E&B Oil Development Project

City of Hermosa Beach

Planning Application

ATTACHMENTS TO PROJECT DESCRIPTION

E&B Natural Resources

www.EBNR-Hermosa.com

ATTACHMENT A
E&B OIL DEVELOPMENT PROJECT
REVIEW OF PROPOSED PROJECT RELATED TO
1993 CONDITIONAL USE PERMIT

CUP CONDITION OF APPROVAL	PROPOSED PROJECT COMPLIANCE
Section 1. General	
1. The testing phase for all production shall be a maximum of one year from the date drilling is initiated.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
2. If the project cannot comply with operation standards established by these conditions of approval, after two warnings the operation shall be subject to fines and/or shut down through permit revocation by the City, except in regard to noise, if it is determined that a diligent effort is being made, and a plan has been provided, reviewed and approved by the City Council.	This condition is noted.
3. A minimum of one annual site audit shall take place to inspect for soil contamination as a result of accidental spills in any areas not paved and exposed. Auditor shall be hired by City.	Proposed project would comply with this condition.
4. The maximum number of days the workover rigs or any other rig that is to be used on-site shall be 90 days per year, and shall be operated weekdays 8:00 A.M. to 6:00 P.M. excluding holidays.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
5. In the event that a residence with solar panels is affected by shading, a site specific study paid for by the oil contractor shall be conducted to determine economic impact.	Proposed project would comply with this condition.
6. Pursuant to Assembly Bill 3180 the operation shall be monitored for all conditions of the approval of which the City has responsibility which includes (but not limited to) noise monitoring and inspection of the site for proper maintenance.	This condition is noted.
7. The proposed plans shall be submitted to the division of oil and gas for their review and recommendation; a. Any recommendation by the Division shall be taken into consideration prior to approval, and may be included as conditions of approval.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
8. Drill cuttings and other wastes, shall be collected in above ground containers and disposed of at an approved disposal site. Receipts for all disposal of waste product shall be provided within ten (10) days of disposal to the Public Works Director.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.

REVIEW OF PROPOSED PROJECT RELATED TO 1993 CONDITIONAL USE PERMIT (CONTINUED)

CUP CONDITION OF APPROVAL	PROPOSED PROJECT COMPLIANCE
9. All requirements, standards, conditions stated within the Oil Production Code, Chapter 21-A, of the City's Municipal Code shall be met, unless more restrictive requirements are imposed through mitigation measures; where it cannot be clearly determined whether the City's Oil Ordinance, Chapter 21-A or mitigation measures are more stringent, the appropriate City staff shall make a determination; appealable to the City Council.	The proposed project may request an amendments to the Oil Code.
10. Three (3) copies of final building plans including site, elevation, and floor plans shall be submitted for review and approval by the Planning Director prior to the issuance of any Building Permit.	Proposed project would comply with this condition.
11. The proposed development shall be in substantial conformance with submitted plans. Any minor modification shall be reviewed and may be approved by the Planning Director.	This condition is noted.
12. All wells must be drilled and completed within 55 months from the start of drilling of the first exploratory well in accordance with the following schedule: EXPLORATION AND TEST PHASE 12 MONTHS (Exploratory drilling, production testing) CONSTRUCTION PHASE 9 MONTHS (Permanent facility construction) DRILLING PHASE 34 MONTHS (Development Drilling, 1 month per well) If the Drilling Contractor is delayed at any time in the progress of work by any act or neglect of the City of Hermosa Beach or any other governmental body having authority over this project, or by labor disputes, adverse weather conditions, by law, war, riots, strikes, unavoidable casualties, unusual delays in receiving materials or equipment or by an act of God, or causes beyond the control of the Drilling Contractor, when justified, the time periods may be extended a reasonable time to correspond with the delay incurred by the Drilling Contractor.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
Section 2. Land Use Development	
1. The maximum size for any storage tank of any type shall be forty feet in diameter and sixteen feet in height, appurtenances not included.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.

REVIEW OF PROPOSED PROJECT RELATED TO 1993 CONDITIONAL USE PERMIT (CONTINUED)

CUP CONDITION OF APPROVAL	PROPOSED PROJECT COMPLIANCE
2. Prior to construction and prior to obtaining building permits for oil production, a complete soil analysis shall be performed and approved by all applicable governing agencies having jurisdiction over the project.	Proposed project would comply with this condition. A complete soil analysis has been provided in the Geotechnical Investigation in Appendix D and the Phase II Environmental Site Assessment in Appendix F to the Planning Application.
3. Not more than five tanks shall be installed, and shall be submerged in a concrete basin which contains 10% above the volume required by the State Division of Oil and Gas and the Uniform Fire Code which is as follows: The volumetric capacity of the diked area shall not be less than the greatest amount of liquid that can be released from the larges *[sic]* tank within the diked area. The capacity of the diked areas enclosing more than one tank shall be calculated by deducting the volume of the tanks other than the largest tank below the height of the dike.	Proposed project would comply with this condition.
4. All wells shall be drilled and cemented in accordance with State Division of Oil and Gas regulations to protect underground aquifers.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
5. Except for the drill rig and drawworks, no equipment or appurtenant structures shall exceed 16 feet in height from grade as defined by the Oil Code.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
6. The electrical service systems shall be designed with sufficient capacity to minimize surging impacts.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
7. The well cellars shall be concrete lined and shall be designed to hold contaminated run-off from on-site sources; or a sump shall be provided.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
8. Solid state control console linked to a control system to perform energy conservation functions such as a start/stop time programming of motor equipment, data logging of energy consumption and maintenance and service scheduling shall be provided. a. All Electrical machinery where possible shall have a minimum coefficient of efficiency of 0.75.	Proposed project would comply with this condition.
9. Parking shall be provided on the site consistent with the submitted parking plan to provide adequate parking facilities for all workers involved in oil recovery operations, including exploratory and production phases.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.

REVIEW OF PROPOSED PROJECT RELATED TO 1993 CONDITIONAL USE PERMIT (CONTINUED)

CUP CONDITION OF APPROVAL	PROPOSED PROJECT COMPLIANCE
10. All studies, reports, plans and analysis required by any section of this C.U.P. or required by law shall be submitted to and approved by the City prior to the issuance of any permit for commencing any work, including site preparation. An up-front deposit of $10,000 in addition to any required plan check fees shall be submitted at the time of submitting such studies, reports, plans or analysis for the City to draw upon to cover the City's cost of hiring the appropriate expert or specialist, if necessary, to review these submittals for adequacy. Any amount of the deposit not used would be returned to the permittee, and any additional costs the City spends over $10,000 shall be reimbursed by the permittee.	Proposed project would comply with this condition.
Section 3. Public Safety	
1. The site shall be enclosed by a solid masonry or concrete wall with solid gates during all operations, protecting both against public entry, observation and attraction. A chain link fence to provide security is acceptable only through the exploratory phase.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
2. Security personnel shall be employed at all times during the drilling stage (24 hours) and emergency phone numbers shall be posted ruing production Phase II.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
3. Signs warning of unauthorized entry and safety hazards shall be posted on all sides.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
4. Access to facilities shall be limited to authorized personnel only.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
5. Trees shall be maintained at a distance from all walls to prohibit children and others from unauthorized entry.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
6. All site personnel shall be instructed on required safety procedures if hydrogen sulfide concentrations are encountered. Documentation of training and instruction shall be made available to the City Personnel *[sic]* Director.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Air Quality Impact Analysis in Appendix C to the Planning Application.
7. Both solid and liquid wastes shall be sampled and tested to determine if it needs to be treated as a hazardous waste.	Proposed project would comply with this condition.

REVIEW OF PROPOSED PROJECT RELATED TO 1993 CONDITIONAL USE PERMIT (CONTINUED)

CUP CONDITION OF APPROVAL	PROPOSED PROJECT COMPLIANCE
8. An Oil Spill Prevention Control Countermeasures (SPCC) Plan and an Oil Drilling Contingency Plan will be prepared for the project and approved by the State Division of Oil and Gas, and the City of Hermosa Beach Fire and Building and Safety Departments.	Proposed project would comply with this condition. Refer to the Plant Safety and Control Systems Report in Appendix B to the Planning Application.
9. Drillsite and production facilities shall be constructed in accordance with the State seismic standards, and designed in accordance with U.B.C. seismic requirements for hazardous facilities.	Proposed project would comply with this condition. Refer to the Geotechnical Investigation in Appendix D to the Planning Application.
10. A soils engineering report and engineering geology report prepared by a licensed geologist and engineer shall be prepared and reviewed in conjunction with the plans for all physical improvements. Said report shall address potential seismic hazards, such as liquefaction, due to soils or geologic conditions. All recommendations contained in said reports shall be incorporated in the construction documents.	Proposed project would comply with this condition. Refer to the Geotechnical Investigation in Appendix D to the Planning Application.
11. An emergency response plan, including a blowout prevention and control plan, shall be prepared for review and approval by the Division of Oil and Gas and the Hermosa Beach Fire Department.	Proposed project would comply with this condition. Refer to the Plant Safety and Control Systems Report in Appendix B to the Planning Application.
12. When a leak or spill occurs, it shall be contained, the fluid shall be recovered and the area restored to its original condition.	Proposed project would comply with this condition. Refer to the Hydrology and Water Quality Study in Appendix L to the Planning Application.
Section 4. Fire Safety	
1. Adequate fire detection and fighting equipment and supplies approved by the Fire Department, shall be maintained on the drillsite and tank production facility at all times.	Proposed project would comply with this condition. Refer to the Plant Safety and Control Systems Report in Appendix B to the Planning Application.
2. A supplementary analysis by a professional consultant shall be provided detailing any necessary improvements the Fire Department may need to prevent, and to halt oil related fires and shall also include the following: public notification, warning and evacuation plan.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
3. Oil sumps, drip pans, etc. shall be cleaned at regular intervals to reduce fire hazards and prevent minor spills.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
4. Oily rags, paper and miscellaneous waste shall be disposed of in an appropriate manner to reduce fire hazards.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.

REVIEW OF PROPOSED PROJECT RELATED TO 1993 CONDITIONAL USE PERMIT (CONTINUED)

CUP CONDITION OF APPROVAL	PROPOSED PROJECT COMPLIANCE
5. Signs warning of flammable fluids and prohibiting smoking shall be installed where appropriate.	Proposed project would comply with this condition.
6. The drillsite and production facility shall be protected by automatic fire detection sensors and suppression systems. The fire suppression systems shall include a tank-cooling sprinkler system.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
7. Drilling operations shall be conducted in accordance with appropriate Division of Oil and Gas regulations and shall utilize all required blowout prevention equipment and safety devices.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
8. Fire flows to service the operation shall meet Fire Department requirements.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
9. All equipment necessary to contain an oil fire or blowout shall be provided and/or maintained on site and all fire personnel shall be trained on its use.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
Section 5. Subsidence	
1. Analysis shall be reviewed by an independent reservoir engineer hired by the City of Hermosa Beach and paid for by the oil driller.	Proposed project would comply with this condition.
2. The engineer's focus shall deal with the issue of settlement of land within the limits of the oil field and area outside the limit of the oil field and as a result of the driller's operation.	Proposed project would comply with this condition. Refer to the Subsidence and Induced Seismicity Report in Appendix H to the Planning Application.
3. The engineer shall determine and submit a plan showing the potential zone of influence for all soil settlement. Settlement readings shall be measured to 0.01 feet at any control point.	Proposed project would comply with this condition. Refer to the Subsidence and Induced Seismicity Report in Appendix H to the Planning Application.
4. The adjacent area shall be surveyed a minimum of 1,000 feet from the zone of influence boundary as determined above. To determine the existing ground surface elevations, an elevation control survey shall be done before the drilling begins and shall be used as a base of reference.	Proposed project would comply with this condition. Refer to the Subsidence and Induced Seismicity Report in Appendix H to the Planning Application.
5. The operator 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 shall be approved by and independent engineer and approved y the Director of Public works.	Proposed project would comply with this condition. Refer to the Subsidence and Induced Seismicity Report in Appendix H to the Planning Application.

REVIEW OF PROPOSED PROJECT RELATED TO 1993 CONDITIONAL USE PERMIT (CONTINUED)

CUP CONDITION OF APPROVAL	PROPOSED PROJECT COMPLIANCE
6. There shall be an annual elevation survey for the project area to monitor and evaluate any potential settlement. If the survey data indicates subsidence, then the driller shall 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 shall include monitoring subsidence along the pipeline route.	Proposed project would comply with this condition. Refer to the Subsidence and Induced Seismicity Report in Appendix H to the Planning Application.
Section 6. Vehicle Traffic and Circulation On and Off Site	
1. All truck deliveries shall be limited to daylight hours (9:00 AM – 3:00 PM), Monday through Friday, except for an emergency situation, as defined by this C.U.P. and reported to the City in accordance with the notification requirement, which have been reported to the Director of Public Works in advance of the delivery.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Traffic Impact Analysis in Appendix M to the Planning Application.
2. Operation of earthmoving equipment shall be limited to daytime hours between 8 AM and 6 PM.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
3. Equipment deliveries shall be made only during daytime hours between 9 AM and 3 PM.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
4. Project related truck travel shall be restricted to specific truck routes and access points as approved by the Public Works Department.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Traffic Impact Analysis in Appendix M to the Planning Application.
5. Signs shall be installed to direct detour traffic as approved by the Public Works Director.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Traffic Impact Analysis in Appendix M to the Planning Application.
6. The number of truck trips shall be limited to a maximum of 18 rounds trips per day, except in an emergency, as defined by this C.U.P. and reported to the City in accordance with the notification requirement.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Traffic Impact Analysis in Appendix M to the Planning Application.
7. Maintenance Yard site access shall be designed to enable trucks to turn into the site without inhibiting traffic movement on Valley Drive or Sixth Street.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Traffic Impact Analysis in Appendix M to the Planning Application.
8. Minor curb radii reconstruction shall be done by the operator as determined by the City Public Works depending on the length and necessary turning radii for project related trucks.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Traffic Impact Analysis in Appendix M to the Planning Application.

