2.0 Project Description

E&B Natural Resources Management Corporation (E&B), the Applicant, is proposing the E&B Oil Drilling & Development Project (Proposed Oil Project) on a 1.3-acre site located in the City of Hermosa Beach (City). The site for the Proposed Oil Project (Project Site), as shown in Figure 2.1, would be located at 555 6th Street, bounded on the east by Valley Drive and on the south by 6th Street, approximately seven blocks east of the beach and the Pacific Ocean. Oil and gas pipelines constructed and used by the Project would extend from the Project Site to area refineries. The Project Site is owned by the City and is currently used as the City (Public Works) Maintenance Yard. The Applicant has leased the Project Site from the City for the implementation of the Proposed Oil Project.

The Proposed Project is composed of two parts: 1) the relocation of the City Maintenance Yard (called the Proposed City Maintenance Yard Project); and 2) the development of an oil and gas facility on the current City Maintenance Yard site (called the Proposed Oil Project). In order to clear the current City Maintenance Yard site (called the Project Site) for the construction of the proposed oil and gas facility, the City Maintenance Yard would be temporarily relocated during Phase 1 of the Proposed Project . If it is determined that the production of oil and gas on the Project Site would be economically viable (Phase 2 of the Proposed Project), construction of the permanent City Maintenance Yard would be completed once Phase 3 of the Proposed Project begins. The permanent Proposed City Maintenance Yard Project has two options: a Parking Option, which would add a net 97 parking spaces with a below grade parking garage, and a No Added Parking Option, which would have the same amount of parking as is currently available.

This Project Description reflects information contained in the Project Application submitted to the City of Hermosa Beach by the Applicant, along with supporting information provided in conjunction with the Project Application (E&B Natural Resources, Planning Application and Appendices, Volumes 1 – 3, November 14, 2012; Response to Planning Application Completeness Review, April 11, 2013; Response to Requested Clarifications, June 24, 2013; Quantitative Risk Analysis, July 3, 2013; Errata, July 22, 2013).[1] Information related to the relocation of the City Maintenance Yard and construction and operation of the Proposed City Maintenance Yard is derived from information provided by the City of Hermosa Beach Public Works Department. The description of the Proposed Project incorporates the essential elements of the Project as it is proposed, including all phases and major components as well as the locations of all proposed offsite activities (in addition to those occurring on the Project Site). More detailed information related to some aspects of the Proposed Project (including proposed operational parameters and design features) may be

Directional Drilling
Drilling wells at multiple angles to better reach and produce oil and gas reserves. Directional drilling allows for multiple wells from the same drilling location.

[1] Information submitted by the Project Applicant is available for public review at the City of Hermosa Beach website, www.hermosabch.org (under 'Oil Production Project') and at the City of Hermosa Beach Community Development Department.

found within individual sections of this Draft Environmental Impact Report (EIR), where considered relevant to the discussion of specific environmental issues and/or effects. In addition, a description of the environmental setting and current conditions related to the environmental issues is presented in the Environmental Setting subsection of the individual sections of this EIR.

This section discusses the Project objectives, historical operations on the Proposed Project Sites, the four phases of the Proposed Oil Project, scheduling, vehicle trip and employee requirements, and necessary permitting associated with the Proposed Project. A number of technical drawings related to the Proposed Project design and layout are included in Appendix A to this Draft EIR.

2.1 Project Overview

The Applicant proposes the development of an onshore drilling and production facility site that would utilize directional drilling of 34 wells (30 oil, 4 four water injection) to access the oil and gas reserves in the tidelands (pursuant to a lease granted by the State of California to the City) and in an onshore area known as the uplands. Both of these areas are located within the Torrance Oil Field within the jurisdiction of the City. In addition, the Proposed Project would result in the installation of offsite underground pipelines for the transportation of the processed crude oil and gas from the Project Site to purchasers, extending through the Cities of Redondo Beach and Torrance. The Applicant proposes a laydown site for heavy equipment and supply staging/storage within the industrial building at 601 Cypress Avenue during the construction phases. The Applicant also proposes to construct a parking lot at 636 Cypress Avenue for use by some of its construction employees/contractors on weekdays and by the public at other times.

The City Maintenance Yard is proposed to be relocated to a temporary facility to be established on the rear (westerly) portion of the City Hall site (1315 Valley Drive) prior to and during the initial phase of the Proposed Oil Project so that the maintenance operations could be moved when the existing City Maintenance Yard is demolished as part of Proposed Oil Project activities. The construction of the permanent City Maintenance Yard would be undertaken on the site now occupied by the Hermosa Self-Storage (552 11th Place) after the Applicant completes the exploration phase of the Proposed Oil Project in Phase 2. As indicated below, the permanent City Maintenance Yard and the oil and gas facility on the Project Site would be constructed at the same time.

The timeframe from commencement of the Proposed Project until the permanent oil and gas facility would be operational is estimated to be approximately 3.25 years. The existing lease (Oil and Gas Lease No. 2) allowing drilling into the tidelands provides for a 35-year period.

Table 2.1 summarizes events in the Proposed Project timeline. Specifics of each of the Proposed Project components are described in the following sections.

Figure 2.1 Proposed Project Location

Source: Project Application, Amendments and Appendices

Table 2.1 Proposed Project Schedule Summary

Phase		Year 1				Year 2				Year 3				Year 4				Year 5				Year 6			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Temporary City Yard																									
Oil Project Phase 1																									
Oil Project Phase 2	Drill																								
	Test																								
Permanent City Yard																									
Oil Project Phase 3*																									
Oil Project Phase 4*	Drill																								
	Operate														Continuously for 30+ years										

Note: * If the test phase is determined to be successful, Phase 3 and 4 would occur. For construction only. Does not include permitting timeframe.

2.2 Proposed Project Objectives

Pursuant to Section 15124(b) of the California Environmental Quality Act (CEQA) Guidelines, the description of the Proposed Project is to contain "a clearly written statement of objectives" that would aid the lead agency in developing a reasonable range of alternatives to evaluate in the EIR and would aid decision makers in preparing findings and, if necessary, a statement of overriding considerations. The City is the lead agency which is preparing the EIR, and in this case the decision makers are the electorate of the City of Hermosa Beach

As part of the Project Application, the Applicant provided its stated objectives for the Proposed Oil Project, which consist of the following:

1. Develop the Proposed Oil Project consistent with the 1993 Conditional Use Permit and the March 2, 2012 Settlement Agreement, with the utilization of directional drilling techniques from the Project Site, which is the current City Maintenance Yard;
2. Maximize oil and gas production from the Torrance Oil Field within the City's jurisdiction, thereby maximizing the economic benefits to the City;
3. Provide an oil and gas development project on the Project Site that utilizes the latest technology and operational advancements related to safety and production efficiency in order to provide a project that would be safe and would meet the applicable environmental requirements;
4. Conduct construction and drilling activities on the Project Site incorporating technological advancements, operational practices, and design features related to air quality, odors, noise, hazards, and water quality to minimize the potential impacts on the adjacent community and the environment;
5. Provide landscaping, hardscape, signage, lighting, and other design features to minimize the visual effects of the Proposed Oil Project on the adjacent community; and
6. Implement operational practices and incorporate design features to provide safe vehicular ingress and egress during temporary construction activities and the ongoing operation of the Proposed Oil Project.

Pursuant to the March 2, 2012 Settlement Agreement between the City of Hermosa Beach, E&B, and Macpherson Oil Co., the City's primary objective is to comply with the California Environmental Quality Act and place on the ballot a measure allowing the City of Hermosa Beach electorate to decide whether or not to approve the Applicant's Proposed Oil Project and a Development Agreement to vest the Project so that, if approved, the Project cannot later be invalidated by a vote of the people.

In the event that voters approve the Proposed Oil Project, the City would need to relocate the City Maintenance Yard. Under those conditions, the City's objectives for relocation of the City Maintenance Yard would be to:

1. Provide City Yard Maintenance facilities that support provision of high-quality City services in an integrated and cost-efficient manner;
2. Consolidate City facilities and functions for maximum efficiency and flexibility;
3. Minimize disruption of City functions during relocation of the City Maintenance Yard;
4. Ensure the relocated City Maintenance Yard is compatible with surrounding uses; and
5. Ensure there is no net loss of public and employee parking spaces as a result of both the Proposed Oil Project and the relocation of the City Maintenance Yard consistent with the Preferential Parking Program approved by the Coastal Commission.

