measured to detect compaction on the producing zones. This information shall be included in the annual reports provided to the executive director.

**Mitigation:** Macpherson will undertake the following steps if subsidence is detected during monitoring:

- If the offshore monitoring identifies a bowl-like subsidence feature, with progressive subsidence (greater than the extrapolated background level) of 6 or more inches at any two sites, or of 4 or more inches at any one site which is located in less than 30 feet of water, the applicant shall:
  - (1) immediately notify the executive director;
  - (2) increase the monitoring schedule to every 3 months for onshore and offshore surveys;
  - (3) evaluate the injection program and propose to the executive director changes or modifications to better address existing conditions within two months after the elevation drop being observed; and
  - (4) implement approved changes to the re-injection program within 30 days after approval has been received.

If the changes to the re-injection program do not halt or reverse subsidence, and the offshore monitoring program identifies a bowl-like subsidence feature, with progressive subsidence (greater than the extrapolated background levels) of 8 inches at any two sites, or of 8 or more inches at any one site which is located in less than 30 feet of water, the applicant shall:

- (1) immediately notify the executive director;
- (2) evaluate a re-pressuring program which would re-inject a quantity of fluid somewhat comparable to the total amount of fluid being withdrawn;
- (3) propose to the executive director changes or modifications to the re-injection program to better address existing conditions within two months after the elevation drop being observed; and
- (4) implement approved changes to the re-injection program within 30 days after approve has

been received.

If the changes to the re-injection program do not halt or reverse subsidence, and the offshore monitoring program identifies a bowl-like subsidence feature, with progressive subsidence (greater than the extrapolated background level) of 12 inches at any one site which is located in less than 30 feet of water, the applicant shall:

- (1) immediately notify the executive director; and
- (2) halt or reduce production from all wells within the zone of subsidence, or initiate any and all other changes to production to halt the drop on elevation and or the lateral spreading of this drop.

If, after modifications to re-injection and production are attempted, the measured elevation drops continue to subside, or if the number of sites with an elevation drop increases, the entire project shall halt until both the measured subsidence stabilizes and a new extraction and re-injection plan can be prepared to insure no additional subsidence will occur.

- If onshore monitoring identifies a bowl-like subsidence feature, with progressive subsidence (greater than the extrapolated background level) of 0.1 foot at six or more of the onshore benchmarks, shown in Exhibit 18, the applicant shall:
  - (1) immediately notify the executive director and any other contacts identified by the City's Conditional Use Permit;
  - (2) increase the monitoring schedule to every 3 months for onshore and offshore surveys;
  - (3) evaluate the injection program and propose to the executive director changes or modifications to better address existing conditions within two months after the elevation drop being observed; and
  - (4) implement approved changes to the re-injection program within 30 days after approve has been received.

If the changes to the re-injection program do not halt or reverse subsidence, and the onshore monitoring program identifies a bowl-like subsidence feature, with progressive subsidence (greater than the extrapolated background levels) of 0.15 feet at six or more onshore benchmarks, the applicant shall:

- (1) immediately notify the executive director;
- (2) evaluate a re-pressuring program which would re-inject a quantity of fluid somewhat comparable to the total amount of fluid being withdrawn;
- (3) propose to the executive director changes or modifications to the re-injection program to

better address existing conditions within two months after the elevation drop being observed:  
and

- (4) implement approved changes to the re-injection program within 30 days after approval has been received.

If the identified actions do not halt or reverse onshore subsidence, and the onshore monitoring identifies a bowl-like feature with progressive subsidence (greater than the extrapolated level) exceeding 0.2 feet at six or more onshore benchmarks, the applicant shall halt or reduce production from all wells within the zone of subsidence, or initiate any and all other changes to production to halt the drop on elevation and or the lateral spreading of this drop. If, after modifications to re-injection and production are attempted, the measured elevation drops continue to subside, or if the number of sites with an elevation drop increases, the entire project shall halt until both the measured subsidence stabilizes and a new extraction and re-injection plan can be prepared to insure no additional subsidence will occur.

**Special Condition M-35** requires the applicant, throughout the life of the project, to carry out the subsidence monitoring and control program described in the 1994 *Subsidence, Monitoring and Control Plan*, prepared by Leonard W. Brock, and the 1998 *Offshore Subsidence Monitoring Program Hermosa Beach*, prepared by Coastal Environments.

The Commission thus finds that the applicant's modified Subsidence Monitoring and Control Program incorporates adequate measures to ensure that the project will not cause or contribute to subsidence hazards. The project, as conditioned, is therefore consistent with Coastal Act Section 30262(e).

#### **4.4.2.5 Produced Water Re-injection**

Coastal Act Section 30262(f) requires that oil and gas development projects re-inject all oilfield brines into oil-producing zones. Coastal Act Section 30231 encourages waste water reclamation to protect the biological quality of coastal waters. The applicant proposes to re-inject all produced brines and wastewater. Therefore, the Commission finds that the project, as proposed, is consistent with the applicable provisions of Coastal Acts Sections 30262(f) and 30231.

#### **4.4.3 Oil Spills**

Coastal Act § 30232 states:

*Protection against the spillage of crude oil, gas petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.*

#### **4.4.3.1 Potential Project-Related Oil Spills**

The proposed project poses a potential risk of spillage of crude oil or other petroleum products, such as natural gas liquids, via three potential sources:

- (1) a release from the production facility during Phase I or Phase II (e.g., storage tank failure);
- (2) a tanker truck release (Phase I only); and/or
- (3) a pipeline release (Phase II).