REVIEW OF PROPOSED PROJECT RELATED TO 1993 CONDITIONAL USE PERMIT (CONTINUED)

CUP CONDITION OF APPROVAL	PROPOSED PROJECT COMPLIANCE
9. Area residents shall be notified of pipeline construction prior to commencement. Signs shall be installed to direct detour traffic.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Traffic Impact Analysis in Appendix M to the Planning Application.
10. All trucks arriving or departing the drill site shall be washed to prevent spillage of earth and all routes shall be swept and/or washed by the driller as required by the City.	Proposed project would comply with this condition. Refer to the Remedial Action Plan in Appendix G and the Air Quality Impact Analysis in Appendix C to the Planning Application.
11. An evaluation of the structural condition of the existing pavement shall be performed by a soils engineer on all access streets and the proposed truck routes prior to commencing any sit preparation or construction and prior to the issuance of any necessary permits. The evaluation shall include as a minimum: a) the number, type, size, and weight of trucks for export of materials or product, b) the number, type, size and weight of truck deliveries of building supplies, drilling supplies, etc. c) the number, type, size and weight of equipment transported to the site, d) other associated transportation items, e) other anticipated loading. The evaluation shall contain recommendations as to actions required to maintain said streets and routes in their current condition throughout the planned development phase, planned production phase, and in the close out phase.	Proposed project would comply with this condition. Refer to the Geotechnical Investigation in Appendix D to the Planning Application.
12. The operator shall perform the actions on the existing pavement as recommended by the soils or highway engineer, the operator will hire a licensed contractor and provide street profiles, drawings, and engineering to the satisfaction of the Public Works Department prior to work commencing.	Proposed project would comply with this condition. Refer to the Geotechnical Investigation in Appendix D to the Planning Application.
13. The City Council may restrict the use of certain street, alleys, or roadways in connection with the permittee's operations. In the event any street, alley, or roadway is damaged by the permittee's operations, such damages shall be paid for by the permittee upon demand by the City, and the failure to pay such damages, being the reasonable cost of the repair of any such damaged portions, shall be grounds for the revocation of the permit and the collection of such damages.	Proposed project would comply with this condition.

REVIEW OF PROPOSED PROJECT RELATED TO 1993 CONDITIONAL USE PERMIT (CONTINUED)

CUP CONDITION OF APPROVAL	PROPOSED PROJECT COMPLIANCE
Section 7. Sanitary Sewer	
1. Use of the sanitary sewer is prohibited, except for the minimal use associated with the office and restroom facilities. Any water from oil production shall be disposed in the five disposal wells.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
Section 8. Noise/Vibration	
1. The entire drilling operation shall be equipped with acoustical treatment for noise to be within the standards set forth inn the City's Oil Ordinance. a) A sound attenuation wall of 30-feet in height shall be provided along the perimeter of site as shown on plans during oil drilling phases.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Noise Impact Study in Appendix J to the Planning Application.
2. Heavy/large reciprocating equipment shall be mounted on vibration isolators.	Proposed project would comply with this condition. Refer to the Noise Impact Study in Appendix J to the Planning Application.
3. Pumping unit shall be maintained to eliminate noise from worn parts.	Proposed project would comply with this condition. Refer to the Noise Impact Study in Appendix J to the Planning Application.
4. The drilling rig shall be acoustically wrapped and/or paneled including the ancillary and support equipment to meet the requirements of the noise ordinance.	Proposed project would comply with this condition. Refer to the Noise Impact Study in Appendix J to the Planning Application.
5. Tripping will be restricted to daylight hours only.	Proposed project would comply with this condition. Refer to the Noise Impact Study in Appendix J to the Planning Application.
6. Loudspeaker paging systems shall be prohibited.	Proposed project would comply with this condition. Refer to the Noise Impact Study in Appendix J to the Planning Application.
7. Well workover rigs or any other rig that is used shall be operated only between the hours of 8:00 AM and 6:00 PM during daytime weekday hours only, excluding holidays, except in an emergency, as defined by this C.U.P. and reported to the City in accordance with the notification requirement. The exhaust and intake of the diesel engine (if used on the workover rig) shall be muffled to reduce noise to an acceptable limit. The operator shall use whatever means necessary, including but not limited to, enclosing the diesel engine and rig in acoustic blankets or housing.	Proposed project would comply with this condition. Refer to the Noise Impact Study in Appendix J to the Planning Application.

REVIEW OF PROPOSED PROJECT RELATED TO 1993 CONDITIONAL USE PERMIT (CONTINUED)

CUP CONDITION OF APPROVAL	PROPOSED PROJECT COMPLIANCE
8. All oil maintenance equipment, vehicles and non-electrical motors shall be equipped with manufacturer approved mufflers or housed in a sound-proofing device.	Proposed project would comply with this condition. Refer to the Noise Impact Study in Appendix J to the Planning Application.
9. Noise monitoring shall be conducted under the supervision of an independent certified acoustical engineer paid for by the permittee. Reports shall be submitted to the Planning Director within three working days after the completion of each phase of the monitoring. The monitoring shall include the following: a) Pre-drilling phase monitoring. Prior to the start of the drilling phase, noise measurements shall be obtained during the operation of the specific drilling rig which has been selected and the measurements shall be related to those experienced at the nearest residential boundaries to the drilling site. In addition, the noise control measures which have been (or will be) applied to the rig as needed for compliance with the City of Hermosa Beach noise ordinance shall be identified. b) Start of Drilling. Noise measurements shall be obtained during the nighttime hours (10:00 PM to 7:00 AM) for at least six hours on each of the three nights within the five day period from the start of the drilling phase. Monitoring is to occur at the nearest residential boundary to the actual drilling operation. c) During the drilling phase. Noise monitoring shall occur during a six-hour period between the hours from 10:00 PM to 7:00 AM at least once each month during the drilling phase of the project. The noise level data obtained shall be compared to the City of Hermosa Beach Noise Ordinance standards by the Planning Department. Where an exceedence of the standards is identified, noise control measures shall be required. d) Production phase. Noise measurements shall be obtained during a six-hour period between the hours from 10:00 PM to 7:00 AM at least once each year during the production and completion phase.	Proposed project would comply with this condition. Refer to the Noise Impact Study in Appendix J to the Planning Application.

REVIEW OF PROPOSED PROJECT RELATED TO 1993 CONDITIONAL USE PERMIT (CONTINUED)

CUP CONDITION OF APPROVAL	PROPOSED PROJECT COMPLIANCE
Section 9. Landscaping	
1. A Detailed Landscape Plan for Phase I (exploratory and testing) and Phase II, indicating the type, size and quantity of plant materials shall be submitted to the Planning Director for review and approval, and it shall be consistent with the conceptual landscape plan reviewed by the Planning Commission, and shall comply with Section 21A-2.9 of the Oil Code.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
2. During Phase I, test facility, landscaping consisting of 24" box, or larger size trees may be installed without permanent planting.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
3. Minimum 24" boxed trees for Phase I and II shall be adequate in size to create a buffer effect to obscure visibility of oil production activity. Permanent trees planted around the perimeter of the site for Phase II shall be a minimum sixteen (16) feet high at planting.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
4. Trees along the lot perimeter shall be provided to create a dense landscape buffer to the satisfaction and field review of the Planning Director.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
5. The aesthetic impact of the exposed masonry walls on the west and northern sides shall be soften with the planting of climbing vines to the satisfaction and field review of the Planning Director.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
6. Landscaping shall be maintained in a neat and cleaning condition.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
7. A complete automatic sprinkler system shall be provided prior to commencement of Phase II.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
Section 10. Aesthetics	
1. The tanks, acoustical wrap and wall, and production facility shall be painted a neutral color to blend in with the surroundings; color shall be reviewed and approved by the Planning Commission.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Visual Simulations in Appendix A to the Planning Application.
2. The use of architectural lighting beyond safety and security requirements shall be prohibited.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
3. The site for drilling equipment and the storage facilities shall be depressed in combination with walls so that the visual impact is minimized.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Visual Simulations in Appendix A to the Planning Application.

REVIEW OF PROPOSED PROJECT RELATED TO 1993 CONDITIONAL USE PERMIT (CONTINUED)

CUP CONDITION OF APPROVAL	PROPOSED PROJECT COMPLIANCE
4. All outdoor lighting shall be shielded and directed inward of the site.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
5. Lighting shall be limited solely to the amount and intensities necessary for safety and security purposes.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
6. Certain activities which might involve unshielded lighting (i.e., site preparation and restoration) activities shall be limited to daylight hours and thus not require nighttime lighting.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
7. A spilt-face block wall maintained graffiti free of a minimum of 12 feet in height shall be provided; wall materials shall be reviewed and approved by Planning Director. During test drilling minimum 6' high fencing shall be provided.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Visual Simulations in Appendix A to the Planning Application.
8. The height of the site's perimeter wall shall be increased to at least 16 feet if beam pumping units taller than 12 feet are installed, or if perimeter trees, when planted for Phase II, are not a minimum of sixteen (16) feet in height when installed.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
9. Tanks shall be submerged 6 to 8 feet or more below grade and will be adjacent to the 12-foot high privacy wall.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
10. If the drill derrick remains idle for more than one year, review and approval by the City Planning Commission or City Council shall be required, or the derrick with review and approval by the Planning Director.	Proposed project would comply with this condition.
11. All production equipment and structures shall be painted to blend with the surrounding environment with review and approval by the Planning Director.	Proposed project would comply with this condition. Refer to the Visual Simulations in Appendix A to the Planning Application.
12. On-site signs shall be limited to those needed for public health and safety.	Proposed project would comply with this condition.
13. All derricks hereafter erected for drilling, re-drilling or remedial operations or for use in production operations shall be removed within 45 days after completion of the work unless otherwise ordered by the Division of Oil and Gas of the state.	Proposed project would comply with this condition.

REVIEW OF PROPOSED PROJECT RELATED TO 1993 CONDITIONAL USE PERMIT (CONTINUED)

CUP CONDITION OF APPROVAL	PROPOSED PROJECT COMPLIANCE
14. The operator shall diligently and continuously pursue drilling operations until the all 30 oil wells and all five (5) water disposal wells are completed or abandoned to the satisfaction of the Division of Oil and Fas of the states and upon completion or abandonment shall remove all drilling equipment from the drill site within 45 days following ordered by the Division of Oil and Gas.	Proposed project would comply with this condition.
Section 11. Odors/Vapor/Air Pollution	
1. A vapor recovery system shall be installed to recover 99% of hydrocarbon emissions during storage and transfer of crude oil.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Air Quality Impact Analysis in Appendix C to the Planning Application.
2. Raw gas shall not be allowed into the atmosphere.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Air Quality Impact Analysis in Appendix C to the Planning Application.
3. Gas and vapor detection systems shall be installed at appropriate locations.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Air Quality Impact Analysis in Appendix C to the Planning Application.
4. All project site activities shall be conducted such as to eliminate escape of gas in accordance with best available control technology and practices which shall be reviewed and approved by the City.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Air Quality Impact Analysis in Appendix C and the Plant Safety and Control Systems Report in Appendix B to the Planning Application.
5. All requirements of AQMD shall be met at all times.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Air Quality Impact Analysis in Appendix C to the Planning Application.
6. A state-of-the-art scrubber shall be employed for the exploratory phase to eliminate odors from waste gases, and any flame shall be enclosed.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Air Quality Impact Analysis in Appendix C and the Plant Safety and Control Systems Report in Appendix B to the Planning Application.
7. Tanks shall be designed and located so that no odors or fumes can be detected from the adjacent areas outside the exterior walls of the project.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Air Quality Impact Analysis in Appendix C and the Plant Safety and Control Systems Report in Appendix B to the Planning Application.