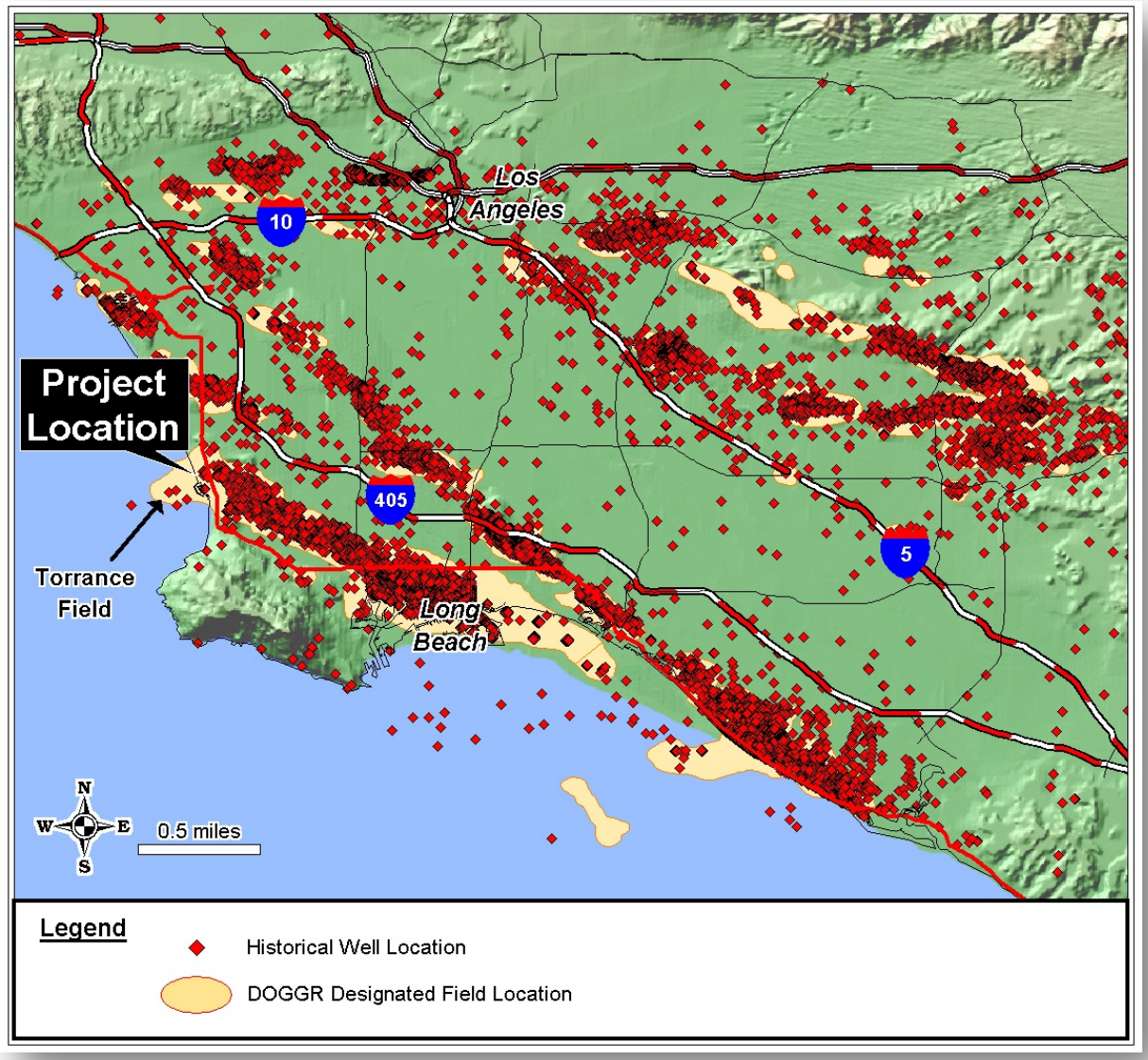
2.3 Historical and Current Operations

Oil drilling and production in the Los Angeles Basin has a long history. According to the California Division of Oil, Gas, and Geothermal Resources (DOGGR) database, almost 30,000 oil wells have been drilled in the Los Angeles Basin in the last 100 to 150 years. Figure 2.2 shows the location of these wells.

The Proposed Oil Project would drill into the western edge of the Torrance Oil Field (see Figure 2.2). Most of the production from the Torrance Oil Field has been generated from wells drilled in the City of Torrance, with some drilling in the Cities of Redondo Beach and Hermosa Beach. There have been approximately 1,500 wells drilled in the Torrance Oil Field historically.

Although the Project Site is relatively flat, it is underlain by windblown sand dunes that previously covered the region, resulting in uneven ground due to natural conditions. In the 1920s and 1930s, the northeastern portion of the Project Site had a large depression that was mined for sand. Around 1927, the City's dump and refuse burner were located on the Project Site, and, by 1947, the depression was filled. The resulting former landfill is approximately 45 feet deep and is filled with glass, porcelain, and ceramic towards the bottom and soils containing miscellaneous metals, wires, glass, and other materials toward the top (i.e., closer to the ground surface). Between the depths of 3 feet and 25 feet below ground surface (bgs), the former landfill contains some soil with lead at concentrations above the Environmental Protection Agency (EPA) Region 9 Industrial Regional Screening levels. In addition, soils impacted with total petroleum hydrocarbons (TPH) were found at depths of 25 to 44 feet bgs within the central portion of the landfill. For a detailed discussion of the soil conditions on the Project Site, refer to the Geological Resources section.

Figure 2.2 Historical Wells Drilled in the Los Angeles Basin



Source: DOGGR

In 1930, an oil well (Stinnett Oil Well No. 1) was drilled in the western portion of the Project Site. The oil well was abandoned in 2005, consistent with the then-current standards of the DOGGR. During the mid-1940s, the first building was constructed on the Project Site for City maintenance uses, with the last building constructed in the 1980s. Since the 1990s, with the exception of the addition of trailers, storage containers, and sheds, the Project Site has generally remained unchanged.

The Project Site is currently developed as the City Maintenance Yard, and the Proposed Oil Project would require the relocation of the City Maintenance Yard. As indicated in Figure 2.3, existing development on the Project Site consists of three buildings, two trailers, storage

containers, sheds, trash bins, a propane tank, concrete paving and asphalt, fencing, and masonry walls. In addition, within the boundaries of the Project Site, there is an asphalt parking area to the south of the City Maintenance Yard that provides 15 parking spaces for employees (Monday through Thursday between the hours of 6:00 a.m. and 6:00 p.m.) and for the public after hours (6:00 p.m. to 6:00 a.m.) and on weekends and holidays.

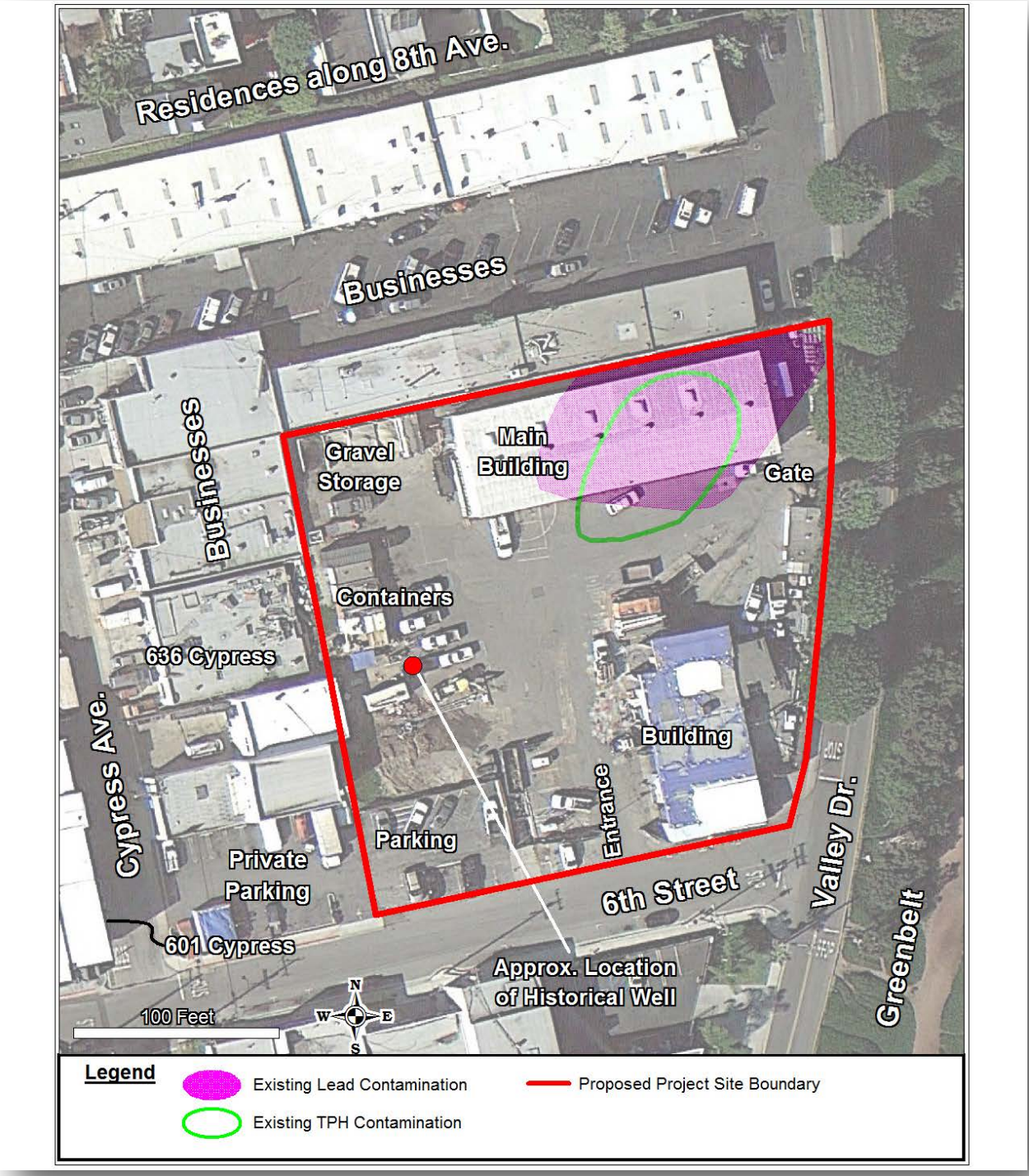
Existing site contamination from historical site uses is also shown in Figure 2.3. According to an Environmental Site Assessment prepared in 2012 (Brycon 2012), 10 of the 73 soil samples taken exceeded Regional Water Quality Control Board guidelines for total petroleum hydrocarbons, all within the mid range hydrocarbons (C13-C22). Volatile organic carbons were not present in any of the samples at concentrations above the EPA Region 9 Industrial Regional Screening Levels. Six of the samples exceeded the EPA Region 9 Industrial Regional Screening Levels for lead. In addition, a series of groundwater borings conducted in 2013 (Brycon 2013) found the presence of total petroleum hydrocarbons, lead, barium, and arsenic in the groundwater below the City Maintenance Yard that exceeded the Maximum Contaminant Levels (MCLs) established for drinking water by the Regional Water Quality Control Board.

The immediately adjoining properties were sparsely developed into the 1940s, with a few residential units located to the northwest of the Project Site. Post 1940s, significant development occurred with industrial buildings being constructed to the south and west of the Project Site by 1953 and to the north of the Project Site by the 1960s. By 1960, the buildings to the west of the Project Site were identified as containing a building material warehouse, a boat repair shop, and a contractor's storage yard.

By 1960, the building to the south was being utilized as a planter mix manufacturing site. Since the 1960s, the various adjoining buildings have been utilized for multiple small businesses as industrial/commercial uses. To the east, from the late 1800s, there was a railroad right-of-way (ROW) that was utilized by the Santa Fe Railway. During the 1960s, the railroad ROW was converted to a greenbelt/park (Veterans Parkway - Hermosa Valley Greenbelt (Greenbelt)), followed by a Council initiative in 1987 directing the City of Hermosa Beach to acquire the Railroad ROW for public use as parkland and open space in perpetuity; the property is zoned O-S-1 Restricted Open Space.