The proposed drilling and production site is located approximately seven blocks inland from Hermosa City Beach. Therefore, the primary risk for an oil spill is on-land, and the greatest risk of impacts is to coastal resources on the land surface and underground. However, the Phase I proposed tanker truck route and Phase II pipelines traverse public storm drain entry points. Therefore, there is a risk, albeit a low risk, that a tanker truck release on Valley Drive or a crude oil pipeline rupture could cause oil to reach the shoreline and marine waters via the storm drain system.

The applicant has prepared an oil spill contingency plan (OSCP) for the production/drilling facility and its related components pursuant to the contingency plan regulations (14 CCR §§ 815.01 – 820.01) of the California Department of Fish and Game, Office of Spill Prevention and Response (OSPR). These OSCPs describe the “reasonable worst case” scenarios for potential oil spills, the prevention measures proposed to reduce the risk of oil spills, and the response and spill mitigation measures proposed to protect the coastal and marine resources from the oil spill impacts of a “reasonable worst case” scenario. At this time, the applicant’s OSCP for the proposed project has not been submitted to OSPR for its review and approval. However, pursuant to 14 CCR §816.02 the applicant must submit its OSCP to the OSPR for review and approval six months prior to start-up operation of the facility.

#### ***Production Facility/Drilling Site (Phase I and Phase II)***

The worst case oil spill that could occur during Phase I and Phase II operations would result from a well blow-out. However, the risk of a well blow-out is extremely low for the following reasons:

- the oil being drilled is in a low pressure field and is not naturally free flowing (i.e., it needs to be pumped under pressure); and
- the well drilling equipment is the best technology available to prevent oil spill blow-outs.

Due to these prevention measures and the low pressure oil field, it is highly unlikely that a well blow out would occur, according to California State Lands Commission engineers. The applicant did not, therefore, include a well-blow out scenario in its reasonable worst case oil calculations.

The risk of an oil spill from either the storage tanks and/or pressure vessels is low due to the following prevention measures: 1) the federal and state mandated design and construction requirements for the tanks or pressure vessels; and 2) the inspection and maintenance standards required under federal and state regulations. (For more detail see Section 4.4.3.2 below.)

Notwithstanding the low risk of an oil spill resulting from the failure of a storage tank and/or pressure vessel, the OSCP provides three potential reasonable worst case scenarios. For Phase I operations, the OSCP identified an on-site worst-case oil spill of 500 barrels of crude oil resulting from the failure of one of the two oil handling pressure vessels (heater treater). For Phase II operations, the OSCP identified two reasonable worst-case oil spill scenarios that potentially could occur on site: 1) a spill of 525 barrels of crude oil from the pressure vessels (heater treater); or 2) a spill of 2,800 barrels of crude oil from the maximum operating capacity of the largest above-ground storage tank on site. Therefore, the largest reasonable worst case spill for the production facility and drilling site is 2,800 barrels of crude oil from the storage tank.

#### ***Risk of Oil Spill From Tanker Trucks (Phase I Only)***

Approximately four tanker trucks per day are required to transport oil offsite during Phase I. Any spill during transfer operations from the production facility to a truck would be contained on site. However, it is possible for oil to get into the storm drains and then reach the ocean, in the event of a tanker truck accident along adjacent Valley Drive (see Exhibit 13). One tanker truck carries a maximum of 175 barrels of oil.

#### ***Crude Oil Pipeline Oil Spill (Phase II Only)***

The applicant proposes to construct a ½-mile crude oil pipeline to carry up to 8,000 barrels per day of crude oil and natural gas liquids produced during Phase II of the proposed project. The OCSP identifies six potential causes for pipeline releases: (1) corrosion, (2) third party damage, (3) a seismic event, (4) landslide/ground movement, (5) material failure, and/or (6) operational procedures.

The applicant's OSCP identifies a potential reasonable worst case pipeline spill of 141 barrels, of which 11 barrels could potentially reach the surface street and enter a storm drain.

#### **4.4.3.2 Oil Spill Prevention**

The first test of Coastal Act Section 30232 requires the applicant to “provide protection against the spillage of crude oil, gas, petroleum products, or hazardous substances...”

To prevent or reduce an oil spill, the proposed production/drilling facility and its related on-site storage tanks and pipelines are designed with the best available technologies, pursuant to the latest oil industry standards and in compliance with state and federal regulations (e.g. California's Division



of Oil and Gas and Geothermal Resources (DOGGR), the California State Fire Marshal (CSFM), Regional Water Quality Control Board, and the U.S. Environmental Protection Agency). These industry standards and federal and state regulations also require redundant back-up computer systems and automatic controls (e.g., leak detection systems and alarms, and automatic shut-off valves) to shut down operations to isolate and reduce the size of a spill.

In addition, pursuant to state and federal requirements under the EPA, DOGGR, CSFM, and RWQCB the production facility, storage tanks, pipelines, and drilling rigs are inspected on a frequent basis and the owner/operator must provide evidence that the facility, storage tanks, pipelines, drilling rigs, and other facility components are maintained in a safe operating condition to protect human health and environmental resources.