REVIEW OF PROPOSED PROJECT RELATED TO 1993 CONDITIONAL USE PERMIT (CONTINUED)

CUP CONDITION OF APPROVAL	PROPOSED PROJECT COMPLIANCE
8. Operators shall not blow lines to the atmosphere, except in an emergency, as defined by the C.U.P. and reported to the City in accordance with the notification requirement.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Air Quality Impact Analysis in Appendix C and the Plant Safety and Control Systems Report in Appendix B to the Planning Application.
9. Construction equipment and vehicles shall be maintained in proper tune.	Proposed project would comply with this condition. Refer to the Air Quality Impact Analysis in Appendix C to the Planning Application.
10. Odorless drilling muds shall be used.	Proposed project would comply with this condition. Refer to the Air Quality Impact Analysis in Appendix C to the Planning Application.
11. Well tubing and rods shall not remain out of the well during workover operations less than 8-hours. The tubing will be surface washed with a detergent solution to remove odor bearing residual hydrocarbons if exposed longer than 8-hours.	Proposed project would comply with this condition. Refer to the Air Quality Impact Analysis in Appendix C to the Planning Application.
12. Odor control will be further enforced by the SCAQMD under Rules 402, 466, 466.1 of their regulations, and the commercial recovery system shall be employed for the permanent facility.	Proposed project would comply with this condition. Refer to the Air Quality Impact Analysis in Appendix C to the Planning Application.
13. There shall be no open flames allowed.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Air Quality Impact Analysis in Appendix C and the Plant Safety and Control Systems Report in Appendix B to the Planning Application.
14. The permittee shall monitor drilling mud during drilling on the site for odorous substances and take such measures to eliminate any odor which could be perceptible outside the drill site.	Proposed project would comply with this condition. Refer to the Air Quality Impact Analysis in Appendix C to the Planning Application.
15. The permittee shall undertake no refining process or any process for the extraction of produces from natural gas, except for such minor processed as necessary to natural gas acceptable to the City gas mains for domestic use.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
16. Well cellars shall be maintained in a clean and efficient manner to prevent waste accumulation and shall be frequently steam cleaned.	Proposed project would comply with this condition.

REVIEW OF PROPOSED PROJECT RELATED TO 1993 CONDITIONAL USE PERMIT (CONTINUED)

CUP CONDITION OF APPROVAL	PROPOSED PROJECT COMPLIANCE
Section 12. Grading/Storm Water/Site Runoff	
1. Grading shall not be performed when wind speeds exceed 20 mph. The contractor shall maintain a wind speed monitoring device on site during grading operations. The contractor shall continually keep the soil moist during grading operations. At no time shall any dust be allowed to leave the work site.	Proposed project would comply with this condition. Refer to the Air Quality Impact Analysis in Appendix C to the Planning Application.
2. Normal wetting procedures shall be employed during grading. Reviewed and approval of procedure shall be by Public Works Director.	Proposed project would comply with this condition. Refer to the Air Quality Impact Analysis in Appendix C to the Planning Application.
3. Graded surfaces shall be paved or landscaped per approved plan.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
4. Project site shall be graded so that all contaminated runoff is collected and treated on-site and disposed of according to all laws.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Hydrology and Water Quality Study in Appendix L to the Planning Application.
5. Site shall be graded in a manner so that all hazardous or contaminated fluids and runoff are directed toward a cellar and approved pit and disposed of properly.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Hydrology and Water Quality Study in Appendix L to the Planning Application.
6. No water from the site shall be allowed to enter the storm drainage system or any public area.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Hydrology and Water Quality Study in Appendix L to the Planning Application.
7. No water from the site shall be allowed to surface flow across the public beach.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Hydrology and Water Quality Study in Appendix L to the Planning Application.
Section 13. Pipeline Construction	
1. The pipeline operators shall adhere to all applicable federal, state, regional, and local statutes governing design, construction, operation, and maintenance of the pipelines and related equipment.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
2. A detailed pipeline survey shall be conducted in order to locate existing pipeline prior to excavation for pipeline construction.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
3. A responsible agent paid for by the applicant shall be present during excavations.	Proposed project would comply with this condition.

REVIEW OF PROPOSED PROJECT RELATED TO 1993 CONDITIONAL USE PERMIT (CONTINUED)

CUP CONDITION OF APPROVAL	PROPOSED PROJECT COMPLIANCE
4. Areas of construction and maintenance activities shall be delineated by signs, flagmen, pavement markings, barricades, and lights, as determined by permit requirements of all local agencies.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Traffic Impact Analysis in Appendix M to the Planning Application.
5. Where pedestrian activities are affected during construction, appropriate warning signs shall be installed and pedestrians will be diverted. Pedestrians access to business and residences will be maintained during construction. Special facilities, such as handrails, fences, and walkways shall be provided, if necessary, for the safety of pedestrians.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Traffic Impact Analysis in Appendix M to the Planning Application.
6. Obstruction of emergency vehicle operations will be partially mitigated by ensuring that providers of emergency services are kept informed of the location, nature, and duration of construction activities so alternate routes can be chosen. It is essential that fire department access is maintained to all buildings adjacent to construction activities. For this reason, a minimum of at least one lane for streets undergoing construction will be kept opne at all times, and fire hydrants in construction areas will remain accessible.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Traffic Impact Analysis in Appendix M to the Planning Application.
7. If public transit stops along pipeline routes need to be temporarily relocated during construction, the applicant shall coordinate with the appropriate local operators to provide signs directing riders to the temporary stop locations.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Traffic Impact Analysis in Appendix M to the Planning Application.
8. When hauling excavated and waste materials from construction sites, substandard roadways will be avoided and local jurisdiction regulations governing hauling vehicles will be adhered to.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
9. Pipeline construction and operation of earth moving equipment shall be limited to daylight hours between 8:00 AM and 3:00 PM and shall not be permitted during weekend periods. Additionally, construction-related trucks should not be operated during peak traffic hours of 7 to 9 AM and 3 to 7 PM. Pipeline construction at major intersections shall be limited to daylight hours between 9:00 AM and 3:00 PM to avoid peak traffic periods.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Traffic Impact Analysis in Appendix M to the Planning Application.
10. Equipment deliveries shall be made only during daytime hours between 8 AM and 3 PM.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.

REVIEW OF PROPOSED PROJECT RELATED TO 1993 CONDITIONAL USE PERMIT (CONTINUED)

CUP CONDITION OF APPROVAL	PROPOSED PROJECT COMPLIANCE
11. In order to reduce visual impacts and possible safety hazards, storage of pipes and other materials, as well as construction equipment, shall not be permitted on any street during non-construction hours.	Proposed project would comply with this condition.
12. Area residents within 300' shall be notified about the pipeline construction operation prior to commencement of construction.	Proposed project would comply with this condition.
13. Detour signs on pipeline construction routes shall be placed at appropriate locations.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Traffic Impact Analysis in Appendix M to the Planning Application.
14. Steel plates covering pipeline excavation trenches shall be placed to permit traffic movement during non-construction hours.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Traffic Impact Analysis in Appendix M to the Planning Application.
15. Pipeline shall be designed with ample safety factors, pressure-tested prior to being placed in operation, and monitored for corrosion once in operation.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Plant Safety and Control Systems Report in Appendix B to the Planning Application.
16. Safety shut-down devices that respond to drops in pipeline pressure shall be incorporated into the project in order to stop the flow of the pipeline contents in case of a pipeline rupture.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application. Also refer to the Plant Safety and Control Systems Report in Appendix B to the Planning Application.
17. Groundwater level and land subsidence shall be monitored to insure that pipeline damage does not occur as a result of geologic and hydrologic phenomena. The annual subsidence survey shall include a report to the City on monitoring efforts to insure pipeline damage has not occurred.	Proposed project would comply with this condition. Refer to the Subsidence and Induced Seismicity Report in Appendix H to the Planning Application.
18. Pipeline construction along Valley Drive shall be approved by the Director of Public Works prior to issuance of a permit.	Proposed project would comply with this condition.
19. Pipeline construction shall not occur in the area known as the Hermosa Valley Greenbelt.	Proposed project would comply with this condition.

REVIEW OF PROPOSED PROJECT RELATED TO 1993 CONDITIONAL USE PERMIT (CONTINUED)

CUP CONDITION OF APPROVAL	PROPOSED PROJECT COMPLIANCE
20. Storage of materials shall not be allowed on the Hermosa Valley Greenbelt. The storage or dumping upon the greenbelt of any materials, construction equipment, debris, oil drilling equipment, drilling rigs, piping, etc., and any and all equipment and vehicles necessary for the construction and maintenance of the pipeline and oil development site shall be prohibited. The use of the greenbelt as a staging area for construction of the oil facility or pipeline shall be prohibited. There shall be no parking or standing of any vehicles on the greenbelt for any time period.	Proposed project would comply with this condition.
21. Trenches shall be covered during non-working hours to minimize traffic circulation problems.	Proposed project would comply with this condition.
Section 14.	
Definition and notification requirements for emergency situations: I. For purposes of this Conditional Use Permit, "Emergency" is defined as follows: A threat to the health and safety of persons in the surrounding area to the drill site and the following conditions which require immediate action: A. Conditions which could lead to a potential spill or well blowout: 1. Entry of oil and gas into the wellbore while drilling, tripping or out of the hole which may be indicated by one or more of the following: a) Pit volume gain b) Well flowing with pumps off c) Flow rate increases with circulation d) Improper hole fill-up on trips e) Sudden increase in drilling rate f) Pump pressure decreases and pump rate increases g) Decrease in returning mud rate h) Sloughing shale i) Changes in mud salinity and/or mud flow properties	This condition is noted.
2. Lost circulation or loss of ability to circulate	This condition is noted.
3. Casing or wellhead failure while drilling	This condition is noted.

REVIEW OF PROPOSED PROJECT RELATED TO 1993 CONDITIONAL USE PERMIT (CONTINUED)

CUP CONDITION OF APPROVAL	PROPOSED PROJECT COMPLIANCE
4. Stuck pipe and/or equipment during any of the following operations: a) Drilling b) Tripping drill pipe and tools c) Wireline logging d) Drill stem testing e) Running casing f) Perforating and stimulating completion interval	This condition is noted.
5. Loss of rig power or equipment failure while drilling or tripping. B. Injuries to personnel at the Drill Site C. Conditions which could reduce the stability and safety of the rig and production equipment: 1. Natural events: a) Excessive winds, rain, and lightning b) Floods c) Subsidence d) Earthquake	This condition is noted.
2. Other events: a) Riots/Demonstrations b) Fire	This condition is noted.
II. **Notification Required:** In the case of an emergency, as defined above, the permittee shall give immediate notice to the City of the occurrence of the emergency event. The City will provide a list of phone numbers. A written notice, including a detailed description of the emergency condition, and the actions taken and/or proposed to be taken to correct the situation, shall be provided within 24 hours of the occurrence of the emergency event.	Proposed project would comply with this condition. Refer to the Project Description in the Planning Application.
Section 15.	
1. This grant shall not be effective for any purposes until the permittee and the owner of the property involved have filed at the office of the Department of Planning their affidavits stating that they are aware of, and agree to accept, all of the conditions of this grant.	This condition is noted.
2. The Conditional Use Permit shall be recorded, and proof of recordation shall be submitted to the Planning Department.	This condition is noted.

REVIEW OF PROPOSED PROJECT RELATED TO 1993 CONDITIONAL USE PERMIT (CONTINUED)

CUP CONDITION OF APPROVAL	PROPOSED PROJECT COMPLIANCE
3. Each of the above conditions is separately enforced, and if any of the conditions of approval is found to be invalid by a court of law, all the other conditions shall remain valid and enforceable.	This condition is noted.
4. Permittee shall defend, indemnify and hold harmless the City, its agents, officers, and employees from any claim, action, or proceeding against the city or its agents, officers, or employees to attack, set aside, void or annul this permit approval, which action is brought within the applicable time period of Government Code Section 65907. The City shall promptly notify the permittee of any claim, action, or proceeding and the City shall cooperate fully in the defense. If the City fails to promptly notify the permittee of any claim, action or proceeding, or if the City fails to cooperate fully in the defense, the permittee shall not thereafter be responsible to defend, indemnify, or hold harmless the City. a) The permittee shall reimburse the City for any court and attorney's fees which the City may be required to pay as a result of any claim or action brought against the City because of this grant. Although the permittee is the real party in interest in an action, the City may, at its sole party in interest in an action, the City may, at its sole discretion, participate at its own expense in the defense of the action, but such participation shall not relieve the permittee of any obligation under this condition. b) The permittee shall provide a cash bond to the City, in the amount of $50,000, to be used by the City towards Attorneys costs in the event of litigation. This conditional use permit shall not be in full force and effect until this cash bond is submitted.	This condition is noted.
5. The subject property shall be developed, maintained and operated in full compliance with the conditions of this grant and any law, statute, ordinance or other regulation applicable to any development or activity on the subject property. Failure of the permittee to cease any development or activity not in full compliance shall be a violation of these conditions.	Proposed project would comply with this condition.

REVIEW OF PROPOSED PROJECT RELATED TO 1993 CONDITIONAL USE PERMIT (CONTINUED)

CUP CONDITION OF APPROVAL	PROPOSED PROJECT COMPLIANCE
Section 16.	
The Planning Commission may review this Conditional Use Permit and may amend the subject conditions or impose any new conditions if deemed necessary to mitigate detrimental effects on the neighborhood resulting from the subject project.	This condition is noted.
The Planning Commission shall review, and if necessary, modify the conditions as set forth in this Conditional Use Permit on an annual basis or upon change in the operator of the project.	This condition is noted.
The Planning Commission reserves the right to revoke this Conditional Use Permit if any violation of these conditions or the Hermosa Beach Municipal Code occurs. The City shall provide the operator with notice in writing of any violation, stating the City's basis for determining that a violation has occurred. The operator shall have a reasonable time to abate the violation before further action is taken. The City may require the operator with notice in writing to submit written documentation of actions taken to remedy any violation and may require monitoring or other procedures to be implemented in order to ensure that the violation will be abated.	This condition is noted.
This resolution revokes and supercedes City Council Resolution No. 93-5621.	This condition is noted.