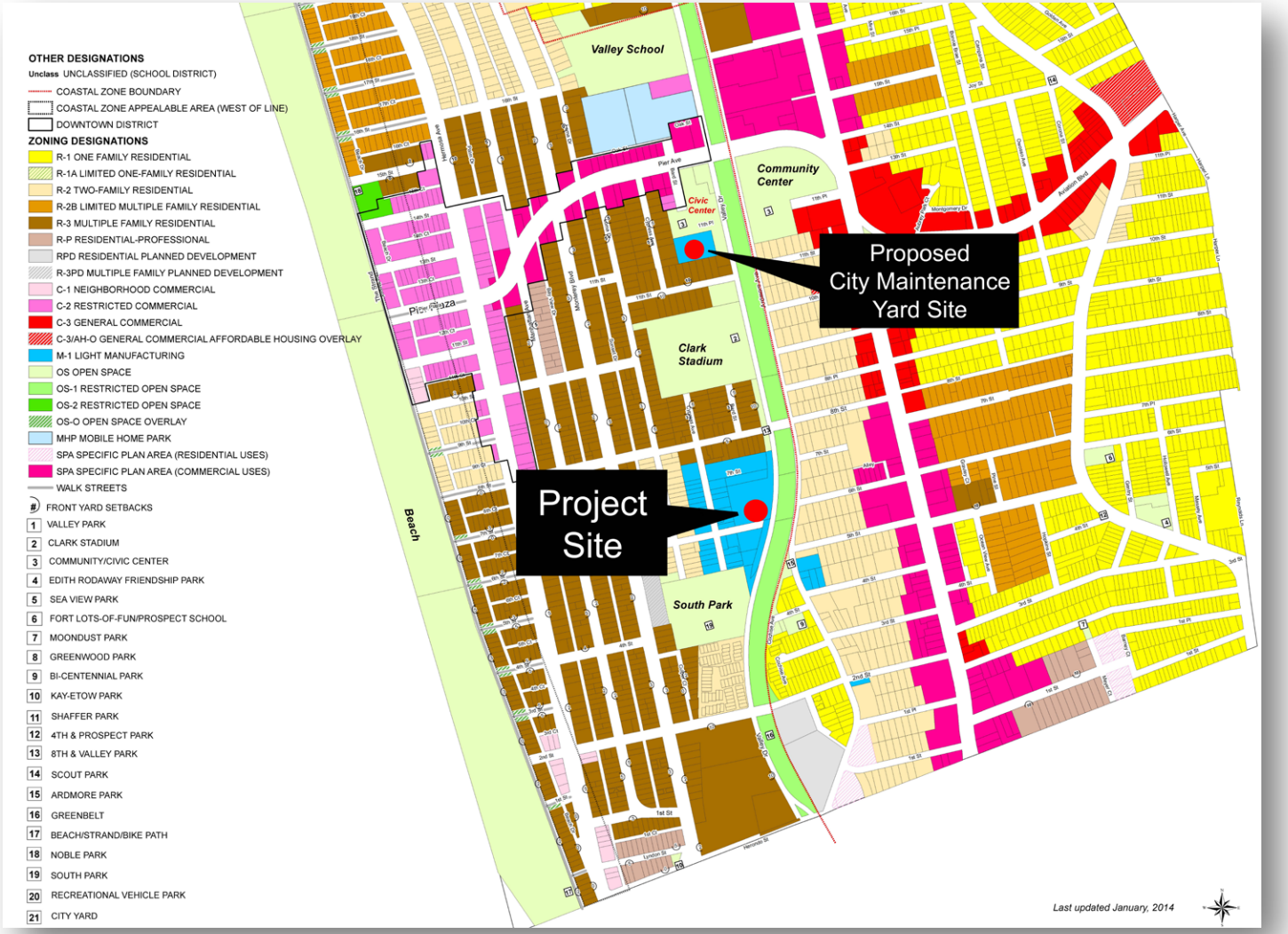
Currently, other land uses adjacent to the Project Site (on the same block between 8th and 6th Street and Cypress Avenue and Valley Drive) are commercial/industrial (Cypress Auto Body, A&B Heating, JB Plumbing, McGivern Surfboard Manufacturing, and other various small commercial/industrial businesses), with some residential uses along 8th Street to the north. Adjacent blocks include residential uses located 150 feet to the north of the Project Site, 250 feet to the west and 180 feet to the east (east of the Greenbelt), with small commercial/industrial uses and the Beach Cities Self Storage facility located to the immediate south across 6th Street with its required parking lot abutting the southwest corner of the Project Site. Figure 2.4 shows the southern area of the City of Hermosa Beach along with land uses.

Figure 2.3 Existing Site Conditions



Source: Applicant Project Application, DOGGR well database, Phase 2 Environmental Site Assessments

Figure 2.4 Project Site and Area Land Uses (Zoning Map)



Source: City of Hermosa Beach Zoning Map, November 2013

2.4 Proposed Oil Project Phases

The Proposed Oil Project would occur in the following four phases:

- Phase 1: Site Preparation;
- Phase 2: Drilling and Testing;
- Phase 3: Final Design and Construction; and
- Phase 4: Development and Operations.

Each phase is discussed in the following sections.

The Applicant proposes a facility designed for a maximum capacity of 8,000 barrels per day (bpd) of crude oil and 2.5 million standard cubic feet per day (scfd) of produced gas at completion of the drilling stage of the Proposed Oil Project in Phase 4. The operational parameters of the Proposed Oil Project are summarized in Table 2.2. Prior to the initiation of each phase of the Proposed Oil Project, it would be required that plans be submitted by the Applicant to the City and other permitting authorities for review and approval. These would include coastal development permits, oil and gas well permits, demolition plans, grading plans, utility and electrical plans, cement/foundation plans, landscaping plans, street and ROW improvement/modification plans, and construction plans, amongst others. Figure 2.5 shows the Project Site along with the electrical and pipeline connections and the Cypress Avenue parking lot.

2.4.1 Phase 1 Site Preparation

The purpose of Phase 1 would be to prepare the Project Site for drilling and testing as well as for the subsequent phases of the Proposed Oil Project. It is anticipated that Phase 1 would occur for approximately six months. Prior to Phase 1 activities, the temporary City Maintenance Yard would be installed. See section 2.5.

PHASE 1

Site Preparation
6-7 Months

2.4.1.1 Phase 1 Construction Activities

Phase 1 would consist of the following construction activities:

- Underground existing overhead utilities;
- Construction of modifications to intersection of 6th Street and Valley Drive;
- Relocation of City Maintenance Yard to the temporary site;
- Clearance of Project Site;
- Construction of retaining walls and rough grading;
- Installation of perimeter fencing;
- Construction of well cellar;
- Installation of offsite electrical conduit and onsite electrical equipment;
- Completion of onsite surface and entrance/exit;

- Installation of temporary landscaping; and
- Installation of 32-foot sound attenuation wall.

Table 2.2 Proposed Oil Project Design Parameters

Parameter	Value
Crude oil production	Phase 2: Up to 800 bpd Phase 4: Up to 8,000 bpd
Crude oil properties	18 API
Natural gas production	Phase 2: Up to 250,000 scfd Phase 4: Up to 2.5 million scfd
Produced water injection	Phase 2: Up to 1,600 bpd Phase 4: Up to 16,000 bpd
Maximum number of wells	Phase 2: 4 wells (3 production, 1 water injection) Phase 4: 34 total (30 production, 4 water injection/disposal)
NGL production	Up to 1 bpd mixed with crude oil
Pipeline length and tie-in, gas	Approx. 0.43 miles + 1.4 miles
Pipeline length and tie-in, crude	Approx. 3.55 miles
Water use, during construction	Approx. 2,000 gallons per day during grading and earthwork Approx. 10,000 gallons per day during pipeline installation Approx. 20,000 gallons per month during facility construction
Water use, during drilling	130,000 gallons per well reclaimed water (Approx. 4,500 gallons per day)
Water use, during operations and maintenance (Landscaping- Reclaimed Water) (Domestic- Potable Water)	1,300 gallons per day (1,000 gallons per day for landscaping) (300 gallons per day for domestic use)
Electrical use, Phase 2	4.5 megawatts (including drill rig)
Electrical use, Phase 3	0.3 megawatts
Electrical use, Phase 4	7.0 megawatts (including drill rig) 3.0 megawatts during normal ongoing operations Onsite electrical generation of 1 MW
Well workovers, annually	90 days/year
Well re-drills (full sized drilling rig, peak annually	Up to 5 per year, up to 30 redrills for the life of the Project

Notes: bpd = barrels per day; kW = kilowatts; scfd = standard cubic feet per day; NGL = natural gas liquids; API = American Petroleum Institute; estimated peak values and maximums shown
Source: Project Application, Amendments and Appendices.

Figure 2.5 Project Site and Pipeline/Electrical Connections

Source: E&B Supplemental Application materials, January 2014

Each of these activities is discussed in the following subsections. Figure 2.6 shows the proposed arrangement of the Project Site under Phase 1. Appendix A provides the conceptual grading plan, site plan, elevations, and landscape concept plan for the Proposed Oil Project at the completion of Phase 1.

The laydown area (equipment and supply storage/staging) for the Proposed Oil Project would be in the basement of the building located at 601 Cypress Street on the northwest corner of Cypress Street/6th Street (See Figure 2.3).

Underground Existing Overhead Utilities

There are currently overhead power lines and communication lines on poles that run overhead through the existing trees along Valley Drive. These existing lines would be removed along the Project frontage and relocated underground adjacent to the Project Site in a location determined by the utility companies and the City. Appendix A provides drawings showing the general location where the utility lines would be placed underground.

Construction of Modifications to Intersection of 6th Street and Valley Drive

The Proposed Oil Project would include the construction of modifications to the intersection of 6th Street/Valley Drive to provide the necessary turning radius for Project-related trucks. Appendix A provides drawings showing the conceptual design of the proposed intersection modifications. These modifications would result in:

- Removal of a portion of the landscaped area and entry driveway to the Beach Cities Self Storage facility;
- Redesign of the sidewalk on the southwest corner of the intersection;
- Relocation of the stop sign and striping for the northbound lanes on Valley Drive to address the redesign of the southwest corner;
- Removal of a utility pole and underground utilities on the southwest corner of the intersection;
- Removal of a utility pole and underground the utilities on 6th Street; and
- The removal of two on-street parking spaces on 6th Street.

As a part of the intersection modifications, the stop sign and striping for the southbound lanes on Valley Drive would be relocated to improve the line of sight to and from the intersection with 6th Street. This modification would be made concurrently with the addition of the perimeter fencing on the Project Site (See Figure 2.6). In addition, the curb on the northwest corner along 6th Street adjacent to the Project Site would be temporarily provided as a rolled asphalt curb for Phases 1 and 2.

The two on-street parking spaces removed from 6th Street would be provided as part of the Project's overall parking replacement program discussed further below.

Relocation of the City Maintenance Yard

Prior to Phase 1, a temporary City Maintenance Yard would be built at the New City Maintenance Yard location to the rear of City Hall at 1315 Valley Drive. At this point, the

maintenance operations would be moved into the temporary City Maintenance Yard. Please see section 2.5 for a discussion of the City Maintenance Yard Project.

Clearance of the Project Site

Prior to the initiation of the site clearance activities, temporary 16-foot sound attenuation walls would be erected at the Project Site to reduce noise impacts related to construction. These sound walls would be designed to be movable and would be relocated within the Project Site as needed to attenuate noise associated with Phase 1 demolition and construction activities. The temporary sound walls would be removed from the Project Site after the onsite construction activities in Phase 1 are completed.