Human error is a potential cause of oil spill accidents. The applicant's OSCP documents the training and operational procedures (e.g., methods to reduce spills during transfer operations, risk reduction incentive programs, and alcohol and drug testing programs) that will be put into place at the production/drilling facility to reduce avoidable human error. These measures will further reduce the likelihood of an oil spill.

As an additional measure to contain facility oil spills onsite, the facility has been designed to hold the maximum volume of oil spill that could occur, including the simultaneous release of all tanks and vessels. To create the necessary containment capacity, all wells are located in a 10-foot deep cellar, all vessels and tanks are located in a below-grade secondary containment system, and the entire facility is surrounded by a tertiary containment system. The containment areas do not connect to off-site storm or sanitary drains, therefore it is virtually impossible for a worst-case facility spill to adversely affect coastal resources.

The oil pipeline is also designed to meet pipeline safety regulations as specified by the Federal Department of Transportation and as set forth in 49 CFR (Code of Federal Regulations) Part 195. These regulations are enforced by the CSFM as authorized by the California Pipeline Safety Act of 1981. Applicable measures to protect pipeline integrity pursuant to these regulations include installation of markers and signs, weekly right-of-way inspections, corrosion control, replacement of corroded pipeline sections, valve inspection and maintenance, and installation of overpressure safety devices. **Special Conditions M-10, M-12, M-15, M-16, and M-23** require the applicant to submit to the executive director evidence that all pipeline safety tests and design standards required by the State Fire Marshall's office, the California State Lands Commission, and the Department of Transportation, as applicable, have been met. Also, if at any time the executive director determines that new proven oil spill prevention and cleanup technological advances have become available, **Special Condition M-9** provides for the executive director to schedule a hearing before the Coastal Commission to consider imposing additional reasonable oil spill mitigation measures.

The Commission therefore finds that the proposed project, as conditioned, meets the first test of Coastal Act Section 30232.

#### 4.4.3.3 Oil Spill Response

The second test of Coastal Act section 30232 requires the applicant to provide “effective containment and cleanup equipment and procedures for accidental spills that do occur.”

To prevent and mitigate oil spill impacts to neighboring off-site coastal and marine resources, the facility has been designed to contain on-site any spill that does occur at facility, including a release from all tanks and vessels failing simultaneously. The 10-foot deep well cellar around each of the wells and vessels (e.g., heat treaters and storage tank will be capable of containing over 750 barrels of liquid. The secondary containment system capacity will be capable of holding a maximum capacity of 6,900 barrels of crude oil. Therefore, adequate containment is provided by the facility design.

As noted above, there is the potential for a maximum 175 barrel spill from a tanker truck accident. If such an accident occurred upon a truck leaving the production/drilling site, some oil could enter the storm drain system. The trucking company would have ultimate responsibility for any oil spills caused by its trucking operations. Therefore, to provide the fastest oil spill response effort **Special Condition M-14** requires the applicant to maintain at a site within ½-mile of the production facility, 500 sandbags for immediate deployment to block the storm drains from the flow of oil. The sandbags could also be used to block the storm drains from an oil flow that might result from a pipeline rupture that allowed oil to surface to the street.

In addition, **Special Condition M-13** requires the applicant to obtain membership in Clean Coastal Waters, Inc. (CCW), or an equivalent Oil Spill Response Organization (OSRO) approved by OSPR, pursuant to OSPR’s contingency plan regulations 14 CCR §817.02. Membership or a contract with an OSRO would demonstrate that the applicant has the equipment and personnel capability under contract to recover and clean-up a spill from project-related operations.

The Commission therefore finds that the proposed project, as conditioned, meets the second test of Coastal Act Section 30232.

#### 4.4.4 Visual Impacts

Coastal Act § 30251 states:

*The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, ... to be visually compatible with the character of surrounding areas, and where feasible, to restore and enhance visually degraded areas.*

#### 4.4.4.1. Certified Coastal Land Use Plan Policies

The City of Hermosa Beach describes itself as a fully developed “beach cottage-style” community. Some of the one story cottages have made way for two and sometimes three story condominiums and duplexes. The City has undergone a substantial revitalization and redevelopment, and in recent years has seen new interest in waterfront commercial development with new restaurants, shops, and other amenities for coastal visitors and local residents. The City’s civic leaders have emphasized the preservation of aesthetic qualities and community character, primarily through restrictions on both the height and nature of new development.

As noted previously, prior to full certification of a Local Coastal Program (LCP), the Commission relies upon a local government’s certified Land Use Plan (LUP) as guidance in applying the policies of the Coastal Act to local circumstances. The City of Hermosa Beach LUP was certified as legally adequate by the Coastal Commission on April 21, 1982. The City’s LUP reflects the requirements of Coastal Act Section 30251 through a number of policy statements, including pages G12–13 which state in pertinent part:

*Hermosa Beach is a unique coastal community with cultural and historical significance and a scale and character not found elsewhere along the California coast. It is the rich and varied character of residential development, as well as the area’s natural coastal resources, which make the area of such region-wide significance as an important visitor destination... Environmental, public use, and visual considerations pose important constraints and modifying factors for private development in the Coastal Zone; future residential and commercial development must be guided to insure that the existing community character and resources are not eliminated.*

The LUP, in Appendix G, further states in pertinent part:

*Design/Character:*

*The character and design of structures within the City is a unique mixture of old and new. The buildings that have been constructed throughout the City’s history reflect both varied construction techniques used over the past 80 years and also the varied lifestyles of the residents in the community. The community’s main attraction, other than the beach, is the variety and unique mixture of land uses. Through the years, Hermosa Beach residents have been adamant in retaining an informal “beach cottage” atmosphere for the City.*

*Elements which define the character of the City vary. Physical features such as buildings, topography and special land forms (i.e., an ocean beach) play an important role in determining an area’s character. In addition to these physical elements, other less definable social and cultural elements serve to clarify an area’s ultimate character...*

*The main physical elements which define the character of Hermosa Beach are: topography, building height/scale, building architecture, land use mixture, landscaping and commercial signing. Each element contributes to the design of the Coastal Zone and together set an overall tone for the City.*

The LUP incorporates specific height restrictions in the Development/Design section of Appendix M:

*The scale of the City is subdued and reflective of the natural contours of the beach and dune areas. The City, at present, does not contain any large obtrusive structures. Building heights for all areas are controlled by zoning height limitations. Present height restrictions is the basic view preservation mechanism utilized by the City. The maximum building height allowable in the City is 3 stories or 45 feet, for commercial property and 35 feet for residential property (see Table XXV).*

Finally, the LUP, in Section VI (Coastal Development and Design), Subsection C (Policies and Programs), pages 10–11, sets forth explicit restrictions on height as a means of protecting citywide overviews and viewshed qualities:

*Existing Policies & Programs:*

*Policy: That the City should restrict building height to protect overview and viewshed qualities and to preserve the City's existing low-rise profile.*

*Program: Zoning and building codes limit the height of all structures, depending on zone. The maximum height in each residential R-1, R-2, and R-3 zones are 25 ft., 30 ft., and 35 ft. respectively. The maximum height in the City is 45 ft. or three stories and is in the commercial zone. (See Appendix G, Table XIII)*

The applicant proposes to construct an oil and gas development project on an approximately 1.3-acre parcel designated as "Open Space" in the City's certified Land Use Plan. Although the site is designated as open space, it is presently used for the City's maintenance yard, rather than for public recreation. The site contains a kennel, a shop, a gas pump, parking for various city vehicles, an abandoned oil well, and several areas apparently used to dispose of green wastes collected elsewhere by City staff.

The proposed site is immediately surrounded (for less than one block in each direction) on three sides by light manufacturing uses and borders the public greenbelt/strip park on the east side. The greater area beyond the adjacent light manufacturing structures contains mostly residential development (see Exhibits 8-10). The proposed site is located less than one mile (seven blocks) east of Hermosa City Beach, a popular attraction for tourists and local beach visitors.

The proposal would convert existing maintenance yard uses to oil drilling, storage, processing, and transportation uses. The applicant proposes to re-grade the site, construct a temporary chain link fence (except for the west side of the property which will be fenced with a 12-foot masonry fence) and 30-foot sound attenuation wall during Phase I (which will last approximately one year), and to replace the chain link fence with a permanent concrete block and decorative masonry wall, and install landscaping, prior to commencement of Phase II (production). The tank vessels will be placed in an excavated, 6-foot deep concrete basin on the eastern portion of the site. After drilling is completed, wells (up to 30 oil and gas wells) will be produced with mechanical rod and beam pumping units known as “grasshoppers,” not to exceed 16 feet in height. The tanks, including appurtenances, will extend above the height of the perimeter wall. The tanks and production facilities will be painted a neutral color to blend in with the surroundings. Nevertheless, though the permanent fencing and landscaping will shield public views of the facility to a great extent, a portion of the tank farm and permanent vessels will remain visible above the fenceline.

The primary visual impact of the proposed development will be the presence of the approximately 135-foot drilling rig (the equivalent of about 15 stories) that will be located onsite continuously for the one year of Phase I exploratory drilling, and for approximately three additional years during Phase II drilling and production. After the initial construction of wells, the applicant proposes to have a workover rig standing an average of 110 feet in height onsite for up to three months each year for as long as thirty-three additional years after Phase I is completed (total project life is up to 35 years). Thus, the cumulative total length of time that a rig of this height could be onsite is approximately 12 years. The rigs would also be visible at night because they must be lighted to ensure the safety of aircraft.

Commission staff requested that the applicant flag a crane hoisted to the same height as the proposed 135-foot drilling rig. On a site visit to examine the result, staff confirmed that the drilling rig will be partially visible from most prominent public coastal viewing places within the City of Hermosa Beach, including the waterfront and pier. The views of coastal visitors using the public greenbelt adjacent to the project will be more severely impacted than the views available from other public coastal recreational areas closer to the beach.

During construction, heavy-duty trucks maneuvering onsite while transporting equipment, and a large crane onsite during drill rig assembly, will be visible to nearby residents and greenbelt visitors. In addition, as many as four tanker truck trips per day, on weekdays only, may be necessary to transport oil offsite during Phase I. Oil tanker truck trips will not be allowed during weekends and holidays. Drilling operations will proceed around-the-clock, and will require up to three truck trips per day for removal of drilling cuttings and muds. Posting of onsite signage will be limited to the minimum required by law and to ensure public safety.