ATTACHMENT B
E&B OIL DEVELOPMENT PROJECT
DESIGN FEATURES OF THE PROPOSED PROJECT

The E&B Oil Development Project incorporates design features that demonstrate significant improvements and differences from the previously approved 1993 Macpherson Oil Project. The complete description of these operational practices and design features, which are included as part of the project design, are provided in detail in the Project Description and accompanying Appendices which contains the technical reports and studies prepared for the proposed project.

Detailed Analysis of Potential Effects Reflected in Project Design and Operational Practices

- Detailed environmental analysis has been conducted throughout the project design process. The results of the analysis have been incorporated into the proposed project through its design and operational practices.
- An early understanding of the potential environmental effects will allow for a more meaningful dialogue with concerned members of the public, the City, and responsible or other interested agencies.

Modern Drilling Rig

- Electric drill rig height is 87 feet and will have a covered mast that reduces noise and is less visually intrusive.
- Use of Iron Roughneck, an automated system to connect/disconnect pipe, increases safety and efficiency.
- Use of automated pipe loading and handling increases safety.
- Drill rig has no drawworks or cables resulting in less noise.
- No monkey board for racking of pipe reduces noise and visual impact of pipe strands.
- Only nonhazardous water-based drilling muds will be used.
- Critical component design does not allow component failure mode, for instance, hydraulic raising rams cannot exceed their maximum rating providing for safer operation.
- Raising arm of the drill rig is designed so that it cannot “crown out” providing for safer operation.
- Top drive of the drill rig allows it to be used as a “snubbing unit” providing more well control.
- Bit technology has allowed bits to be used longer resulting in a reduction of the trips in and out of the hole, reducing noise and the potential for blowout.

- Continual real time steering of the drill bit by advanced computer and hydraulic technology reduces tripping of pipe.
- Advanced mud monitoring systems, such as radar, will detect circulation loss or gain for early detection of any potential issue such as a blowout.
- Alarms and sensors will be installed for gas detection, including hydrogen sulfide and carbon dioxide.
- Regular testing of systems will ensure functionality.

Facility Safety Systems

- Proposed project will use additional design standards such as American Petroleum Institute (API) 14C: Analysis, Design, Installation, and Testing of Basic Surface Safety Systems for Offshore Production Platforms to increase facility safety.
- Proposed project is a closed-loop system that does not allow for venting or emitting of fluids into the air as part of the operation. All fluids are directed back though the system or to a gas combustor (enclosed ground flare).
- Automated safety system with segment isolation and faster acting shut-in valves will be used and the design includes fail-safe logic.
- A sophisticated computerized safety system will closely monitor the closed-loop system, providing early warnings, corrective actions, and shutdowns, if necessary. Corrective actions are provided by a series of safety devices installed within the piping, vessels, and tanks along the entire system. Each device is strategically placed to provide early warning, corrective action, or shut down of that segment of the system or the entire facility, if necessary. All safety devices will be tested regularly (weekly/monthly) by qualified operators and audited by regulatory agencies.
- Proposed project provides redundancy for safety devices. This is the duplication of critical safety components. Depending on the critical nature of the system, triple redundancy will be incorporated into the safety devices.
- Shut down procedures are defined to address the primary source of energy so it does not “cascade” (sequentially throughout the system).
- Proposed project includes Modern Programmable Logic Controllers (PLCs) that have the capability to manage vast amounts of information and offer significant process control capability. The advanced capability enables real time monitoring of substantially more process variables. This monitoring has enabled the PLCs to become more of a supervisory tool. Instead of sending alarms to the operators and relying on the operator to take corrective action, PLCs respond and control an event before it gets to an alarm stage.
- Use of wireless technology allows monitoring of remote devices that previously could not be wired. It also eliminates a cable connection that could easily be severed.

- The reliability and accuracy of gas monitoring devices has advanced over time. New devices provide for continuous monitoring, quicker hazard recognition, and faster response. If a hazardous situation is detected, an automated sequence of events is triggered. This sequence includes notification of plant personnel, safety officials, and the public through a predetermined notification process.
- As part of the design process, a Hazard and Operability Study (HAZOP) will be performed to systematically analyze the design and operational process and evaluate all potential unplanned events. The HAZOP will determine what alarms, shutdowns, and notifications will be implemented.

Fire Detection and Suppression

- Operation of fire suppression systems that are faster and more reliable. For example, the proposed project will use Low Expansion foam which offers a 5:1 expansion rate, making it a foam system of choice to protect large and hazardous facilities, including petro-chemical tank farms, loading docks, processing areas, refineries, and liquefied natural gas storage.
- Fire detection system consists of thermal fire detection and optical surveillance systems that will monitor potential fire zones and activate warning indicators. This will improve efficiency and operation of the fire suppression systems once an event is detected.
- The proposed project includes upgrades to the existing water system and an additional fire hydrant.
- The proposed project provides improved emergency response and control procedures for Operational staff. Systems provide better-automated transmission of alarms to improve response time from first responder.

Blow Out Prevention Stack (BOP)

- Class III or IV BOP, with addition of Blind Shear Rams, provides unsurpassed well control capabilities.
- Certification and inspections will occur by regulatory authority to monitor that Blind Shear Rams function correctly.
- Drilling program will be evaluated by a Licensed Professional Engineer to verify that the drilling program is applicable to the Blow Out Prevention selected.
- Operational personnel will be certified and trained in Blow Out Prevention.
- Regulatory agency personnel will be present for visual inspections, functional operations, pressure tests, maintenance practices, and drills.

Advanced Operator Training

- Standardized training for operators will be conducted through a third party. API T2, API T3, and API T6 provide guidelines for operator training. This standardized training ensures that any operator at the facility has received proper training.

- Operators will receive an orientation, initial basic training, and advanced training.
- Mentoring and progress measurement will occur.

Mechanical Integrity Program

- Inspection and monitoring of piping, tanks, and vessels will occur regularly to ensure integrity.
- Ultrasonic testing will be utilized to determine wall thickness.
- Internal/external visual inspections will be utilized.
- A qualified third-party inspection firm will conduct inspections.

Safety and Environmental Management Program

A Safety and Environmental Management Program (SEMP), that includes the following plans and programs, will be implemented:

- Safety and Environmental Information (Process and Instrument Diagrams, Material Safety Data Sheets (MSDS), Response Plans, etc.)
- Hazard analysis
- Management of Change
- Operating Procedures
- Safe Work Practices
- Training
- Mechanical Integrity
- Prestart-up safety review
- Emergency response and control
- Investigation of Incidents
- Audits
- Records and documentation

Complete Containment for Fluids (including Precipitation Runoff) on Project Site

- Proposed project is designed to retain, process, and inject storm water within the perimeter fence or wall for a 100-year storm event.
- Proposed project is designed to provide for on–site containment of fluids from vessels and tanks in case of leaks or rupture.

Perimeter Walls and Enhanced Landscaping

- A permanent 16-foot high perimeter block wall will be constructed to provide noise attenuation and screen views of the production equipment and operations.

- Enhanced landscaping will be provided along the 6th Street, Valley Drive, and the visible portions of the perimeter wall along the western boundary. The landscaping will provide a visual buffer effect through the layering of plants to create depth to the landscape "screen." The plant materials and irrigation are consistent with the requirements of the City.

Underground Power Lines along Valley Drive and 6th Street

- Overhead utility lines and poles adjacent to site along Valley Drive and around the corner of Valley Drive and 6th Street will improve visual aesthetics and sidewalk access.

Use of Reclaimed Water

- Reclaimed water will be used for drilling and landscaping, reducing the demand on local potable water resources.

Gas Treatment Unit

- A gas treatment unit will process the gas to the pipeline quality level required by the Southern California Gas Company (SCG).

Odor Minimization Plans

- Proposed project will include an odor minimization plan that will address potential sources of odor from equipment, wells and drilling operations, and provide measures to reduce or eliminate odors.
- Proposed project will have an air monitoring plan that will monitor and record the levels of hydrogen sulfide and total hydrocarbons vapors throughout the project site.

Subsidence and Induced Seismicity Monitoring Programs

- Proposed project includes a Subsidence Monitoring Program to detect subsidence as a result of drilling activities to ensure that subsidence will not be allowed to the degree that it could endanger the facility, off-site structures, and the shoreline.
- Proposed project includes an Induced Seismicity Monitoring Program to detect seismic activity that might result from drilling activities.

Noise Reduction Features

- Proposed project includes noise reduction features and operational practices for all construction activities on-site and off-site, including along the pipeline routes.
- Proposed project includes noise reduction features and operational practices for each phase of operations, including sound attenuation barriers, acoustical coverings for equipment, and modified practices during construction, drilling, and ongoing operations.

No Hydraulic Fracturing of Wells

- No hydraulic fracturing of wells will occur because the geologic zones for the proposed project are permeable and capable of yielding oil and gas without hydraulic fracture stimulation.

Removal of Existing Contaminated Soil

- Should Phase 3 of the proposed project move forward, the removal of the top 15 feet of lead impacted soil will result in safer environmental conditions on the project site which will benefit the surrounding community.

Preliminary Quantitative Risk Assessment

- Preliminary results of the Quantitative Risk Assessment demonstrate that the proposed project is significantly safer than the previously approved project.

ATTACHMENT C
E&B OIL DEVELOPMENT PROJECT
INFORMATION ON DRILLING ACTIVITIES

INTRODUCTION

The proposed project provides for the development of an onshore drilling and production site that would utilize directional drilling to access the oil and gas reserves in the tidelands and in an onshore area know as the uplands. Both of these areas are located in the potion of the Torrance Oil Field that is within the jurisdiction of the City of Hermosa Beach (City). The proposed project would utilize the latest technology and operational advancements related to safety and efficiency in order to provide an oil development project that would be accomplished safely and in an environmentally sensitive manner.

In Phase 2: Drilling and Testing and Phase 4: Development and Operations of the proposed project drilling activities would occur for the proposed project. The following provides information on the drilling activities that would occur.

DRILLING ACTIVITIES

Oil well drilling is the process of penetrating the earth's surface and rock layers to extract fossil fuels, or oil, for energy production. Drilling is done with the use of a drill rig and the process of drilling a well happens in several steps. As stated above, the proposed project would utilize directional drilling technology that allows all wells to be drilled from a consolidated surface drill site. In addition, directional drilling allows wells to be drilled laterally for long distances, so that the bottom-hole locations may be located several thousand feet from the surface location of each well head on the project site. Refer to Figures 9 in the Project Description for an illustration of a typical well course.

Drilling involves several distinct steps, including the following:

- Drill site preparation
- Moving the rig to the drill site
- Rigging up, ready to drill
- "Spudding In" (beginning the drilling operation)
- Drilling the surface hole
- Drilling the production hole
- Completing the well

All wells would be drilled and cemented in accordance with State Division of Oil, Gas and Geothermal Resources (DOGGR) regulations to protect underground aquifers.

The following describes the steps related to drilling.

Drill Site Preparation

Once the drill site has been cleared and leveled and the cellar trench constructed, a small drilling rig, referred to as a dry-hole digger, would be used to set the conductor casing for all of the intended wells in the project site. A large diameter hole, about 18 inches in diameter, would be drilled to an approximately 80-foot depth. This type of drilling is similar to boring a hole with an auger. Usually, no drilling fluid is needed to drill the hole, hence the name dry-hole digger. A large diameter casing, commonly referred to as "conductor pipe", typically 13-3/8 inches in diameter is lowered to the bottom of the hole and is cemented in place with construction concrete. This forms the first seal of the near-surface formations and also serves as a steel conduit to allow the drilling fluid used in the next stage of the well to be circulated to surface without washing away the shallow near-surface dirt. All conductors necessary to develop the proposed project would be set at this time and the dry-hole digger moved off before the drilling rig would be mobilized or brought to the site.

Moving the Rig to the Drill Site

The components of the drill rig and all necessary equipment would then be moved onto the drill site with large specially equipped trucks. Although the number of trucks varies with the depth capacity and size of the rig, the drill rig for the proposed project would consist of approximately 30 truckloads of equipment. A crane would also be utilized to help erect the drill rig over the first well conductor pipe. The crane would not be needed for subsequent moves of the drill rig unless they involve moving from one well to the other, or involve turning the drill rig around to drill the end locations. The crane would be moved onsite as required for specific drill rig moves.

Rigging Up, Ready to Drill

A drill rig is made up of several major components. They include, but are not limited to a Drilling Structure (i.e., mast, substructure, catwalk, SCR House, top drive, back-up generator, crown block, traveling block, iron rough neck, drill pipe, control cabin), Blow Out Preventer System (i.e., BOP Stack, BOP Controller, and Accumulator), and the Mud System (i.e., mud tanks, mud shakers, mud pumps, mud return line). The drilling rig would also require other equipment such as a spare parts house, other tanks, and storage areas as needed to support the drilling operation.