Following the relocation of the City Maintenance Yard (see Section 2.5, Proposed City Maintenance Yard Project, for a description of the relocation of the City Maintenance Yard), the Project Site would be cleared. The site clearance activities would include the removal of three existing buildings (one of which would be moved to the temporary site), two trailers, storage containers, sheds, trash bins, a propane tank, concrete paving and asphalt, fencing and masonry walls. In addition, the asphalt parking area to the west of the City Maintenance Yard would be removed, resulting in the removal of 15 parking spaces. The building located at 636 Cypress Avenue would also be demolished at this time (see Section 2.4.5) Prior to the demolition of the older building on the eastern portion of the Project Site, building materials would be assessed for asbestos content and presence of lead based paint, consistent with the requirements of the South Coast Air Quality Management District (SCAQMD). If asbestos containing materials or lead based paint are detected, the appropriate abatement process would be implemented. The building materials removed from the Project Site would be transported by truck to the recycling facility at Southern California Disposal in Santa Monica, the recycling facilities at Hanson Aggregates in Long Beach, or another certified facility for recycling or disposal.

The Proposed Oil Project would include an overall parking replacement program that meets the intent of the City's Preferential Parking Program and Coastal Development Permit requirements. Section 2.4.5 discusses the parking plan for the Proposed Oil Project.

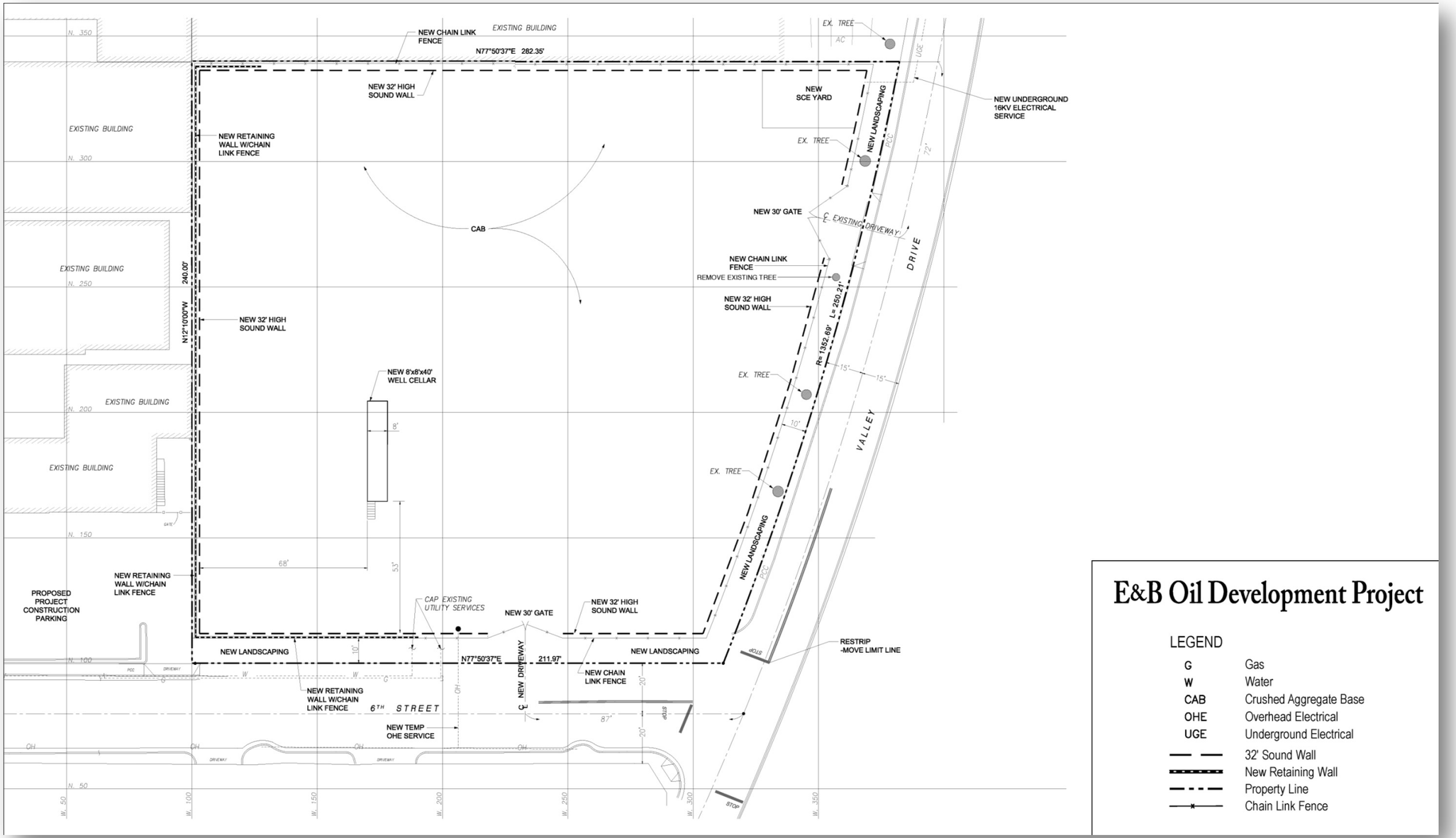
Three of the four existing mature trees along the frontage of the Project Site on Valley Drive would be retained to help screen construction activities. The Applicant has concluded that the fourth tree should be removed because it is in poor health, and it would limit access to the Project Site (See Figure 2.6). The three remaining trees would be trimmed to keep branches from hanging over onsite equipment and to help prevent trespassing.

Water Injection
Pumping water back down the well hole into the oil reservoir from which it was originally extracted.

Construction of Retaining Walls and Rough Grading

Once the Project Site is cleared, retaining walls would be constructed along the western boundary of the Project Site and set back 10 feet along the western portion of the southern property boundary (See Figure 2.6).

Figure 2.6 Proposed Oil Project Phase 1 Conceptual Site Plan



Source: Applicant application

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Rough grading would occur to allow for:

- The construction of a well cellar for three test oil wells and a water injection well;
- Surface drainage towards a temporary retention basin, which would contain a 100-year flood event;
- A level area for the set up and movement of the drill rig; and
- The installation of temporary production equipment.

It is anticipated that the rough grading would not require the import or export of fill material. Appendix A provides the conceptual grading plan that indicates the retaining wall locations and rough grading at the completion of Phase 1.

Installation of Perimeter Fencing

Following the rough grading, the Project Site would be enclosed by a six-foot temporary perimeter chain link fence covered with green fabric. The fence would include secured gates for the entrance off Valley Drive and the exit to 6th Street. The Applicant proposes to include the appropriate signage consistent with the requirements of the City. Figure 2.6 shows the location of the fencing and gates at the completion of Phase 1, and Appendix A shows an elevation of the fencing.

Construction of Well Cellar

A cement well cellar approximately 8 feet wide by 40 feet long by 12 feet deep would be constructed for three test wells and one water injection well to allow for the drilling of the wells in Phase 2. The well cellar would provide containment of any potential oil spillage during Phase 2. Figure 2.6 shows the location of the well cellar.

Installation of Offsite Electrical Conduit and Onsite Electrical Equipment

Electrical service for the Proposed Oil Project would be provided by Southern California Edison (SCE). The electrical conduit and onsite electrical equipment for all phases of the Proposed Oil Project would be installed in Phase 1. The electrical load during Phase 2 and Phase 3 would be 4.5 Megawatts (MW) and 0.3 MW, respectively. During Phase 4, the electrical load during drilling would be 7.0 MW and during ongoing operations would be 3.0 MW. According to the Applicant, SCE has determined that the existing 16 kilovolt (kV) circuit running along 8th Street to the north of the Project Site has the necessary capacity to serve the Proposed Oil Project. To receive electrical service from SCE, the Proposed Oil Project would provide for the installation of an underground conduit for a linear distance of 280 feet under Valley Drive from 8th Street to the northeast corner of the Project Site (see Figure 2.6)

Electrical equipment consisting of step down transformer(s), switchgear, and variable frequency drive units would be installed in the northeast corner of the Project Site designated as the New SCE Yard in Figure 2.6. The electricity would be used to provide power for well pumps, the temporary production equipment, the temporary construction trailer, safety system controls, onsite lighting, and the drill rig used in Phase 2 and Phase 4. An uninterruptable power supply would be installed for critical systems such as the temporary production equipment safety systems and security lights. An emergency generator would be installed to provide power for the safe shutdown of the drilling operation in the event of a loss of power from SCE.

Appendix A provides the general location of the offsite underground conduit.

Completion of Onsite Surface and Entrance/Exit

The surface of the Project Site would be covered with crushed aggregate base material to serve as a dust inhibitor and driving surface. Temporary berms would be constructed around the areas where the drill rig and associated equipment would be set up and the temporary production equipment installed to provide secondary containment. In addition, a temporary berm would be provided around the well cellar to avoid surface flows from entering the well cellar. The existing driveway access from Valley Drive and 6th Street would be used. On both sides of the driveway on 6th Street, a rolled asphalt curb would be provided.

Installation of Temporary Landscaping

Landscaping would be provided along the eastern and southern perimeter of the Project Site to provide a visual buffer. The plant materials and irrigation would be consistent with the requirements of the City. The trees and other plant materials would be planted in a manner that allows for their replanting as a part of the permanent landscaping provided in Phase 3. Reclaimed water supplied by West Basin Municipal Water District would be used for irrigation. The reclaimed water line serving the Greenbelt east of Valley Drive would be tapped and extended to the Project Site. Appendix A includes a conceptual landscape plan and plant materials for the temporary landscaping provided at the completion of Phase 1.

Installation of 32-Foot Sound Attenuation Wall

At the completion of the improvements provided with Phase 1, a 32-foot sound attenuation wall would be erected inside the chain link construction fence in order to attenuate noise generated during Phase 2 drilling and testing. The 32-foot sound wall would stay installed through the duration of Phase 2.

2.4.1.2 Phase 1 Site Preparation Detailed Schedule

It is anticipated that Phase 1 would occur for a period of approximately six months as indicated in the schedule provided in Table 2.3.

As required by the previous Conditional Use Permit and as proposed by the Applicant, the construction activities on the Project Site, including the operation of earthmoving equipment, would be conducted between the hours of 8:00 a.m. and 6:00 p.m. Monday through Friday (except holidays) and 9:00 a.m. and 5:00 p.m. on Saturdays. Offsite construction activities within the public ROW would occur between the hours of 8:00 a.m. and 3:00 p.m. Monday through Friday in the City of Hermosa Beach.

Truck deliveries to the Project Site would be limited to the hours between 9:00 a.m. and 3:00 p.m. Monday through Friday, except in the case of an emergency and with the prior approval of the Director of Public Works. The Project-related truck trips would be limited to 18 round trips per day and limited to the designated truck routes.

2.4.1.3 Phase 1 Site Preparation Personnel and Equipment Requirements

The vehicles, equipment, and employees estimated for Phase 1 are provided in the detailed listing in Appendix A. Vehicle trips are summarized in Table 2.4. The Project-related personnel would utilize parking spaces in an offsite parking area provided consistent with the proposed parking plan described in detail in attachments of this Draft EIR.