At the commencement of Phase II, pipeline construction excavation and installation activity will result in temporary, localized visual impacts along the approximately ½-mile pipeline corridor (see Exhibit 19). The applicant will not store construction materials outside of the designated right-of-

way and will clean all affected streetways daily. Construction activities will be limited to weekdays between 8:00 a.m. and 3:00 p.m.

As stated above, the applicant proposes to install permanent, decorative masonry perimeter fencing and landscaping during Phase II of the project, and to paint all protruding permanent equipment and structures onsite a neutral color in addition to other mitigation measures set forth above. **Special Conditions M-26** and **M-27** require the minimization of project lighting and glare, consistent with applicable safety standards. **Special Condition M-28** requires submittal of final landscaping plans for the executive director's review and long-term implementation of landscaping techniques to soften the project's appearance. **Special Condition M-29** requires the use of neutral colors to minimize the visual impacts of permanent structures.

The Commission finds, however, and the applicant acknowledges, that despite the implementation of these measures, residual adverse visual impacts to public coastal views will remain. The drill rig will be visible from most coastal public viewing areas and will contrast sharply with the building heights in the nearby neighborhoods and public parks. Night lighting of protruding structures for safety reasons will contribute to visual impacts. Moreover, despite implementation of the proposed mitigation measures, the construction and operation of the proposed project, particularly the scale and character of drill and workover rigs ranging in height from 110 feet to 135 feet, are not compatible with the visual character of the surrounding area, which otherwise conforms to the building height restrictions (a maximum of 45 feet in height for commercial structures) set forth in the certified LUP.

The City's LUP policies, which offer guidance to the Commission's previous applications of Coastal Act policies with the City, clearly cite height restrictions as a key means of protecting community character. The LUP states, "*the City, at present, does not contain any large obtrusive structures.*"

Coastal Act Section 30251 requires that new development be visually compatible with the character of the surrounding area. The Commission concedes that the various drilling and workover rigs will not be permanent structures, and that the rigs, however visually intrusive while present may nevertheless be compared to temporary construction cranes. The Commission finds that the total presence of such rigs for up to twelve years, cumulatively, will significantly impact visual resources in a manner that transcends the usual meaning of "temporary impact."

Despite the imposition of applicable Special Conditions, the Commission finds that residual adverse impacts to public coastal views and community character will remain. Therefore, compensatory mitigation is the only remaining means to reduce the adverse visual impacts of the applicant's proposal to less than significant levels. The applicant recognizes the need to fund compensatory visual enhancement measures to offset its projects adverse effects on public coastal views. The applicant has proposed and committed to contribute additional sums to the previously established Coastal Resource Enhancement Fund for the specific purpose of assisting the Hermosa Greenbelt Improvement Project (CIP 96-508) approved by the City Council in December 1997. Macpherson

Oil Company shall contribute to the Fund \$1,000 per month, or a sum pro-rated based on the number of days per month, that any rigs are standing on the site for any reason. Any funds remaining after the project is completed shall be expended for other visual enhancement projects according to the requirements of **Special Condition M-30**.

The applicant's proposal is incorporated into **Special Condition M-30**, which also relies on a Memorandum of Understanding with the City of Hermosa Beach to ensure appropriate expenditures of the mitigation fees and accrued interest. The applicant's mitigation fees, together with any interest earned by unexpended funds, would be reserved exclusively for projects that visually enhance the public coastal open spaces and recreation areas from which the project would be visible. Priority would be given to projects designed to enhance the public greenbelt immediately east of the project. The funds generated for this purpose would only be available to qualified projects approved by the City Council and proposed by public agencies or registered non-profit organizations.

The Commission further notes that because neither the production facilities nor the drilling rigs will remain as permanent development, and because the visual enhancements funded by the applicant are expected to provide permanent improvements, the visual impacts of the proposed project will be mitigated to less than significant levels. Therefore, the Commission finds that as conditioned by **Special Conditions M-26 to M-30**, the proposed project is consistent with Coastal Act Section 30251.

#### **4.4.5 Recreation and Public Access**

Coastal Act § 30211 states in part :

*Development shall not interfere with the public's right of access to the sea....*

Coastal Act § 30240(b) states:

*Development in areas adjacent to ... parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade such areas....*

The applicant proposes to remove twelve existing onsite parking spaces presently used by City of Hermosa Beach employees on weekdays, and by the public — including coastal visitors — at no charge on weekends. The City Manager of Hermosa Beach has confirmed that the public uses the existing spaces extensively on weekends for coastal access parking. The applicant proposes to construct six new parking spaces onsite for employee use. In addition, the applicant has prepared, and the City of Hermosa Beach has approved, a parking plan (Exhibit 23) that provides for the construction of six additional on-street parking spaces adjacent to the proposed project.

**Special Condition M-31** requires the new spaces to be provided after the site is re-graded, curbs installed, etc., but before the construction of any wells. There will be a temporal loss of coastal

access parking during the approximately six months that may elapse between the onset of project grading and other construction activities and the installation of curbing, striping, etc., necessary to release the new spaces for public parking. The short-term loss of parking will be compensated for by the long-term provision of six new parking spaces that will be available seven days per week, rather than on weekends only as is presently the case. In addition, **Special Condition M-31** prohibits the use of the six new on-street parking spaces by project employees. Therefore, the Commission finds that as conditioned by **Special Condition M-31**, the project would not have adverse impacts on coastal access parking and thus would be consistent with the requirements of Coastal Act Section 30211. **Special Condition M-30**, as discussed in Section 4.4.4 above, provides for payment by the applicant of mitigation fees to offset the visual impacts of the proposed project, particularly upon the adjacent public greenbelt. The Commission finds that as conditioned to require visual enhancement of the public recreational areas adversely affected by the project's visual impacts, the proposed project is consistent with the applicable requirements of Coastal Act Section 30240(b).