The substructure of the drill rig would be located over the first well, the mast would be raised, and the other equipment aligned and connected. The drill pipe would be laid out on racks convenient to the rig floor so they may be used when needed. Water tanks would be filled, and drilling fluid additives would be stored on location. The drill rig for the proposed project would be run on electric utility power, so an electrical hookup would be made at this time. When all these matters have been attended to, drilling operations would be ready to begin. The initial mobilization and rigging up operation is expected to last about seven to ten days.

The following provides information on the major components of the drill rig and the associated equipment.

Drill Rig Structure

Mast: A metal tower that is raised and is used as a component of the hoisting system

Substructure: Steel platform and supports on which the mast and all the drilling floor equipment sit.

Loading Arm: A long, flat, steel platform where pipe is laid before it is lifted/ or raised up and connected to the top drive.

SCR House: An electrical housing unit in close proximity to the power source which balances and controls the energy used to power the rig, also called a breaker house

Top Drive: A power swivel that rotates the drill string without the use of a rotary table or kelly.

Crown Block: This is the top of the rig mast.

Drill Pipe: Is hollow, thick-walled, steel piping that is used on drilling rigs. This along with drill stem is referred to as the drill string.

Pipe Rack: Rack used to store tubulars.

Floating block: This is the hydraulic block that raises and lowers the top drive.

Iron Roughneck: A hydraulic powered wrench that can make up or break out pipe joints by applying correct torque. Most of the manual pipe handling operations previously performed by the drilling crew on the rig floor have been replaced by this piece of equipment.

Water Tank: Used to store water for use during drilling operations.

Blow Preventer System

Blowout preventer systems were developed to cope with pressures and uncontrolled flow (formation kick) emanating from a well reservoir during drilling. Kicks can lead to an event known as a blowout. Blowout preventers systems are critical to the safety of the crew, the drill rig, and the environment and to the monitoring and maintenance of well integrity. Therefore, blowout preventers are intended to be fail-safe devices. The major components of the blow preventer system consist of:

BOP Stack: Stands for blow out preventer stack. This piece of equipment is attached to the well head under the rig floor and utilizes vertically arranged closing elements to either close off the well or control the release of fluids to and from the well.

BOP Controller: A control panel on the drilling rig floor that can remotely and independently operate each preventer on the BOP Stack.

Accumulator: A tank that holds hydraulic fluid stored under pressure. The primary purpose of this unit is to supply hydraulic power to the BOP stack in order to close/open BOP stack for both normal operational and emergency situation.

Mud System

The water-based mud system is the equipment that separates the earth cuttings coming out of the well bore and continues circulating fluids back to the wellbore. The mud system includes the drilling mud, mud tanks, shakers, and mud pumps. Drilling provides for lifting of cuttings, integrity of the hole and most importantly protection against reservoir pressure. The major components of the mud system consist of:

Mud Tanks: Mud mixing tank, return tank, etc.

Mud Shakers: A series of vibrating screens used to remove the earth cuttings from the circulating fluids from the wellbore.

Mud Pumps: A set of two or three pumps that are used to move circulating fluids on a drill rig.

Mud Return Line: A pipe that carries the circulated drilling mud from the mud pumps to the well bore.

Stand Pipe: A seamless, vertical steel pipe attached to one leg of the mast that carries drilling mud up to the rotary hose.

Mud logging: A detailed record (well log) of a borehole created by examining the bits of rock or sediment brought to the surface by the circulating drilling medium (most commonly mud). Mud logging is usually performed by a third-party mud logging company. This provides well owners and producers with information about the lithology and fluid content of the borehole while drilling.

"Spudding In" (Beginning the Drilling Operation)

"Spudding in" is the term used to begin drilling operations. A large (12 ¼-inch diameter) drill bit is attached to the first joint of drill pipe and lowered into the conductor casing. When it reaches bottom of the conductor casing at a depth of 80 feet, the drilling begins. In order to drill downwards through soil and rock, the drill bit requires rotation and downward force, which is provided by the weight of thick-wall pipe strewed on top of the drill bit. A single, 30-foot long drill pipe for a larger diameter drill bit weighs approximately three tons. As the drill bit drills deeper, more drill pipe is placed on top, thereby increasing the downward force, this is collectively known as the drill string. The drill bit turns clockwise as the weight of the drill pipe column forces it downward. Drilling fluid, called mud is pumped down the hollow drill pipe, through the drill bit, and flushes the drilled rock cuttings away from the bit and up the space between the wall of the borehole and the drill pipe, which is referred to as the "annulus." The mud circulates to a mud tank where the rock cuttings are separated out of the fluid by using a shaker, and the clean mud is pumped back down the hole in a continuous circuit, constantly circulating the drilled rock cuttings up and away from the drill bit as it penetrates deeper into the earth. The cuttings are analyzed, stored in 20 cubic yard bins, and then hauled offsite.

Drilling the Surface Hole

When a well is spudded in, a large diameter bit is used to drill to a predetermined depth. This is for the purpose of drilling the surface hole. The depth of the surface hole is usually dictated by the regulatory authority responsible for issuing the drilling permit, along with the conditions of approval for drilling the well. The depth of the surface hole is determined by the depth of the deepest aquifer or other formation that may contain fresh water.

When the required depth is reached, drilling is stopped, and a large diameter (9 5/8-inch diameter) casing string is assembled in 40-foot lengths and lowered to the bottom of the well bore. It is then cemented in place from bottom to top with cement slurry. The cement is transported to the project site "dry" and is mixed onsite and immediately pumped down the inside of the casing, around the bottom of the hole, and up the annulus between the casing and the well bore. In this way, the liquid cement circulates to the surface, insuring that the entire casing and well bore are encased in cement, protecting the fresh water aquifers and the security of the surface casing. The cement is allowed to harden and a wellhead is welded to the top of the casing.

Next, a piece of equipment known as a blowout preventer is attached to the well head. The blowout preventer (BOP) and casing are then pressure tested to 3,000 or 5,000 pounds per square inch (psi), or to the test pressure stipulated in the regulatory Conditions of Approval. The BOP is a safety system used during drilling operations in oil and gas fields to prevent the uncontrolled release of reservoir fluids and to immediately shut off the flow in the event that abnormal pressure is encountered in the well bore that cannot be controlled by the hydrostatic head of the drilling fluid when drilling resumes beneath the surface casing. If the subsurface pressure begins to cause the well to flow, the BOP is activated, closing in the well and trapping the pressure until it can be bled off safely and drilling can continue. A BOP would be placed on each wellhead during the drilling and removed after the well was cased off and stabilized.

The surface casing serves three primary functions:

- It isolates fresh water formations from contact with any fluids coming from deeper in the earth;
- It serves as a mounting place for the blowout preventer; and
- It serves as the support for the production casing that will be placed in the well if oil is found.

Drilling the Production Hole

Once the surface casing is cemented in place and pressure tested for integrity, drilling operations resume with a smaller (8-¾-inch) drill bit. The bit and drill pipe are lowered to the bottom of the 9-5/8-inch surface casing, and operations continue by drilling through the "shoe," or the bottom, of the surface casing and deeper into the earth. This smaller hole is drilled to the total depth decided upon by the oil company's geologic and engineering staff. Usually, the only interruptions to drilling operations will be to remove the drill pipe from the well to replace a dull drill bit, and then lowering the pipe back to the bottom of the well to

resume drilling. This process is referred to as tripping for a bit. The rock cuttings that are circulated from the well are constantly examined by a geologist or other technician for signs of oil or gas. Generally, the decision to stop drilling is made based on the signs, or "shows" in the rock samples.

Today, almost all wells drilled in the coastal areas of California are directional wells. It is logical to think of a well bore as being drilled straight down, and many times this is the case. However, techniques have been developed that allow the oil company to drill to a target zone located thousands of feet sideways from the surface location. This operation, called directional drilling, has been used and has evolved to the state of the art it is today during the last 80 years. However, in the last 20 years, the technical ability to reach remote targets has increased dramatically. The act of "bending" a well out of the vertical axis typically begins after vertical drilling has progressed several hundred feet beneath the surface. It is not uncommon to begin to deviate from vertical at a depth of about 600 feet and still reach a target formation located at a depth of 4,000 feet, but also almost 4,000 to 6,000 feet sideways from the surface spot location. This system would be used on virtually all of the wells drilled for the proposed project.

When the well reaches total depth (TD), drilling operations are halted and the drill pipe is removed from the well. A specialty company is then employed to lower a logging tool into the well on an electrically conducting wire cable. The logging tool is slowly reeled back to surface, recording petrophysical data of the formations that have previously been drilled. The data retrieved from the logging tools will significantly help determine whether the well is a producer or a dry hole. When all the data are compiled (geologic interpretation, electric log data, etc.) and the well looks like it would produce oil, the decision is made to run production casing and complete the well as an oil well. They need tables on a per well basis.

Completing the Well

Production casing is smaller than the surface casing, and is run inside it and down through the well bore to total depth. Production casing for the proposed project is planned to be 7-inch in diameter. When the casing is lowered to the bottom of the well and is "landed" at TD, the cementing process is again implemented. Once again, dry cement is mixed and pumped down the 7-inch casing as a liquid slurry, and this cement would once again be circulated all the way to the surface of the ground. It should be noted that the fresh water aquifers and surface formations are now isolated from the oil production operation by two strings of steel casing and two cement sheaths on the outside of those casings. The rock very near (less than 80 feet) the surface is protected by three casings and cement sheaths (conductor, surface casing, and production casing).

Once the cement has been allowed to fully harden, another electric logging tool, called a cement bond log, is lowered to the bottom of the well to evaluate the completeness and effectiveness of the cement on the outside of the production casing. Once the cement quality has been verified, the final step in completion can be started.

The following is a summary listing of the possible and most probable completion methods that could be employed for the petroleum producing wells at proposed project site. The information is not organized in any particular order, but all methods listed should encompass all likely completion methods. The final, optimal completion method used may not be determined until after completing and producing two-to-three producers.

Slotted-Liner Completion

A "casing point" is determined at or near the top of the completion interval after examination of the open-hole log. "Surface" casing is run into the open-hole to the top of the productive interval. The casing is then cemented in place by pumping cement in the casing-formation annulus from the bottom of the surface casing to surface level. The well is then under-reamed (drilled hole larger than casing above) slightly to provide a "clean" formation face from the casing shoe to total depth. A slotted-liner is then run in to the open-hole and "hung" in the surface casing near the surface casing bottom.

Gravel-Packed/Slotted-Liner Completion

This completion method is identical to the "slotted-liner completion" except for a larger under-reamer (4-8 inches larger than the diameter of the surface casing) is employed to provide greater annular space so that a gravel-pack of a uniform grain-size can be placed in the annular space to provide "sand control" and optimize production inflow while minimizing production of formation sand.

Cemented Casing with Selective Perforations

In this completion method, casing is run into the open-hole from total depth to the surface and cemented in place in the casing-formation annulus. Petroleum productive intervals are determined and the casing selectively perforated with wireline casing-tool which shoot shape-charged jets (no projectile is used) that penetrate the cemented casing out into the producing formation at pre-determined depths.

This completion method allows the flexibility to avoid water-wet or other non-petroleum productive intervals that could reduce economic recovery of petroleum reserves.

High Rate Gravel Pack

In unconsolidated sand formations that require sand-control and selective completion intervals to avoid non-petroleum productive intervals, this completion method can prove highly successful. In this completion method, a selective interval is perforated as previously described in the "Cemented Casing with Selective Perforations" case, but after perforating, a relatively small amount of uniform grain-size sand and water is pumped into the formation at a pressure that slightly exceeds the fracture gradient of the productive formation. The depth of sand penetration into the formation is minimal usually in the three to ten foot radius range. After the sand is displaced into the formation, the pressure is released in a controlled manner so that the sand is held in place. This method can greatly reduce the infiltration of reservoir sand into the wellbore. The industry term "Frac-Pac" is often used to describe this method and should not be confused with conventional hydraulic fracturing. Unlike conventional hydraulic fracturing, the process of High Rate Gravel Pack is not intended to fracture the

formation in order to increase the permeability of producing formation, but rather is a method of placing sand and gravel in the well annulus so as to limit the entry of formation sands into the wellbore. Injection rates used in the High Rate Gravel Pack method are much lower than in the conventional hydraulic fracturing methods.

Summary

These are the completion methods that are most likely to be employed for the proposed project. Final determination of which method of completion will be used will depend on the information derived and results from the drilling and testing of the initial producing wells.

During well completion, it is sometimes necessary to stimulate the producing zone to improve the permeability of the oil rock and increase the flow of oil into the well casing. This may be accomplished by the use of a perforation washing tool that individually breaks down and cleans out each perforation, or occasionally by the use of acid to dissolve some of the particles blocking the flow path of the oil in the formation. Such a treatment usually improves the flow of oil into the casing.

Drilling Materials Used

The following is a list of material that would be used during drilling operations. The amounts listed are the estimated quantities consumed per well drilled. These materials are packaged by the manufacturer for shipping and would be delivered to the job site by conventional delivery or flatbed trucks. Only trained personnel would handle these materials.

All of the products are generically listed on the California Department of Health Services approved Drilling Mud Additives Lists. In these concentrations, the drilling fluid is categorized as a non-hazardous material.