Table 2.3 Phase 1 Project Schedule

Activity	Schedule (Weeks)																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Construction of Temporary City Yard	■	■	■	■	■																						
Underground overhead utilities	■	■	■	■	■																						
6th Street & Valley intersection					■	■	■	■																			
Relocation of Yard					■	■																					
Remove buildings					■	■	■	■																			
Remove other site structures									■	■	■																
Construct retaining walls												■	■	■	■	■											
Grade, well cellar, aggregate																	■	■	■	■	■						
Construct chain link fence																						■					
Construct well cellar																						■	■				
Install electrical service									■	■	■	■										■	■	■	■	■	■
Install landscaping																										■	■
Install 32-foot sound wall																								■	■	■	

Note: relocation of Yard would only include moving of shop materials and equipment. The Temporary City Maintenance Yard would be construction prior to the start of Phase 1 and would take approximately 9 months. See section 2.5.

2.4.1.4 Phase 1 Truck Routes

Truck trips would be required in order to deliver and remove construction-related materials and equipment to and from, respectively, the Project Site. Trucks would utilize roads designated as truck routes by the cities of Hermosa Beach, Redondo Beach, Manhattan Beach and Torrance. Truck routes are shown in Figures 2.13 and 2.14.

The routes identified by the Applicant as those utilized for all phases of the Project are as follows:

Inbound Trucks

1. Inbound trucks from westbound Artesia Boulevard
2. Left on to southbound Pacific Coast Highway
3. Right on to westbound Pier Avenue
4. Left on southbound Valley Drive
5. Right into the Project driveway on Valley Drive

Or

6. Inbound trucks from westbound 190th Street (which becomes Anita Street)
7. Right on northbound Pacific Coast Highway
8. Left on to westbound Pier Avenue
9. Left on to southbound Valley Drive
10. Right into the Project driveway on Valley Drive

Outbound Trucks

11. Outbound trucks on to eastbound 6th Street
12. Right on to southbound Valley Drive
13. Left on to eastbound Herondo Street
14. Continue onto Anita Street, then 190th Street to the Interstate 405 (I-405)/ Crenshaw interchange

Or

15. Outbound trucks on to eastbound 6th Street
16. Right on to southbound Valley Drive
17. Left on to eastbound Herondo Street
18. Left on to northbound Pacific Coast Highway
19. Right on to Artesia Blvd.

2.4.2 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 Oil Project. During this phase, up to three test wells and one water disposal/injection well (a total of four wells) would be drilled. These wells would be drilled utilizing directional drilling technology, which enables the 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 wellhead on the Project Site (see Figure 2.7 and 2.8).

PHASE 2

Drilling and Testing:
Drilling for 3-4 Months
Testing for 7-9 Months
More

2.4.2.1 Phase 2 Site Geology and Drilling Objectives

The Proposed Oil Project would utilize directional drilling techniques to access the crude oil and gas reserves in the tidelands (offshore) and uplands (offshore) in the portions of the Torrance Oil Field within the City's jurisdiction. The Project Application states that "no hydraulic fracturing (or "fracking") 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."

Table 2.4 Phase 1 Vehicle Trip Summary

Activity	Trucks, Maximum RT/day*	Autos/PU, Maximum RT/day	Total, Maximum RT/day
Underground overhead utilities	4	10	14
Construct 6th & Valley intersection	3	8	11
Remove buildings	10	8	18
Remove other existing site structures	15	6	21
Construct retaining walls	5	14	19
Grade, well cellar and aggregate	15	10	25
Construct chain link fence	1	4	5
Construct well cellar	4	8	12
Install electrical service	6	15	22
Install landscaping	1	2	3
Install 32-foot sound attenuation wall	3	12	14
Greatest number of trips in one day	18 (during week 9)	31 (during week 12)	43 (during week 10)

Notes: * According to the 1993 CUP, which is valid pursuant to the Settlement Agreement, the number of truck trips shall be limited to a maximum of 18 rounds trips per day, except in an emergency.
Trucks are 3+ axle or greater or trucks with trailers. Autos are automobiles or pickups/trucks with 2 axles.
Trips are round trips.
Maximum truck activity occurs during week 9 with the installation of electrical service and the removal of existing structures.
Maximum auto activity occurs during week 12 with the installation of electrical service and construction of the retaining wall.
Maximum activity trucks and autos combined occur during week 10.
Truck maximum and auto/PU maximum do not necessarily occur on the same day, so the total maximum is not necessarily a simply addition of the two. See appendix.
See Appendix A for a detailed breakdown of vehicles, employees, trucks and construction equipment for each week.
Source: Project Application, Amendments and Appendices

The approximate extent of the City's jurisdiction within the Torrance Oil Field is provided in Figure 2.7. Figure 2.8 provides a typical well cross section illustrating how wells can reach the oil reserves, within the tidelands, from the Project Site. The Project Application states the primary target zones are the Upper Main, Lower Main, and Del Amo Zones with some production potential within the Schist Conglomerate. These are all part of the Puente Formation.

As shown in Figure 2.8, the Upper Main Zone is the uppermost part of the Puente Formation. The Project Application states that it is expected to be the shallowest oil productive zone in the City. Of the three known producing horizons in the Torrance Oil Field, the Upper Main Zone is the most prolific. The Upper Main Zone beneath the Hermosa Beach tidelands and uplands is expected to be 300 feet thick and composed of inter-bedded thin sands and shales. The shales are currently fractured and provide both fractured porosity and permeability. The fractures are critical to the performance of the reservoir in the area due to the fine-grained and thin-bedded nature of the sands. The Lower Main Zone lies below the Upper Main Zone in the Puente Formation. The Project Application states that similar to the Upper Main Zone, the shales of the

Lower Main Zone are currently fractured and important for oil production. However, the Lower Main Zone has fewer interbedded fine-grained sands and is over 500 feet thick.

The Del Amo Zone lies beneath the Lower Main Zone. It contains the least amount of thin-bedded sandstone in the Puente Formation. The Project Application states that similar to the other two zones, the shales of the Del Amo Zone are currently fractured and important for oil production. The Del Amo Zone varies the most in thickness and could be from 200 feet up to 700 feet thick.

The Schist Conglomerate underlies the Del Amo Zone and is resting on metamorphic basement rock (Catalina Schist). The Schist Conglomerate could be as much as 400 feet thick and is composed of reworked fragments derived from erosion of the underlying Catalina Schist. The Project Application states that although it is unknown if the Schist Conglomerate is productive beneath the City, it is still a viable exploration target.

The production test wells would target areas to the south-west, the north-west and the north areas of the lease (see Figure 2.7). The wells for the Proposed Oil Project would be at a true vertical depth of approximately 3,000 feet and a measured depth of approximately 9,000 feet. The actual well depth would vary depending on the area targeted.

The Applicant indicates that the wellhead pressures anticipated during and immediately after drilling would be 0.0 pounds per square inch (psi) and that the wells are not anticipated to be free-flowing.

2.4.2.2 Phase 2 Construction and Drilling Activities

Phase 2 construction and drilling would consist of the following activities and improvements:

- Installation of Temporary Construction Trailer
- Delivery and Set Up of Drill Rig
- Installation of Temporary Production Equipment
- Drilling of Wells
- Testing and Operational Systems

These activities are discussed in the following subsections.

Phase 2 Installation of Temporary Construction Trailer

A temporary construction trailer would be installed in the northeast portion of the Project Site (see Figure 2.9). In addition, the associated utilities, including potable water and sewer, would be extended from the existing lines currently located along 6th Street that serve the City Maintenance Yard. Water and sewer service would be provided by the California Water Service Company and the City, respectively. Electricity would be provided by Southern California Edison (SCE) as discussed above under Phase 1 construction activities.

Phase 2 Delivery and Set Up of Drill Rig

An electric drilling rig and its associated equipment would be brought to the Project Site on large trucks with trailers to be permitted by the City and the California Highway Patrol (CHP). The drilling rig would be an "automated drill rig" (ADR), which means that many of the drill rig procedures (loading pipe, etc,) would be done by mechanical means automatically. The approximately 87-foot high drill rig would be powered by electricity. A large crane with a 150-foot boom would be used to erect the drill rig. Support equipment for the drill rig would include pipe racks, mud and cutting system, pumps, hydraulic equipment, and an accumulator. In the event of a loss of power from SCE, a generator, which would be a non-road portable diesel-fuel generator certified by the California Air Resources Board (CARB), would provide power for the safe shutdown of the drilling operation.

Automated Drilling Rig

Phase 2 Installation of Temporary Production Equipment

Temporary oil, water, and gas production equipment would be installed on the Project Site. This temporary equipment would include a well test station, an induced gas flotation/filter skid, a gas combustor (enclosed ground flare), fluid handling tanks, piping, vapor recovery unit, pumps, and vessels. The production equipment would be delivered by trucks to the Project Site. The temporary production equipment would be installed in the eastern portion of the Project Site within an area enclosed by a containment berm as shown in Figure 2.9.

Ground Flare

Phase 2 of the Proposed Oil Project would be designed as a closed-loop system, with pressure relief valves venting to a flare and tanks venting to a vapor recovery system. The control system would be computerized and would monitor the closed-loop system, providing warnings, corrective actions, and shutdowns, if necessary. Corrective actions could be closing valves, sounding alarms, shutting down wells or other process related functions. In addition, according to the Applicant, redundancy would be built into the system to provide an extra level of protection, ensuring there would be a backup for each safety device. All safety devices would be tested on a regular basis as per applicable codes and standards.

Figure 2.7 Proposed Oil Project Lease Areas

Source: Project Application

Operators would be onsite 24 hours per day, seven days per week, to monitor all aspects of the Proposed Oil Project's production process.

Phase 2 Drilling of Wells

Once the drill rig and associated equipment set up is complete, up to three test wells would be drilled utilizing directional drilling technology. This would enable the wells to be drilled

laterally for long distances so that the bottom-hole locations may be located horizontally several thousand feet from the surface location of the well head on the Project Site. All wells would be permitted, drilled and cemented in accordance with the State Division of Oil, Gas, and Geothermal Resources (DOGGR) regulations. Drilling would proceed in the following manner:

- Installation of conductor casing;
- Drilling of wells;
- Placement of casing and cementing of wells (in stages at various depths); and
- Completion of the well, including installation of down-hole pumps and tubing.