#### 4.4.6 Air Quality

Coastal Act § 30253(3) states:

*New development shall:*

*Be consistent with requirements imposed by an air pollution control district or the State Air Resources Control Board as to each particular development.*

Air emissions associated with the proposed project would be generated from a variety of stationary and mobile sources.

Primary short-term emission-generating activities during Phase I of the proposed project consist of: dust generated from grading operations, estimated at about 110 lbs/day of dust per acre of area graded; truck traffic, estimated at approximately 27.7 lbs/day (consisting of carbon monoxide, reactive organics, nitrogen oxides, sulfur oxides, and particulates); off-site electricity generation for exploratory drilling, estimated at 15.21 lbs/day (consisting of carbon monoxide, reactive organics, nitrogen oxides, sulfur oxides, and particulates); and drill stem test operations, estimated at 181-lbs/12 hr day (consisting of carbon monoxide, nitrogen oxides, total organic gases, and particulates).

The emission rate of volatile organic compounds (VOCs) from the proposed site remediation phase (Phase II) is assumed to be minimal based on the low volatility of the compounds being excavated, and is estimated to be less than 10 lbs/day.

Primary long-term emission-generating activities during Phase II consist of: evaporation from on-site temporary storage of crude oil estimated at 96.6 lbs/day of hydrocarbons (however, the production tanks will be equipped with vapor recovery systems as required by the City in the CUP which will



reduce emissions from the tanks to 9.6 lbs/day); and off-site electricity generation estimated at 27.2 lbs/day (consisting of carbon monoxide, reactive organics, nitrogen oxides, sulfur oxides, and particulates).

Occasional odors from the proposed project from diesel-powered trucks, drill muds and cuttings, waste gases, and hydrocarbon evaporation may be detected throughout the life of the project, but due to City-required odor control measures (such as location and design of tanks, odorless drilling muds, the burning of “waste” gases during the exploratory phase and the use of commercial recovery systems during the permanent production phase, and the limited time during which well tubing and rods remain out of the well), odors are not expected to be significant.

The South Coast Air Quality Management District (SCAQMD) is the local air pollution control district responsible for implementing federal and state air quality standards in the project area. In 1991 the SCAQMD issued to the applicant the first Permits to Construct for Phases I and II. These were extended yearly until 1995, when the applicant was required to resubmit permit applications to be reviewed under amended SCAQMD rules and regulations. The new Permits to Construct were issued in 1995 and extensions granted in 1996 and 1997. The site remediation component of Phase II does not require any discretionary permits from the SCAQMD. However, the construction contractor responsible for the excavation must have a general SCAQMD excavation permit which requires notification of the SCAQMD before excavation activity.

The current Permits to Construct act as temporary Permits to Operate for Phase I of the proposed project. The SCAQMD must be notified by the applicant when the equipment is operational for Phase II, at which time the SCAQMD will conduct an inspection and approve or deny Permits to Operate. **Special Condition M-37** requires the applicant to submit to the executive director copies of Permits to Operate prior to the operation of Phase II of the proposed project.

Since the project as proposed and conditioned is consistent with the South Coast Air Quality Management District rules and requirements, the Commission finds the project consistent with Coastal Act Section 30253(3).

#### **4.4.7 Energy and Water Conservation**

Coastal Act Section 30231 states in part:

*The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means...encouraging waste water reclamation...*

Coastal Act Section 30253(4) states in pertinent part that new development shall:

*(4) Minimize energy consumption...*

The Coastal Act encourages the use of reclaimed water (among other means) to protect, and where feasible, restore coastal waters, streams, wetlands, estuaries, and lakes. The applicant proposes to re-inject all produced waste water from project operations rather than discharge such waste water into the City's sewer system, in part to control potential subsidence. If the applicant's proposed re-injection program proves inadequate to control subsidence, additional water injection may become necessary in the future pursuant to **Special Conditions M-34** and **M-35**. **Special Condition M-32** requires that if additional use of water is required by the project, reclaimed water shall be used to the maximum extent feasible, pursuant to Coastal Act Section 30231.

Coastal Act Section 30253(4) requires new development to minimize energy consumption. Therefore, **Special Condition M-33** requires that throughout the project life, as equipment is added or replaced, cost-effective energy conservation techniques shall be incorporated into project design. Therefore, energy conservation considerations must be taken into account in selecting future project equipment.

Therefore, the Commission finds that as conditioned, the proposed project is consistent with the applicable requirements of Coastal Act Sections 30231 and 30253(4).

## **5.0 CALIFORNIA ENVIRONMENTAL QUALITY ACT**

As "lead agency" under the California Environmental Quality Act ("CEQA"), the City of Hermosa Beach certified an EIR (EIR No. 89060701 ) in May 1990 and an Addendum to the EIR in August 1993 for the proposed project. The Commission's permit process has been designated by the State Resources Agency as the functional equivalent of the CEQA environmental impact review process. Pursuant to section 21080.5(d)(2)(i) of the CEQA and section 15252(b)(1) of Title 14, California Code of Regulations, the Commission may not approve a development project "if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse impact which the activity may have on the environment."