Name	Material	Container	Amount per Well
Gel	Wyoming Bentonite	100-pound sack	525 sacks
DMA	Sodium Polyacrylate	50-pound sack	82 sacks
Benex	Anionic Acrylamide	2-pound sack	75 sacks
GEOZan	Xanthan Gum	25-pound sack	40 sacks
Omniopol	Sodium Polyacrylate	Liquid	380 gallons
CFR	Fatty Acid	Liquid	600 gallons
Bicarb	Sodium Bicarbonate	50-pound sack	40 sacks
Citric Acid	Citric Acid	50-pound sack	11 sacks
Walnut	Walnut Hulls	50-pound sack	48 sacks
Cement	Cement	Bulk-Truck	3 bulk trucks

In addition, hydraulic oil, lubricating oils, and cleaning solvents would be stored and used during the drilling operations. The following table lists the estimated quantities used and stored on site.

Name	Consumption	Storage
Hydraulic Oil	nil	900 gallons - drill rig
Lubricating Oils	10 gallons per day	55-gallon drum
Miscellaneous Oils and Solvents	Varies	5-gallon drums & 1-gallon containers

ATTACHMENT D
E&B OIL DEVELOPMENT PROJECT
INFORMATION ON THE PRODUCTION PROCESS

INTRODUCTION

The proposed project provides for the development of an onshore drilling and production site that would utilize directional drilling to access the oil and gas reserves in the tidelands and in an onshore area know as the uplands. Both of these areas are located in the potion of the Torrance Oil Field that is within the jurisdiction of the City of Hermosa Beach (City). The proposed project would utilize the latest technology and operational advancements related to safety and efficiency in order to provide an oil development project that would be accomplished safely and in an environmentally sensitive manner.

The production process would occur during two phases of the proposed project: Phase 2: Drilling and Testing; and Phase 4: Development and Operation. The following provides information on the production process for each of these phases. In addition, during both Phases 2 and 4, there is the potential to encounter hydrogen sulfide (H_2S) in the gas produced from the underlying oil reservoir. A discussion of H_2S and, if encountered, how it would be addressed by the production process is provided further below.

PHASE 2: DRILLING AND TESTING

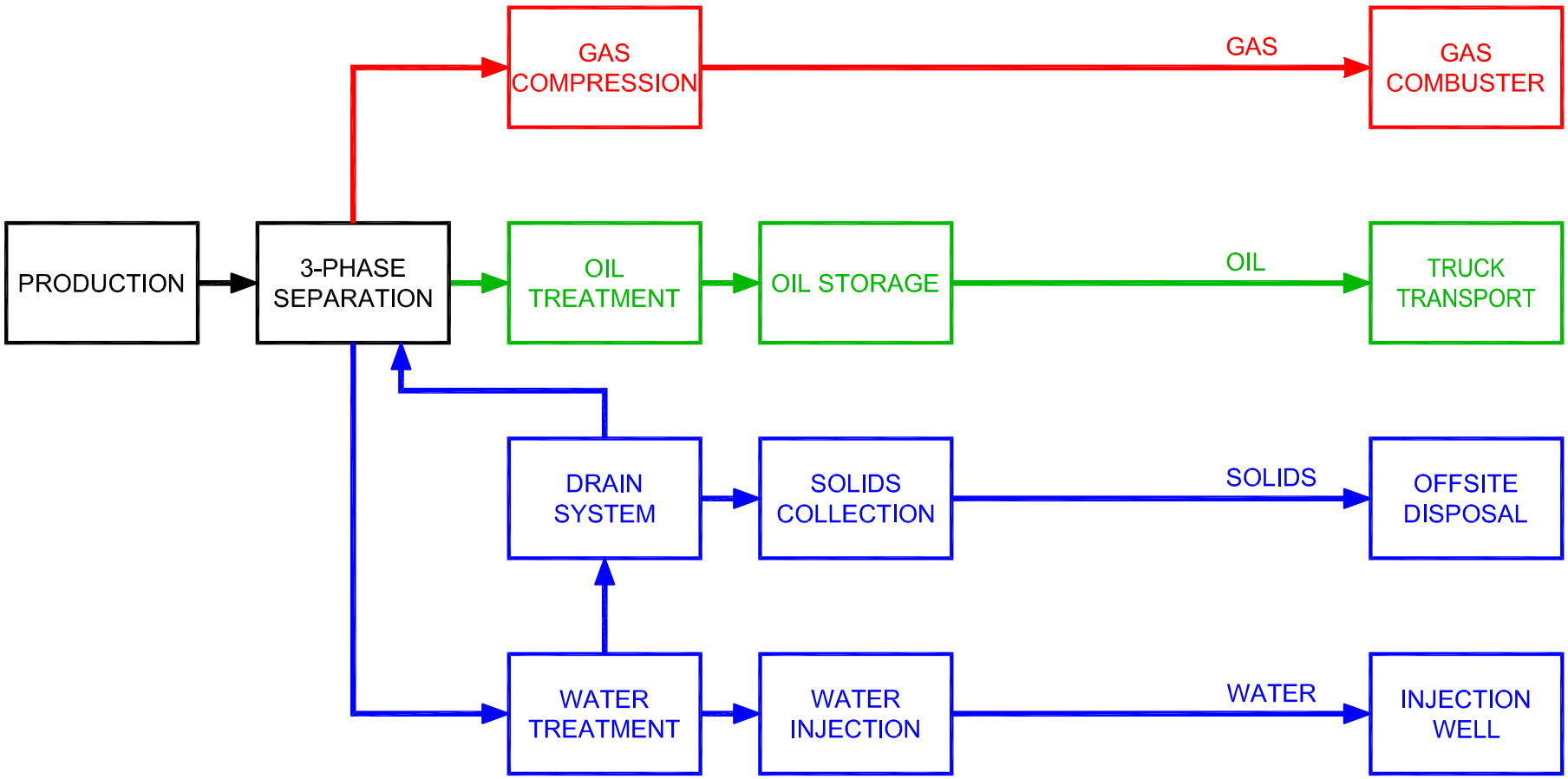
The purpose of Phase 2 would be to conduct the drilling and testing of wells in order to determine the potential productivity and economic viability of the proposed project. During this phase, up to three test wells and one water disposal/injection well would be drilled and the production process would occur through the use of a temporary production facility installed on the project site. The following describes the production process that would occur in Phase 2 of the proposed project.

Description of the Oil, Water, and Gas Production

The temporary production facility would be utilized on the project site to separate and treat oil, gas, and water. The separation and treatment of these fluids allows the oil to be sold and the processed produced water to be reinjected into the oil-producing reservoir below the oil water contact line. In this phase, the gas would be combusted onsite. Figure D-1 provides in general terms an illustration (or Block Flow Diagram) of the flow of fluids through the temporary production facility. The following describes the steps of production and operational characteristics in Phase 2.

Fluids Piped from the Wellhead to the Production Facility

Once a well is drilled and completed, the fluids would be piped to the temporary production facility. Typically the fluids (oil, gas, and water mixture) would be referred to as an emulsion. This emulsion would be sent via pipes to a production header. After the production header, the total emulsion from all of the wells would be commingled in a gross line before entering a three-phase separator. There is also a test header that allows the



Source: E&B Natural Resources Management Corp.

E&B Natural Resources
www.EBNR-Hermosa.com

E&B Oil Development Project

Figure D-1
Phase 2: Drilling and Testing General Block Flow Diagram

diversion of the emulsion from a single well through a well test station. The well test station allows the testing of the well quality and flow characteristics. Once the emulsion passes through the well test station, it would be directed back to the gross line where it would be commingled back with the emulsion from the production header and then enter the three-phase separator.

The three-phase separator separates the oil, gas, and water. The gas exits the top of the separator, the oil exits the middle, and the water exits the bottom of the separator. Each one of these fluids enters a specific system of treatment as discussed below.

Oil Treatment System
When the oil leaves the three-phase separator, it would enter a series of stock tanks. Once the oil is processed to a standard suitable for sale, the oil from the stock tank would be loaded into a tanker truck and transported to the purchaser. If the oil needed to be further processed to remove excess water, the tanks would be used. The water removed from the oil and water mixture would be sent back to the three-phase separator through a drain system.

Gas Treatment System
When the gas leaves the three-phase separator, it would be sent directly to a compressor and then to a gas combustor for disposal.

Water Treatment System
When the water leaves the three-phase separator, it would be pumped into the induced gas flotation unit. From the induced gas flotation unit, the water would pass through a filter unit. The primary objective of both units, would be to clean the water of oil and solids such as sand. When the water has left the filter unit, it would enter a water surge tank. From the water surge tank, the water flows through pumps and then would be sent to the water injection well for reinjection below the oil water contact in the oil-producing reservoir.

Operational Characteristics of the Production Process

The following provides information on the operational characteristics of the temporary production equipment in Phase 2:

Hours of Operation: The temporary production equipment would operate 24 hours a day, seven days per week. The project site would be manned 24 hours a day, seven days per week.

Characteristics of the Oil: Gravity °API 18.4, Viscosity cP @ 100 °F 24.0, Viscosity cP @ 130 °F 14.6, Temperature °F 100.

Characteristics of Gas: Gas (Mole %) is Water 7.06, Carbon Dioxide 4.50, Methane 86.34, Ethane 1.86, Propane 0.08, i-Butane 0.05, n-Butane 0.03, i-Pentane 0.02, n-Pentane 0.00, Hexane+ 0.06, Hydrogen Sulfide ppm 15.00, Inlet Temperature °F 100, Inlet Pressure psig 50.

Vapor Recovery System: Gas from all vessels and tanks would be directed to the vapor recovery compressor unit and then sent to the gas combustor for disposal.

Drain System: All equipment will be connected to a drain system that would be directed to the drain tank. Liquids from the drain tank would be sent back to the three-phase separator for reprocessing. Solids from the drain system may periodically be removed offsite to an approved disposal facility.

Waste: Waste would be generated as part of the production process. Regular waste would include typical municipal trash such paper, trash bags, food, and cups. Other less typical waste would include generic oil field waste such as sandy oil (from the tank bottoms), oily rags, spent filters, oily cloths such as gloves and tyvac suits. Intermittently the facility could generate hazardous waste. However, this would not be a substantial amount and the proposed project, because of the limited volume of the hazardous wastes, would be categorized as a small quantity generator under the Department of Toxics Substances Control (DTSC) guidelines. These wastes could include empty drums, rinsate, chemicals, spent media, and hydraulic fluids. The project site would have an Environmental Protection Agency (EPA) and DTSC Identification Number. All hazardous waste would be stored, handled, manifested, transported, and disposed of according to local, federal, and state laws.

Chemicals: The operation would require the use of chemicals. The chemicals would be: stored onsite in approved containers and secondary containment; handled consistent with the Materials Safety Data Sheet (MSDS); and used according to the manufactures recommendations. The chemicals would be documented in a required Hazardous Materials Business Plan and submitted to the appropriate Certified Unified Program Agency (CUPA). Typical chemicals utilized in the temporary production facility would include, but not be limited to the following:

Common Name	Trade Name	Maximum Quantity (Gallons)
Emulsion Breaker	Phasetreat 6378	60
Water Clarifier	Floctreat 7991	40
Emulsion Breaker	Waxtreat 3610	50
Corrosion Inhibiter	Cor7182	400
Surface Cleaner	4U	165
Scale Dissolver	Techni Solve 1780	55
Scale Inhibitor	Techni Hib 7621	120

Closed Loop System and Plant Safety Systems: The proposed project has been designed to be a closed-loop system. A closed-loop system is a design criterion that does not allow for the venting or emitting of fluids into the atmosphere as part of the operation of the facility. A sophisticated computerized safety system would closely monitor the closed loop system providing early warnings, corrective actions, and shutdowns, if necessary, to address any events that would be encountered. Corrective actions would be provided by a series of safety devices installed within the piping, vessels, and tanks along the entire system from where the oil and gas comes out of the ground into the processing system. In addition, redundancy would be built into the system to provide an extra level of protection, ensuring there would be a backup for each safety device. Each device would be strategically placed to provide early warning, corrective action, or shut down of a specific segment of the system or the

entire facility, if necessary. All safety devices would be tested on a regular basis by qualified operators and audited by the regulatory agencies. Appendix B to the Planning Application provides a detailed discussion of the safety and control systems provided as a part of the proposed project.

PHASE 4: DEVELOPMENT AND OPERATION

The purpose of Phase 4 would be to maximize oil and gas recovery from the reservoirs by drilling additional wells and activating the permanent facility. To accomplish this, Phase 4 would result in: the drilling of the remaining wells (for a total of 30 oil and gas wells and four water disposal/injection wells); the start up and operation of the permanent oil production equipment; the transport of the crude oil and natural gas by pipeline to their respective destinations; and the ongoing maintenance of the proposed project. The proposed project would be designed for a maximum capacity of 8,000 barrels of oil per day natural gas and 2.5 million cubic feet of gas per day. The following describes the production process that would occur in Phase 4 of the proposed project.

Description of Oil, Water, and Gas Production Description

The permanent production facility would be utilized to separate and treat the oil, gas and water. The separation and treatment of these fluids allows the oil and gas to be sold via pipeline and the water to be reinjected into the oil-producing reservoir below the oil water contact line. Figure D-2 provides in general terms an illustration (or Block Flow Diagram) of the flow of fluids through the permanent production facility. The following describes the steps of production and operational characteristics in Phase 4.