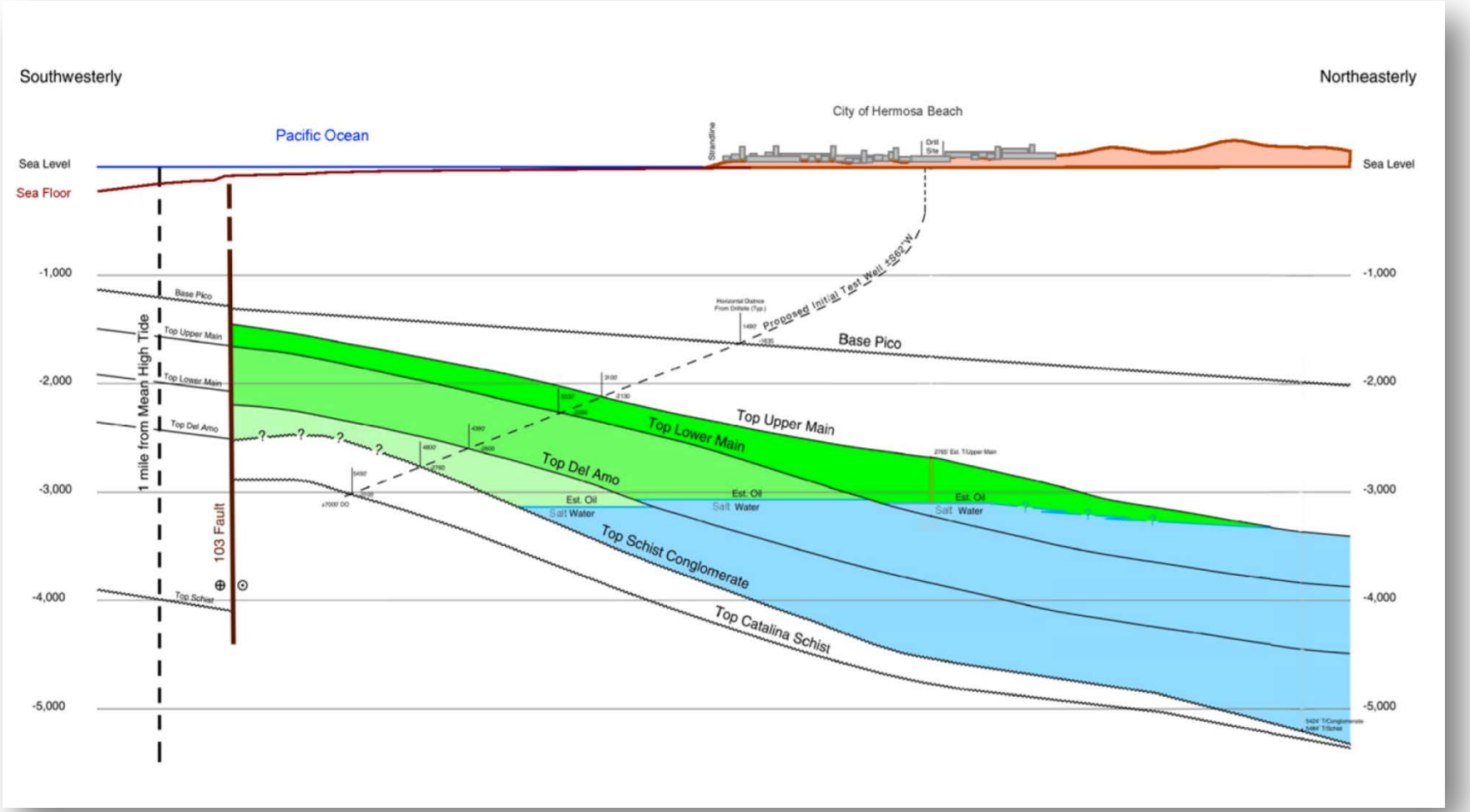
Installation of Conductor Casing

The conductor casing is the initial hole drilled into the ground with a large diameter pipe installed to maintain integrity. The subsequent drilling of the well would take place through the conductor casing. Conductor casing would be installed with a small drilling rig, referred to as a dry-hole digger, which 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 drilling to be circulated to the surface without washing away the shallow near-surface dirt. All conductors necessary to develop the Proposed Oil Project test phase would be set at this time and the dry-hole digger moved off before the drilling rig would be mobilized and brought to the Project Site.

Drilling, Casing and Completion of Wells

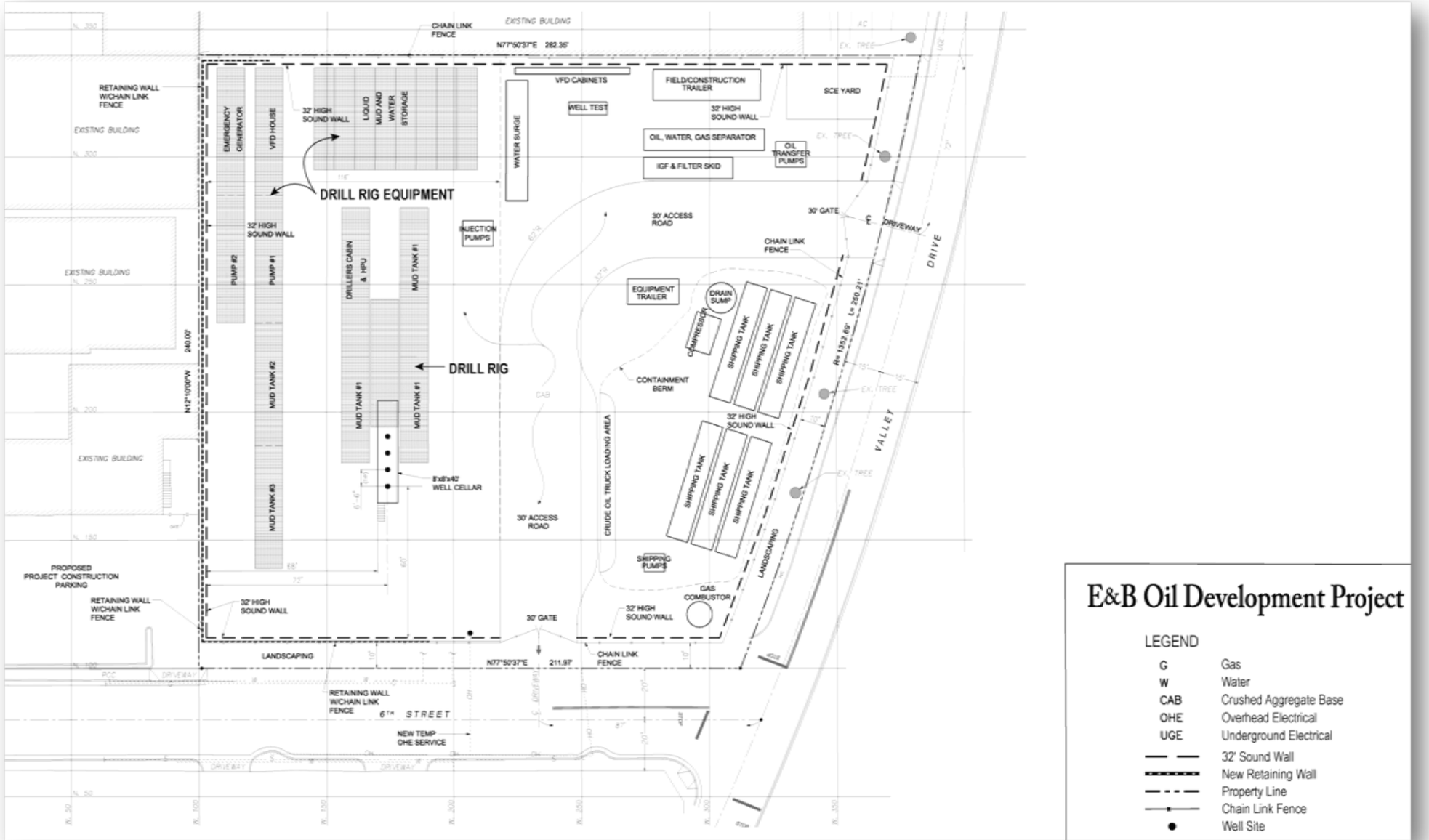
The components of the drill rig and all necessary equipment would then be moved onto the Project Site with large specially equipped trucks. The drill rig height would be 87 feet. The drilling setup would include three main parts; the drilling structure (i.e., mast, substructure,

Figure 2.8 Applicant Proposed Oil Project Lease Areas Cross Section



Source: Project Application. Representative figure not to scale or reflective of the exact geology of the region.

Figure 2.9 Proposed Conceptual Site Plan - Project Phase 2



Source: Applicant application

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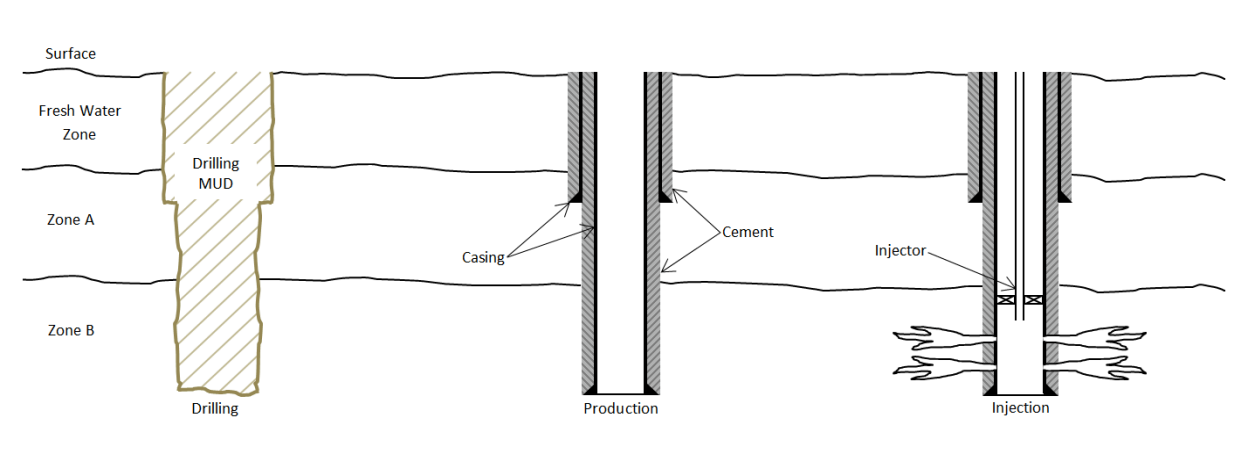
catwalk, silicon-controlled rectifier (SCR) house, top drive, back-up generator, crown block, traveling block, iron rough neck, drill pipe, control cabin), the blow out preventer (BOP) system (i.e., BOP Stack, Shear Ram, BOP Controller, and Accumulator), and the mud system (i.e., mud tanks, mud shakers, 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 conductor casing, the mast would be raised, and the other equipment would be 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 site. The drill rig for the Proposed Oil Project would be run on electric utility power, so an electrical hookup would be made at this time. Drilling operations would then begin. The initial mobilization and rigging up operation is expected to last about seven to ten working days.

"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 (usually 30 feet long) and lowered into the conductor casing. As the first length of pipe is completely lowered in, another length of pipe is attached to the end, thereby increasing the length of the drill "string". When the drill string reaches the 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-walled pipe 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 inside of the hollow drill pipe, through a hole in 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 outside of the drill pipe, which is referred to as the "annulus." When the mud reaches the surface, it 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.