Section 4.4.1 of this report contains an analysis of feasible alternative sites and concludes that no legally feasible alternatives to the proposed project site exist.

Although the Commission believes the applicant's project may cause adverse impacts to coastal resources (hazards, oil spills, visual, recreation/public access), Section 3.0 of this report sets forth extensive measures that, if fully implemented, would mitigate these impacts to less than significant levels.

For these reasons, the Commission finds that there are no feasible less environmentally damaging alternatives or additional feasible mitigation measures that would substantially lessen any significant

adverse impact which the proposed project may have on the environment, other than those identified herein. Therefore, the Commission finds that the project, as conditioned, is consistent with the applicable provisions of the CEQA.

## APPENDIX A — SUBSTANTIVE FILE DOCUMENTS

### AGENCY APPROVALS

City of Hermosa Beach, Conditional Use Permit 93-12, August 10, 1997.

City of Hermosa Beach, Oil and Gas Lease #2, by and between City of Hermosa Beach and Windward Associates, January 14, 1992.

California State Lands Commission, Memorandum of Understanding, by and between City of Hermosa Beach and California State Lands Commission, May 11, 1993.

South Coast Air Quality Management District, *Permits to Construct #'s 306267, 306268, 306269, 306270, 306271, 306272, 306273, 306274, 306275*, granted October 30, 1995, November 2, 1995, December 27, 1995, and July 25, 1996. Extended October 29, 1996.

### CORRESPONDENCE

#### *Correspondence — Macpherson Oil Company*

September 12, 1989. Letter from Michael Schubach, City of Hermosa Beach, to Don Macpherson. *Regarding: Proposed plans for oil drilling at the South School Site and City Yard.*

December 02, 1993. Letter from Alison Dettmer, CCC, to David Gautschy, David Gautschy, Inc. *Regarding: Filing status of coastal development permit application E-93-17 for oil and gas exploration and development at an urban drillsite in the City of Hermosa Beach.*

March 19, 1997. Letter from David Gautschy, David Gautschy, Inc., to Alison Dettmer, CCC. *Regarding: Ruling on Petition for Writ of Mandate.*

March 23, 1994. Letter from Alison Dettmer, CCC, to Michael Schubach, City of Hermosa Beach. *Regarding: Filing status of coastal development permit application E-93-17 for oil and gas exploration and development at an urban drillsite in the City of Hermosa Beach.*

September 01, 1994. Letter from Alison Dettmer, CCC, to Don Macpherson, Macpherson Oil Company, and Larry Morton, Stocker Resources, Inc. *Regarding: Filing status of coastal development permit application E-94-11 for oil and gas exploration and development at an urban drillsite in the City of Hermosa Beach.*

December 23, 1996. Letter from Alison Dettmer, CCC, to David Gautschy, David Gautschy, Inc. *Regarding: Filing Status of Coastal Development Permit Application E-96-28.*

April 10, 1997. Letter from Alison Dettmer, CCC, to David Gautschy, David Gautschy, Inc. *Regarding: Construction and Operation of Crude Oil Shipping Pipeline.*

April 16, 1997. Letter from Alison Dettmer, CCC, to David Gautschy, David Gautschy, Inc.  
*Regarding: Filing Status of Coastal Development Permit Application E-96-28.*

April 22, 1997. Letter from David Gautschy, David Gautschy, Inc., to Alison J. Dettmer, CCC.  
*Regarding: Updated materials for Application E-96-28.*

June 26, 1997. Letter from Donald Macpherson, Macpherson Oil Company, to Stephen Burrell, City of Hermosa Beach. *Regarding: Oil Development Project Coastal Resource Enhancement Fund.*

June 27, 1997. Letter from Alison Dettmer, CCC, to David Gautschy, David Gautschy, Inc.  
*Regarding: Filing status of Coastal Development Permit Application E-96-28.*

August 05, 1997. Letter from David Gautschy, David Gautschy, Inc. to Alison Dettmer, CCC.  
*Regarding: Response to Request for Additional Information letter of June 27, 1997.*

August 11, 1997. Letter from Joseph Petrillo, Sheppard, Mullin, Richter & Hampton, to Alison Dettmer/Melanie Hale, CCC. *Regarding: Status of review of coastal development permit application.*

August 26, 1997. Letter from Maria Pracher, Sheppard, Mullin, Richter & Hampton, to Melanie Hale, CCC. *Regarding: Alternative analysis supplement.*

September 08, 1997. From Macpherson Oil Company to California Coastal Commission. *City of Hermosa Beach Oil and Gas Recovery Project — Fact Sheet.*

September 22, 1997. Transmittal from David Gautschy, David Gautschy, Inc. to Melanie Hale, CCC. *Vicinity Map — Marble #102 well location compared to city maintenance yard in Hermosa Beach.*

September 29, 1997. Transmittal from David Gautschy, David Gautschy, Inc. to Melanie Hale, CCC. *Copies of letters dated March 14, 1997 and April 22, 1997.*

October 02, 1997. Fax from Joseph Petrillo, Sheppard, Mullin, Richter & Hampton, to Melanie Hale, CCC. *Regarding: Status of outstanding information for Macpherson Oil Company coastal development permit application.*