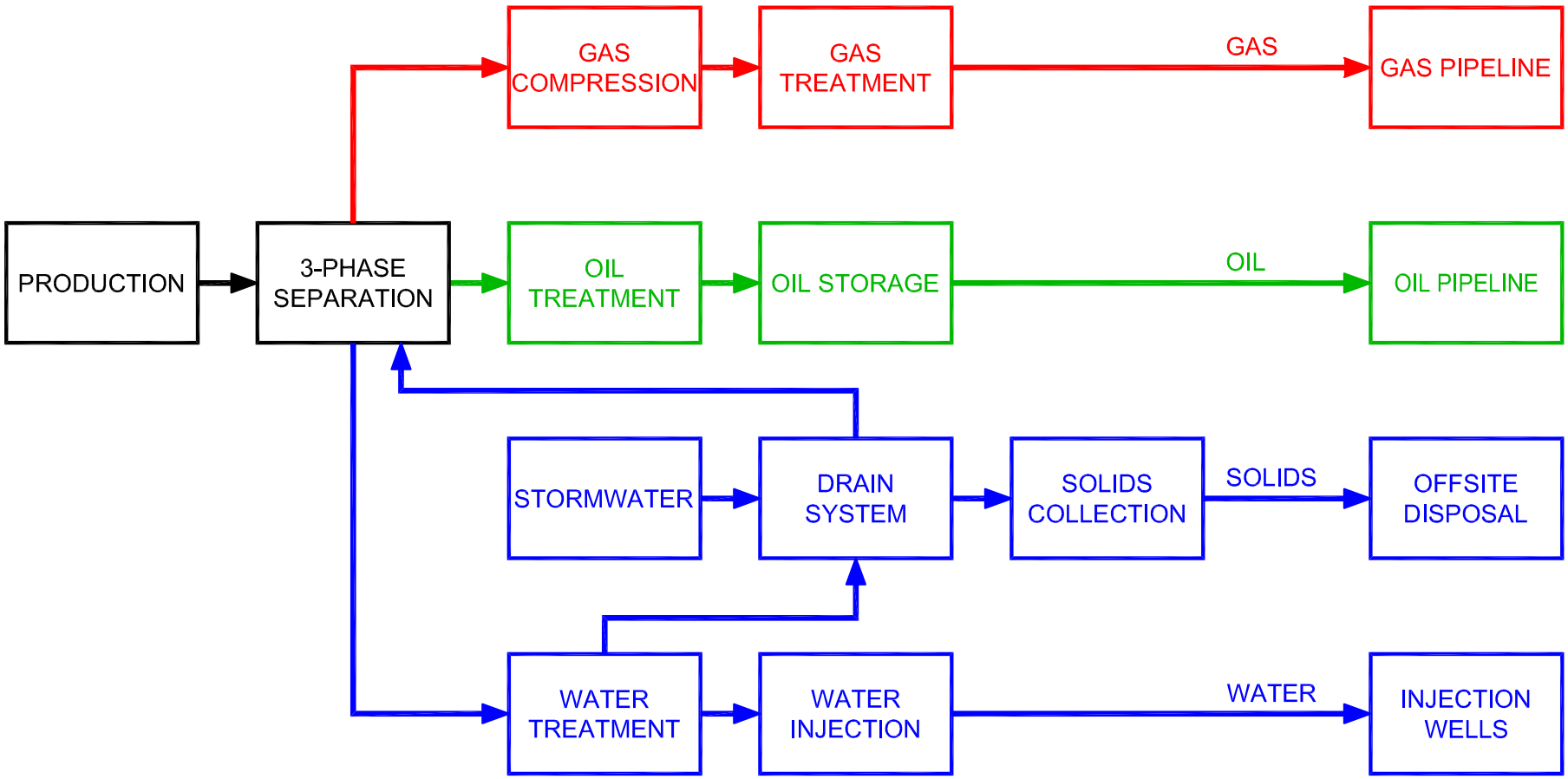
Fluids Piped from the Wellhead to the Production Facility

Once a well is drilled and completed, the fluids would be piped to the permanent production facility. Typically the fluids (oil, gas, and water mixture) would be referred to as an emulsion. This emulsion would be sent via pipes to a production header. After it reaches the production header, the total emulsion from all wells would be commingled in a gross line before entering a three-phase separator. There is also a test header that allows the diversion of emulsions from a single well through a well test station. The well test station allows the testing of the well quality and flow characteristics. Once the emulsion passes through the well test station, it would be directed back to the gross line where it would be commingled back with the emulsion from the production header and then enter the three-phase separator.

The three-phase separator separates the oil, gas, and water. The gas exits the top of the separator, the oil exits the middle, and the water exits the bottom of the separator. Each one of these fluids enters a specific system of treatment as discussed below.

Oil Treatment System

When the oil leaves the three-phase separator, it would potentially enter the stock tank where it may need to be heated. The heating would allow excess water to drop from the oil. From



Source: E&B Natural Resources Management Corp.

E&B Natural Resources
www.EBNR-Hermosa.com

E&B Oil Development Project

Figure D-2
Phase 4: Development and Operations General Block Flow Diagram

the stock tanks, the oil would be measured using a Lease Automated Custody Transfer Unit (LACT) and shipped via pipeline to the purchaser.

Gas Treatment System
During this phase, gas would be sold via a pipeline to the Southern California Gas Company (SCG). To accomplish this, further treatment of the gas would be required to meet the gas pipeline specifications. Once the gas leaves the three-phase separator, it would be sent directly to the first stage compressor. The first stage compressor would increase the pressure of the gas for treatment. The first stage of gas treatment is the SulfaScrub system. This system utilizes a non-hazardous material to remove hydrogen sulfide (H_sS) from the gas, should it be present. From the SulfaScrub system, the gas would be sent through the amine system. This amine system removes carbon dioxide (CO_2) from the gas. From the amine system, the gas passes through the second stage compressor where the pressure is increased prior to entering the low temperature separation system. The low temperature separation system removes any remaining moisture (mostly water) from the gas prior to sales. Before the gas leaves the project site, it would be odorized using a substance called (mercaptan or equivalent) as required by law. The gas is sent via pipeline through a metering station to an existing SCG pipeline located near the corner of Herondo Avenue and N. Francisca Drive to the south of the project site.

Water Treatment System
When the water leaves the three-phase separator it would be sent to the clarifier tank. This tank would allow solids in the water to drop out. From the clarifier tank, the water would enter the induced gas flotation unit. From the induced gas flotation unit, the water would pass through the filter unit. The primary objective of both units would be to clean the water of oil and solids such as sand. When the water has left the filter units, it would enter the water surge tanks. From the water surge tank, the water flows through pumps and then would be sent to the injection wells for reinjection below the oil water contact in the oil-producing reservoir.

Operational Characteristics of the Production Process

The following provides information on the operational characteristics of the production equipment in Phase 4:

Hours of Operation: The permanent production equipment would operate 24 hours a day, seven days per week. The project site would be manned 24 hours a day, seven days per week.

Characteristics of the Oil: Gravity °API 18.4, Viscosity cP @ 100 °F 24.0, Viscosity cP @ 130 °F 14.6, Temperature °F 100.

Characteristics of Gas: Gas (Mole %) is Water 7.06, Carbon Dioxide 4.50, Methane 86.34, Ethane 1.86, Propane 0.08, i-Butane 0.05, n-Butane 0.03, i-Pentane 0.02, n-Pentane 0.00, Hexane+ 0.06, Hydrogen Sulfide ppm 15.00, Inlet Temperature °F 100, Inlet Pressure psig 50.

Vapor Recovery System: Gas from all vessels and tanks would be directed to the vapor recovery compressor unit, combined with the gas from the three-phase separator, processed, and then sent via pipeline to metering station and connected to a SCG facility.

Drain System: All equipment will be connected to a drain system that would be directed to the drain tank. Liquids from the drain tank would be sent back to the three-phase separator for reprocessing. Solids from the drain system may periodically be removed offsite to an approved disposal facility.

Waste: Waste would be generated as part of the production process. Regular waste would include typical municipal trash such paper, trash bags, food, and cups. Other less typical waste would include generic oil field waste such as sandy oil (from the tank bottoms), oily rags, H_2S scavenger, spent filters, oily cloths such as gloves and tyvac suits. Intermittently the facility could generate hazardous waste. However, this would not be a substantial amount and the proposed project would be categorized as a small quantity generator under the Department of Toxics Substances Control (DTSC) guidelines. These wastes could include empty drums, rinsate, painting supplies, spilled chemicals, spent media, and hydraulic fluids. The project site would have an Environmental Protection Agency (EPA) and DTSC Identification Number. All hazardous waste would be stored, handled, manifested, transported, and disposed of according to local, federal, and state laws.

Chemicals: The operation would require the use of chemicals. The chemicals would be: stored onsite in approved containers and secondary containment; handled consistent with the Materials Safety Data Sheet (MSDS); and used according to the manufactures recommendations. The chemicals would be documented in a required Hazardous Materials Business Plan and submitted to the appropriate Certified Unified Program Agency (CUPA). Typical chemicals utilized in the permanent production facility would include, but not be limited to the following:

Chemical Common Name	Trade Name	Maximum Quantity (Gallons)
Odorant	Mercaptan	20
Hydrogen Sulfide Scavenger	Pertrosweet HSE700	9,000
Emulsion Breaker	Phasetreat 6378	60
Water Clarifier	Floctreat 7991	40
Emulsion Breaker	Waxtreat 3610	50
Corrosion Inhibiter	Cor7182	400
Surface Cleaner	4U	165
Scale Dissolver	Techni Solve 1780	55
Scale Inhibitor	Techni Hib 7621	120
Glycol	TEG	55
Amine	DEA	110
Methanol	Methanol	55

Closed Loop System and Plant Safety Systems: The proposed project has been designed to be a closed-loop system. A closed-loop system is a design criterion that does not allow for

the venting or emitting of fluids into the atmosphere as part of the operation of the facility. A sophisticated computerized safety system would closely monitor the closed loop system providing early warnings, corrective actions, and shutdowns, if necessary, to address any events that would be encountered. Corrective actions would be provided by a series of safety devices installed within the piping, vessels, and tanks along the entire system from where the oil and gas comes out of the ground into the processing system. In addition, redundancy would be built into the system to provide an extra level of protection, ensuring there would be a backup for each safety device. Each device would be strategically placed to provide early warning, corrective action, or shut down of a specific segment of the system or the entire facility, if necessary. All safety devices would be tested on a regular basis by qualified operators and audited by the regulatory agencies. Appendix B to the Planning Application provides a detailed discussion of the safety and control systems provided as a part of the proposed project.

HYDROGEN SULFIDE DURING THE PRODUCTION PROCESS

Available data indicates that low levels of potential "native" hydrogen sulfide (H_2S), in the order of 0.0 to 6.0 parts per million (ppm), may be encountered in the gas produced from the underlying oil reservoir. In order to have the capability to treat higher levels, the proposed project has been planned to treat H_2S levels of 15 ppm and has a maximum design capacity to treat H_2S levels of up to 100 ppm. If needed, after treatment, the H_2S levels of the gas would be 0.0 to 4.0 ppm. In addition, the produced gas from the proposed project would be transported via pipeline from the project site to a metering station and subsequently a SCG transmission line. SCG's specifications limit the H_2S concentrations in gas from a producer to less than 4.0 ppm. To address this, if needed, the proposed project would provide for the treatment of H_2S to meet this specification.

As discussed above, the proposed project has been designed to be a closed-loop system and the potential H_2S encountered as part of the proposed project would be considered to be "in pipe" and not "in air" concentrations. A closed-loop system is a design criterion that does not allow for the venting or emitting of fluids into the atmosphere as part of the operation of the facility. A sophisticated computerized safety system would closely monitor the closed loop system providing early warnings, corrective actions, and shutdowns, if necessary, to address any events that would be encountered. "In pipe" corrective actions would be provided by a series of safety devices installed within the piping, vessels, and tanks along the entire system from where the oil and gas comes out of the ground into the processing system. In addition, redundancy would be built into the system to provide an extra level of protection, ensuring there would be a backup for each safety device. Each device would be strategically placed to provide early warning, corrective action, or shut down of a specific segment of the system or the entire facility, if necessary. All safety devices would be tested on a regular basis by qualified operators and audited by the regulatory agencies. Highly trained operators would be onsite 24 hours per day, seven days per week, to monitor all aspects of the proposed project operations. Appendix B to the Planning Application provides a detailed discussion of the safety and control systems provided as a part of the proposed project.

An accidental release would be the only way that H_2S would be considered "in air" or released into the surrounding atmosphere. An accidental release of H_2S would be an

extremely rare occurrence for this type of closed-loop system. Furthermore, the system would be designed so that, in the event that an accidental release did occurred, the volume of the release would be minimized. This limited volume of gas, along with the dilution that would occur because of the mixing with the air, would immediately reduce the concentration of the H_2S. Appendix I to the Planning Application provides a detailed discussion of the potential risks related to H_2S.