Initially, a large diameter bit is used to drill to a predetermined depth. When the specified depth is reached, drilling is stopped, the drilling string is removed and a large diameter pipe (a casing string) is assembled in 40-foot lengths and lowered to the bottom of the well bore. Cement is then pumped down the inside of the casing, around the bottom of the hole, and up the annulus between the casing and the well bore. When the cement hardens, it ensures that the entire casing and well bore are encased in cement, protecting the fresh water aquifers and surrounding subsurface areas from the production fluids inside of the casing. See Figure 2.10 for a schematic of the well bore and casing.

Figure 2.10 Typical Well Bore and Casing



Source: Project Application

Next, a piece of equipment known as a blowout preventer (BOP) is attached to the well head. 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 is completed. A BOP utilizing Blind Shear Rams would be utilized. Blind Shear Rams are a type of BOP common in the offshore environment that allow for the shutting off of flow through the well even if drill pipe is in the wellbore. Pursuant to the requirements of the Code of Federal Regulation on Oil and Gas and Sulphur Operations in the Outer Continental Shelf (30 CFR part 250), the Applicant indicates that the BOP would be certified that the shear rams can actually shear the drill pipe prior to drilling.

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 would be placed in the well if oil is found.

Once the surface casing is cemented in, drilling operations resume with a smaller drill bit. This smaller hole is drilled to the total depth decided upon by the Applicant's geologic and engineering staff. Usually, the only interruptions to drilling operations would be to remove the drill pipe (also known as tripping pipe) from the well to replace a dull drill bit, and then lowering the pipe back to the bottom of the well.

In order to achieve the directional aspect of the drill hole, the well bore is bent. The act of "bending" a well out of the vertical axis typically begins after vertical drilling has progressed several hundred feet beneath the surface. Although the specifics of each well proposed for this Project have not been established, 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 Oil Project.

When the well reaches total depth (TD), drilling operations are halted and the drill pipe is removed from the well leaving mud in the hole to contain any potential production fluids located at the reservoir depth. A logging tool is then lowered into the hole to record petrophysical data of the formations through which the rig has drilled. If the well looks like it would produce oil, production casing is installed in a similar fashion to the installation of the surface casing. Production casing for the Proposed Oil Project is planned to be 7 inches in diameter. Production casing would be cemented similarly to how the surface casing is cemented, as previously described. 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.

The well is then "completed", which is a series of activities that allow for the production fluids to flow into the well bore inside the casing and to the surface. Appendix A provides additional details on this process.

Table 2.5 shows a list of chemicals 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.

Drilling each well would require approximately 130,000 gallons (or 0.4 acre-feet) of water. The water would be reclaimed water provided by the West Basin Municipal Water District from an existing reclaimed water line serving the Greenbelt east of Valley Drive. The West Basin Municipal Water District has provided the Applicant with a "will serve" letter.

The drilling process requires the use of drilling mud to circulate drilled rock cuttings out of the well hole, retain the integrity of the well hole, and control reservoir pressure. The drilling mud would be collected onsite in Baker tanks (enclosed tanks that are approximately 12 feet tall by 40 feet long and hold up to 500 barrels each). Although most of the mud would be reused on subsequent wells, some mud would be removed from the Project Site and disposed of each day by truck at an approved disposal site at Anterra's Oxnard Licensed Class 2 Disposal Facility or a similar facility. In addition, all other waste generated by the test drilling would be transported by truck to the appropriate disposal site at Clean Harbors Buttonwillow Landfill, or a similar facility if closer to the Project Site.

Table 2.5 Phase 2 Drilling Chemicals

Common/Trade Name	Use	Container	Amount per Well
Gel Wyoming Bentonite	Used to enhance mud viscosity	100-pound sack	525 sacks
DMA Sodium Polyacrylate	Water absorbent mud additive	50-pound sack	82 sacks
Benex Anionic Acrylamide	Mud additive	2-pound sack	75 sacks
GEOZan Xanthan Gum	Mud viscosifier	25-pound sack	40 sacks
Omniopol Sodium Polyacrylate Liquid	Water absorbent mud additive	-	380 gallons
CFR Fatty Acid Liquid	Mud additive to enhance lubricity	-	600 gallons
Bicarb Sodium Bicarbonate	Mud additive for pH control	50-pound sack	40 sacks
Citric Acid	Mud additive for pH control	50-pound sack	11 sacks
Walnut Hulls	Filter medium, used to reduce torque and drag of drill pipe and for plugging of fractures and high porosity formations	50-pound sack	48 sacks
Cement Bulk-Truck	Used for well sealing	-	3 bulk trucks
Biotreat 8415	Treatment of water before injection into the oil reservoir		

Source: Project Application, Amendments and Appendices

The Proposed Oil Project would comply with the 1993 CUP conditions of approval, proposed operational practices, and proposed design features. The noise reduction methods would include the following:

- An electric drill rig would be utilized, reducing the need for diesel engines;
- The drill rig would have no draw works or cables resulting in less noise;
- A 32-foot-high acoustical barrier wall would be erected around the perimeter of the Project Site during all drilling activities. The wall would have a sound transmission class (STC) rating of at least 32;
- The air inlets and vents of the hydraulic power unit would be fitted with silencers;
- An acoustical shroud would enclose three sides of the rig mast to reduce the top drive noise (if applicable);
- The mud pumps would be enclosed with acoustical barriers having a sound transmission class (STC) rating of at least 25;
- An 8-foot high acoustical barrier with an STC rating of at least 25 would be installed around the shaker tables;
- Drilling Quiet Mode Plan would be implemented at the drill site between 7:00 p.m. and 8:00 a.m., a plan which would provide for the following: disablement of all audible mobile equipment and truck backup alarms; minimization of pipe handling; cessation of

cementing operations, maintenance, and tripping pipe; and limits within the delivery schedule; and

- An automated and remotely managed system to connect/disconnect pipe (Iron Roughneck) would be used, which would reduce pipe handling;

No processing of gas would occur during Phase 2. The gas separated from the oil and water would be directed to a gas combustor (enclosed ground flare), where disposal of it would occur through burning.

The Applicant 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.

Because the produced fluids may contain some H_2S, fixed H_2S detection systems would be installed around the drilling site and continuous monitoring would be present during all drilling, workover, and well servicing operations. Sensors would be located in areas that are frequently used by personnel, selected drilling area locations, areas where H_2S may accumulate, and any other areas determined by hazard analysis to pose a potential risk. Personnel would also carry personal H_2S monitors attached to their clothing for immediate H_2S detection during drilling.

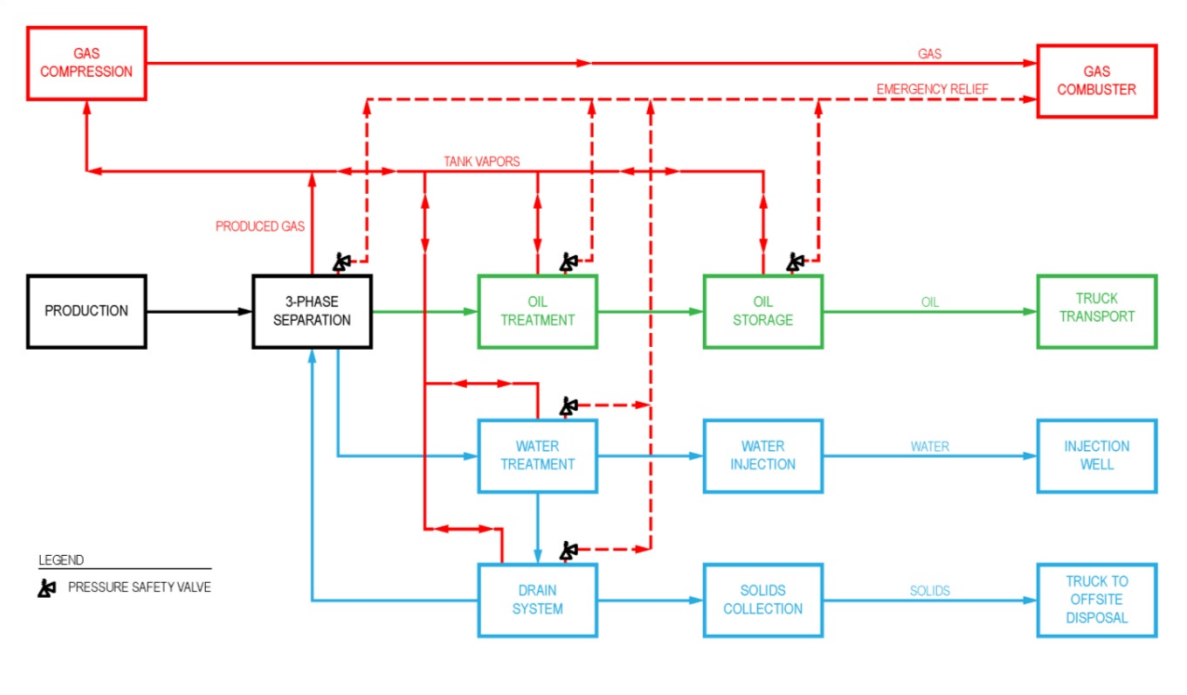
Phase 2 Testing and Operational Systems

After the completion of the first test well and the water injection well, the extracted oil would go through production and testing. The temporary production equipment on the Project Site would be used to process the production fluid. The oil would be processed to a standard that would be suitable for sale. The produced water would be processed and re-injected back into the oil-producing reservoir below the oil water contact. Disposal of the gas produced during Phase 2 would occur through burning in the enclosed ground gas flare. Figure 2.11 shows the steps involved in processing the oil, water, and gas produced from the test wells in Phase 2.

Processing of Production Fluids

During Phase 2, the Proposed Oil Project is designed to handle up to 800 barrels of oil per day and up to 250,000 standard cubic feet of gas per day. After the oil is processed, it would be trucked from the Project Site to an offsite oil receiving facility at 2650 Lomita Boulevard in Torrance. Figures 2.11 and 2.12 provide an outline of the City's designated truck route through the cities of Hermosa Beach, Redondo Beach and Torrance.

Figure 2.12 Phase 2 Process Flow Diagram



Source: Applicant application

The produced fluids would be sent from the wells to a three-phase separator, which would separate the fluid into gas, oil and water streams. 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 follows.