October 03, 1997. Transmittal from David Gautschy, David Gautschy, Inc., to Melanie Hale, CCC.  
*1) Photo copy of Division of Oil, Gas and Geothermal Resources, Map #126 map title, sale and legend (full size), 2) Photo copy of map showing location of Marble #102 well in relationship to project site location (full size).*

October 07, 1997. Transmittal from David Gautschy, David Gautschy, Inc., to Melanie Hale, CCC.  
*Draft Letter of Intent from Edison Pipeline and Terminal Co. for shipping of crude oil to local refineries, and Area Plan showing Edison Pipeline & Terminal Co. pipeline system in Southern California.*

October 08, 1997. Letter from Joseph Petrillo, Sheppard, Mullin, Richter & Hampton, to Melanie Hale, CCC. *Regarding: Tim Chambers ready to prepare final report.*

October 08, 1997. Letter from Donald R. Macpherson, Macpherson Oil Company, to Lesley Ewing, CCC. *Regarding: Subsidence monitoring conditions.*

October 22, 1997. Letter from Theresa Van Andler, South Coast Air Quality Management District, to David E. Gautschy/Ted Guth, Macpherson Oil Company. *Extension of Permits to Construct to October 31, 1998.*

November 12, 1997. Fax from Steve Radis, Arthur D. Little, to Melanie Hale, CCC. *October 17, 1997 meeting in California State Lands Commission Office — Minutes.*

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July 03, 1997. Letter from Peter Green, Huntington Beach City Council, to Alison Dettmer, CCC.

July 24, 1997. Letter from Patricia Fry Godley, U.S. Department of Energy, to Susan Hansch, CCC.

September 15, 1997. Letter from Scott Strawbridge, California Plumbing & Mechanical Contractors Association, to Alison Dettmer, CCC.

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***Correspondence to Commission — Opposed (as of January 13 1998)***

June 19, 1997. Letter from Allan Mason to Alison Dettmer, CCC.

June 22, 1997. Letter from Nancy Reviczky to Alison Dettmer, CCC.

June 30, 1997. Letter from Vicki Goldbach to CCC.

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**APPENDIX B — STANDARD CONDITIONS**

Permit Application No. E-96-28

1. **Notice of Receipt and Acknowledgment.** The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.
2. **Expiration.** If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.
3. **Compliance.** All development must occur in strict compliance with the proposal as set forth in the application for permit, subject to any special conditions set forth below. Any deviation from the approved plans must be reviewed and approved by the staff and may require Commission approval.
4. **Interpretation.** Any questions of intent of interpretation of any condition will be resolved by the executive director or the Commission.
5. **Inspections.** The Commission staff shall be allowed to inspect the site and the development during construction, subject to 24-hour advance notice.
6. **Assignment.** The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.
7. **Terms and Conditions Run with the Land.** These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

## LIST OF EXHIBITS

- Exhibit 1 City of Hermosa Beach, Measures P & Q
- Exhibit 2 City of Hermosa Beach, Measure E
- Exhibit 3 California State Lands Commission, Minute Item 41, June 30, 1992
- Exhibit 4 Letter from City of Hermosa Beach Attorney, RE: Measure E and Macpherson proposal
- Exhibit 5 Letter from City of Hermosa Beach to California Coastal Commission, June 11, 1997, RE: LCP and Macpherson proposal
- Exhibit 6 Letters from Coastal Commission, December 23, 1997; April 10, 1997; April 16 1997; and June 27, 1997, RE: Filing Status of E-96-28
- Exhibit 7 Review of the Hazard Analysis for the Macpherson Oil Company Hermosa Beach Project, December, 1997- Final Report, Arthur D. Little, Inc.
- Exhibit 8 Proposed Development Site — Thomas Brothers Guide Map
- Exhibit 9 Proposed Development Site — Aerial Photograph
- Exhibit 10 Proposed Development Site — Hermosa Beach General Plan Map
- Exhibit 11 Truck Route Plan
- Exhibit 12 Proposed Project Site Plans (with list)
- Exhibit 13 Redondo Beach Alternative Sites Map
- Exhibit 14 Alternative Land Use Site Analysis for Macpherson Oil Company Project, August 22, 1997
- Exhibit 15 Macpherson Oil Company, response to filing letter, March 14, 1997, RE: Project Recovery Analysis
- Exhibit 16 Letter from Macpherson, RE: Hydrogen Sulfide Maximum Concentration and Deletion of Hydrogen Sulfide Treatment Equipment
- Exhibit 17 Letter from California State Lands Commission, RE: Hydrogen Sulfide Production
- Exhibit 18 Subsidence Monitoring and Control Plan, August 1, 1994. Prepared for the City of Hermosa Beach by Leonard W. Brock
- Exhibit 19 Pipeline Corridor Map
- Exhibit 20 Storm Drain System
- Exhibit 21 Letter from Macpherson, January 6 1998, RE: Visual Resource Component of Coastal Resource Enhancement Fund
- Exhibit 22 Example of results of monthly tests and inspections conducted by the California State Lands Commission
- Exhibit 23 Replacement Public Parking Plan, Sheet No. PK-1
- Exhibit 24 Parking Lot Restriping, Sheet No. PK-2
- Exhibit 25 Correspondence