In addition, the proposed project provides for the reinjection of produced water from the drilling and production process back into the oil reservoir using water injection wells. Untreated produced water can introduce sulfur-reducing bacteria, resulting in the creation of H_2S concentrations above the existing levels in the oil reservoir (referred to as the "native" condition). To eliminate the potential contamination of the "native" condition of the oil reservoir, the proposed project would be designed to adequately treat the produced water prior to reinjection. This would prevent the creation of H_2S levels above "native" levels as a result of the reinjection of the produced water from the proposed project.

ATTACHMENT E
E&B OIL DEVELOPMENT PROJECT
OIL AND GAS PIPELINE CONSTRUCTION AND OPERATION

INTRODUCTION

The proposed project provides for the development of an onshore drilling and production site that would utilize directional drilling to access the oil and gas reserves in the tidelands and in an onshore area know as the uplands. Both of these areas are located in the potion of the Torrance Oil Field that is within the jurisdiction of the City of Hermosa Beach (City). The proposed project would utilize the latest technology and operational advancements related to safety and efficiency in order to provide an oil development project that would be accomplished safely and in an environmentally sensitive manner.

In Phase 3: Final Design and Construction of the proposed project, an offsite gas pipeline (designed to handle approximately 2.5 million cubic feet per day) and an offsite oil pipeline (designed to handle approximately 8,000 barrels per day) would be construction as a part of the proposed project. The following provides information on the proposed oil and gas pipeline characteristics and alignments.

Offsite Gas Pipeline

An offsite underground pipeline for the transport of gas would be constructed for a distance of 0.43 mile in the right-of-way (ROW) of southbound Valley Drive (which is one-way starting at 2nd Street) in the City of Hermosa Beach to a tie in to a Southern California Gas Company (SCG) gas line in the Southern California Edison (SCE) Utility Corridor east of N. Francisca Avenue in the City of Redondo Beach. Figure 4A in the Project Description provides the conceptual alignment of the proposed offsite underground gas pipeline. The gas pipeline would consist of two parallel pipelines, four inches in diameter, and located at a depth of approximately 3.5 to 4 feet below ground surface (bgs) within the road ROW until it ties into the SCG line at a proposed metering station immediately to the east of N. Francisca Avenue. The pipeline would be a loop system that allows for the gas to be returned to the project site for further treatment in the event that the produced gas did not meet SCG standards. The metering station site, which would be provided as a part of the proposed project, would be approximately 40 by 60 feet in size and surrounded by an 8-foot high block wall.

Offsite Oil Pipeline

An offsite underground pipeline for the transport of oil to a valve box location in the City of Torrance would to be constructed for a maximum distance of approximately 3.55 miles in one of three potential pipeline scenarios that would traverse through the Cities of Hermosa Beach, Redondo Beach, and Torrance. The pipeline would be eight inches or less in diameter, located at a depth of approximately 3.5 to 4 feet bgs depending on the grade. At one of four potential valve box locations, the pipeline would tie-in to an existing pipeline that transports oil to a refinery. Figures 4A, 4B, and 4C in the Project Description provide the

conceptual alignments of the three oil pipeline scenarios, the four valve box location options, the respective jurisdictional boundaries, and the adjacent land uses.

CONSTRUCTION AND OPERATION

The gas and oil pipelines would be installed utilizing conventional trenching methods within either one trench or two separate trenches within the roadway right of way (ROW). The construction and installation process would occur in stages consisting of approximately 237 feet each. Two stages would be constructed per day (a segment of 237 feet would new construction and another 237 feet would be the completion of the construction from the previous day). With the addition of approximately 126 feet for lane transitions and safety cones, a total of approximately 600 linear feet of roadway would be affected per day.

A construction spread would be used to accomplish most aspects of the gas and oil pipeline construction along the alignments discussed above. A construction spread is a group of construction equipment that would move along the pipeline route, sequentially removing asphalt roadway, trenching, laying pipe, filling, re-paving, and cleaning up. A pipeline construction spread of several units would be organized to proceed with the work in the following order:

- Pre-construction activities
- Asphalt removal and ditching or right of way grubbing and ditching
- Pipe handling/welding
- Pipe coating
- Pipe lowering, backfilling, and street repair
- Pipe testing and inspection
- Metering, pigging, odorant station installation

If the oil pipeline can be laid within the SCE Utility Corridor, a construction spread similar in arrangement, but smaller, would be used since the alignment would not have asphalt. In addition, if it is determined that existing sleeves under streets crossing the SCE Utility Easement exist, trenching across some streets may not need to occur.

The following describes the activities that would occur for the construction and ongoing operation of the pipelines.

Pre-Construction Activity

The pipeline alignment ROW would include roadways and/or land in existing paved streets and unpaved property, potentially including private property. Approval to construct and operate a pipeline would be obtained or authorized by franchise agreements or permits from the agency with jurisdiction over the roadways and, if needed, from affected property owners. After a pipeline ROW is obtained and the proposed project is permitted, typical conditions of approval would require that: the contractor coordinate with the affected agencies regarding the construction activities and any roadway closures; landowners,

permittees, and business owners along the pipeline ROW be notified in advance of construction activities that could affect their business or operations; and notification be made by various means, including signs at road crossings or detours prior to construction. Directly affected businesses and residents would be given ample notice and information to plan alternative ingress and egress routes. In addition, emergency response providers near the proposed route would be notified prior to construction of construction locations, road closure schedules, and potential alternate routes.

The construction requirements in the Cities of Hermosa Beach, Redondo Beach, and Torrance allow for the construction on major roadways during the following weekday hours:

- Hermosa Beach: 8:00 a.m. to 6:00 p.m. on weekdays; and 9:00 a.m. to 5:00 p.m. on Saturday. No construction on Sundays and holidays.
- Redondo Beach: 9:00 a.m. to 3:00 p.m. on weekdays. No construction on weekends and holidays.
- Torrance: 8:30 a.m. to 3:30 p.m. on weekdays. No construction on weekends and holidays.

To minimize impacts on the adjacent streets, the pipeline construction activities would generally occur on weekdays between the hours of 9:00 a.m. and 4:00 p.m., which is outside of the peak commute hours on the affected roadways (7:00 a.m. to 9:00 a.m., and 4:00 p.m. to 6:00 p.m.). There would be no construction activities during the weekends and holidays.

The implementation of a Construction Traffic Management Plan (CTMP) would mitigate the temporary impacts of construction along the 600-foot segments of pipeline installation. The CTMP is discussed in detail in the Mitigation Measures section of the Traffic Impact Analysis in Appendix M to the Planning Application. The CMTP would:

- Require the pipeline contractor(s) to obtain and follow Street Construction Permits in the affected Cities of Hermosa Beach, Redondo Beach, Torrance, and Caltrans facilities (PCH and Hawthorne Boulevard).
- Develop detour and traffic management plans consistent with the affected City's Standard Roadway Plans (e.g., Torrance Street Standard T603), the *California Manual of Uniform Traffic Control Devices* (MUTCD), or the *Work Area Traffic Control Handbook* (WATCH).
- Revise pipeline construction segments to minimize access impacts to adjacent residents and businesses.
- Develop truck route plans to minimize impact on the street network during peak traffic commute hours.
- Avoid construction-related traffic to occur during peak travel periods.
- Implementation of staggered construction worker shifts to minimize project traffic during the peak hours.

Underground Service Alert would notify service providers of construction to avoid conflicts with existing utilities and disruptions of service to utility customers. Since construction

would occur in either paved streets or an existing utility corridor, extensive grading is not proposed.

Asphalt Removal and Ditching

Once traffic control measures are in place, ditching operations would begin. Typically, a five-foot deep and 18- to 24-inch wide ditch (single pipe) or 36-inch wide ditch (double-pipes) would be excavated (varying depths, depending on the conditions encountered). Backhoes and track hoes would excavate the ditch. However, hand digging would be necessary to locate buried utilities, such as other pipelines, cables, water mains, and sewers. Fugitive dust emissions at the construction site during earthmoving operations would be controlled by water trucks equipped with fine-spray nozzles.

Spoils from cuts, including cuts in the streets, would be saved for backfill or would be removed and the ditch would be backfilled with slurry material as approved by the local jurisdictional agency. An effort would be made to minimize the amount of excess material. Material unsuitable for backfill and not economically useful for other purposes at the pipeline location would be disposed of at a landfill according to local jurisdictional guidelines. When used for backfill, the spoils from the trenches would be hauled to previously disturbed sites, as determined by the construction contractor.

Pipe Handling

Special trucks handling large spools of gas piping and pipe-stringing trucks would transport the pipe in 40- to 80-foot lengths from the shipment point or storage yard to the pipeline installation point. Where sufficient room exists, trucks would carry the pipe along the roadway and sideboom tractors would unload the joints of pipe from the stringing trucks and lay them end to end beside the ditch-line for future line-up and welding.

A portable bending machine would bend the pipe to fit the ditch contour both vertically and horizontally. Construction ROW conditions could occasionally required pipe bends that could not be accomplished in the field. In these cases, manufactured or shop-made bends would be used and pipe would be bent prior to the application of coating. While laying the pipe, line-up clamps would hold the pipe sections in position until approximately 50 percent of the first welding pass is completed. Following the line-up crew, the welding crew would apply the remaining weld passes to comply with API 1104, ASME B31.4, or ASME 31.8. All pipeline welds would be radiographically inspected.

Pipe Coating

Protecting the pipe from moisture and air helps prevent corrosion, thereby preventing cracks, breaks, and leaks in the pipe. The steel pipeline would be coated externally with fusion-bond epoxy or a corrosion resistant tape wrap system. Pipeline coating would be applied at the mill before delivery to the construction site. However, field coating would be necessary on all field weld joints to provide a continuous coating along the pipeline. After the pipe has been welded and radiographically inspected, either a two-part epoxy, heat-shrink polyethylene sleeves or polyethylene tape and tape primer would be applied.

Pipe Lowering, Backfilling, and Street Repair

The pipe would be lifted and lowered into the ditch by one or two sideboom tractors spaced so that the weight of unsupported pipe would not cause mechanical damage. Cradles with rubber rollers or padded slings would allow the tractors to lower the pipe without damage as they travel along the ditch line. Additional welds could be required whenever the ditch line is obstructed by other utilities crossing the pipe ditch. These welds would typically be made in the ditch at the final elevation. In addition to normal welding and weld inspection, each weld would require pipe handling for line-up, cutting to exact length, coating, and backfilling.

Backfill material in roadways would most likely be slurry material or could be ditch spoils, according to local agency requirements. Slurry material would be delivered by concrete trucks and consist of sand and cement. Concrete trucks would be trucks from local commercial sources. The area would be repaved if it was previously an existing paved street. In areas where the pipeline would be in previously unpaved areas, the backfill would include topsoil preserved from the excavation for re-vegetation where needed.

At the time of backfilling, a colored warning tape would be buried approximately 12 to 18 inches above the pipeline to indicate the presence of a buried pipeline to third-party excavators. The backfilled earth would be compacted using a roller or hydraulic tamper. The trench would be filled with slurry where approved or required by local regulations. Steel plates would cover any open trench at the end of each workday.

Pipe Testing and Inspection

All field welding would be performed by qualified welders that meet the Applicant's specifications and in accordance with all applicable laws, ordinances, regulations, and standards, including API 1104, the Standard for Welding Pipe Lines and Related Facilities, and the rules and regulations of the U.S. Department of Transportation found in the Code of Federal Regulations.

All welds would be visually and radiographically inspected. All rejected welds would be repaired or replaced as necessary and radiographically inspected again. The radiographic reports and a record of the location of welds would be maintained for the life of the pipeline.

In addition to standard testing of all pipe and fittings at the mill, hydrostatic testing would be performed after construction and prior to startup. Federal regulations mandate hydrostatic testing of new, cathodically protected pipelines prior to placing the line into operation. This test involves filling a test section of the pipeline with fresh water and increasing pressure to a predetermined level. Such tests are designed to prove that the pipe, fittings, and weld sections would maintain mechanical integrity under pressure without failure or leakage.

Cathodic protection controls the corrosion of a metal surface by making it work as a cathode of an electrochemical cell. This is achieved by placing the cell in contact with the metal surface and another more easily corroded metal to act as the anode of the electrochemical cell. The cathodic protection system consists of power sources called rectifiers, buried anodes (either sacrificial or impressed current), and test stations along the pipelines.

Metering and Pigging Station Installation

A natural gas-metering station would be required for the gas pipeline at a location near where the new pipeline interconnects with the existing 16-inch SCG pipeline adjacent to N. Francisca Avenue to measure and record gas volumes and provide custody transfer of the gas to SCG. In addition to the metering station itself, a pigging station would be installed at the metering station and project site as required by SCG for the gas pipeline and at the tie-in point for the oil pipeline.

Operation and Maintenance

The gas line is designed for a maximum operating pressure of 740 pounds per square inch gauge (psig), but would typically operate at approximately 225 psig of pressure. The oil gas line would be designed for a maximum operating pressure of 1,480 psig, but would typically operate at approximately 400 to 700 psig of pressure. The purpose of the pigging station is to send and receive maintenance pigs into and from the pipelines to clean or inspect the pipelines during ongoing operations. This would occur for the lifetime of the proposed project.