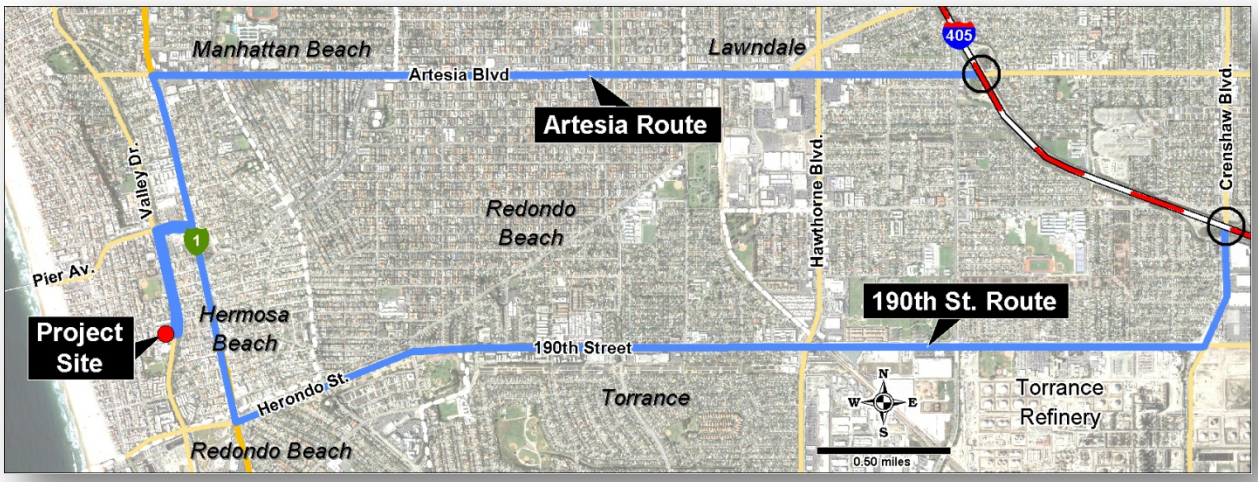
Oil Treatment System

The produced oil would enter a series of stock tanks after leaving the three-phase separator. The stock tanks would be used if the oil needs to be further processed to remove excess water. The water removed from the oil and water mixture would be sent back to the three-phase separator through a drain system. 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.

Gas Treatment System

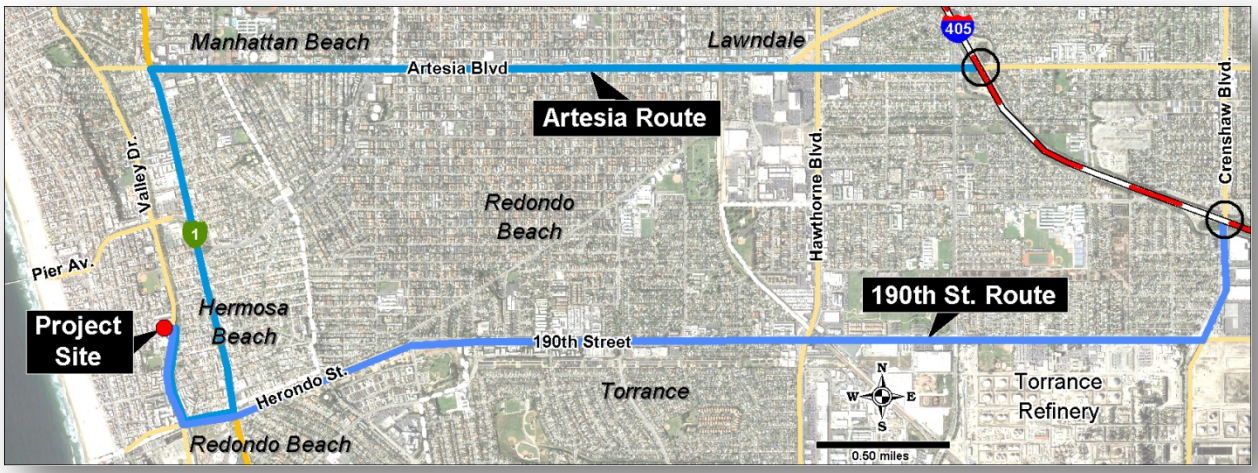
The produced gas would be sent directly to a compressor and then to the gas flare for combustion after leaving the three-phase separator. A vapor recovery system attached to the temporary Baker tanks would be utilized to capture vapors and to direct them to a vapor recovery compressor and to the gas system and flare. The vapor recovery, tank and flare system would be subject to Southern California Air Quality Management District (SCAQMD) permit requirements.

Figure 2.12 Truck Routes from Highway 405 to Project Site



Source: Project Application, Amendments and Appendices

Figure 2.13 Truck Routes to Highway 405 from the Project Site



Source: Project Application, Amendments and Appendices

The Proposed Project provides for the injection of treated stormwater runoff and produced water from the drilling and production process back into the oil reservoir using water injection wells. The injection of untreated water can result in the creation of H_2S concentrations in the oil reservoir above preexisting levels (referred to as the "native" condition). Prior to the injection of produced water from the oil extraction process, or the injection of surface runoff from precipitation that collects on the Project Site, the water would be treated by a biocide to eliminate sulfate-reducing bacteria (SRB). Once wells begin production, the extracted water would be tested for SRBs to determine if treatment is needed. In addition, the surface runoff water and any other injected water, would be tested. SRBs are an assemblage of specialized bacteria that

thrive in the absence of oxygen and obtain energy for growth by oxidation of organic nutrients, with sulfate being reduced to hydrogen sulfide (H_2S). SRBs are treated by the use of a biocide and this treatment could be a batch or continuous treatment. There are numerous antibacterial agents available on the market that could be used for this specific treatment if it is determined to be needed.

Facility Storm Drain System

The Proposed Oil Project Site is designed to retain, process, and inject storm water within the perimeter fence or wall for a 100-year storm event. All rainwater falling on the site would be collected and pumped into the water processing system for injection into the oil reservoir. In addition, any spills on the site would also be contained, both within process system walls/berms around equipment and site walls/berms around the site. Process walls/berms would be designed to contain at least 110 percent of the largest vessel plus the precipitation generated by a 100-year storm event.

Safety Systems

Operators would be onsite 24 hours per day, seven days per week, to monitor the Proposed Oil Project's production process during Phase 2.

A fire protection system as required by Federal, State, and local codes, ordinances and regulations would be installed by the Applicant prior to the drilling and testing activities on the Project Site. The Fire Protection Plan for Phase 2 of the Proposed Oil Project would be provided to the City of Hermosa Beach Fire Department for review and approval prior to the initiation of Phase 2.

The design and operation of the Proposed Oil Project would be required to meet provisions within the California Fire Code (CFC) and standards of the National Fire Protection Association (NFPA), including the requirements for the storage of hazardous materials, the installation and use of fire protection systems and devices, and the implementation of safety measures for employees and emergency responders.

Onsite personnel and a site security program, including a closed circuit television system, a gate access system, and an intrusion and motion detection system, would control all access to and from the Project Site during Phase 2. In addition, temporary lighting would be provided. The lighting would be shielded/hooded and directed downward, as is consistent with City requirements.

All tanks would have containment equal or greater in capacity than at least 110 percent of the largest vessel plus the precipitation generated by a 100-year storm event.

Water Treatment System

The produced water would be pumped into a treatment system, including a gas flotation unit and a filter unit, to remove excess oil after leaving the three-phase separator. The primary objective of both units would be to clean the water of oil and solids such as sand. The water would then enter a water surge tank after leaving the filter unit and would be sent to the water injection pumps for injection into the oil-producing reservoir through the injection well. If determined to

be needed, before it enters the water surge tank, the water would be injected with a biocide to eliminate any bacteria that may be in the produced water.

Electrical Requirements

Approximately 75 kilo-watt hours of electricity would be required to drill each well.

Chemicals

Project operations would require the use of chemicals. These chemicals would be documented in a required Hazardous Materials Business Plan. Typical chemicals utilized in the temporary production facility are shown in Table 2.6.

Table 2.6 Phase 2 Testing Chemicals

Common/Trade Name	Use	Maximum Quantity (Gallons)
Emulsion Breaker/Phasetreat 6378	Help separate oil and water	60
Water Clarifier/Floctreat 7991	Water additive	40
Emulsion Breaker/Waxtreat 3610	Help separate oil and wax	50
Corrosion Inhibiter/Cor 7182	Additive to reduce corrosion	400
Surface Cleaner/4U	General purpose cleaner	165
Scale Dissolver/Techni Solve 1780	General purpose scale remover	55
Scale Inhibitor/Techni Hib 7621	Additive to reduce scaling	120

Source: Project Application, Amendments and Appendices

Noise Abatement

The Proposed Project would be implemented in compliance with the 1993 Conditional Use Permit conditions of approval. In addition, the applicant proposes to incorporate several operational practices and design features intended to abate noise. The conditions of approval, operational practices and design features that would be incorporated into the production operations include the following:

- Heavy/large reciprocating equipment would be mounted on vibration isolators;
- Pipe tripping would be restricted to daylight hours only;
- Loudspeaker paging systems would be prohibited;
- Well workover rigs or any other workover-type rig (not the main drilling rig) that is used would be operated only between 8:00 am and 6:00 pm during daytime weekday hours only, excluding holidays, except in an emergency as defined in the Conditional Use Permit (CUP) 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) would be muffled to reduce noise to an acceptable limit. The operator would use whatever means necessary, including, but not limited to, enclosing the diesel engine and rig in acoustic blankets or housing;

- All oil maintenance equipment, vehicles and non-electrical motors would be equipped with manufacturer approved mufflers or housed in a sound-proofing device;
- Noise monitoring would be conducted under the supervision of an independent certified acoustical engineer;
- Each well pump would produce a sound power level no greater than 83 dBA. This may be achieved by fitting sound attenuating enclosures that provide an insertion loss of at least 15 dB;
- The produced oil pumps, produced water pumps, water booster pumps and variable frequency drive electrical (VFD) cabinets would produce a sound power level no greater than 77 dBA;
- The water injection pumps would produce a sound power level no greater than 83 dBA.
- The vapor recovery compressors would produce a sound power level no greater than 83 dBA; and
- The cooler for the compressors would produce a sound power level no greater than 85 dBA.

Decision not to Proceed - Abandonment

If it is determined that the production of oil and gas on the Project Site would not be economically viable, the Applicant would remove the sound attenuation walls, the temporary production equipment, and the temporary construction trailer and abandon the three test wells and the water injection well in accordance with the requirements of DOGGR. The Project Site would be left as a graded site with site improvements including the retaining walls, the perimeter chain link fence, and the perimeter landscaping.

As the temporary City Maintenance Yard would already be constructed under the Proposed Project, the current City Maintenance Yard Site would be empty and would be available for development within the M-1 Light Manufacturing zoned area of Hermosa Beach. The site would then be available for City or other development proposals, or for the temporary City Maintenance Yard to be relocated back to this site.

2.4.2.3 Phase 2 Drilling and Testing Schedule

It is anticipated that Phase 2 would occur for approximately 12 months as indicated in the schedule provided in Table 2.7. The drill rig would operate continuously for 24 hours per day, seven days per week, until the appropriate depth and bottom-hole location for each well has been reached. It is estimated it would take 120 days for drilling activities, 24 hours a day, which is approximately 30 days per well for four wells. After the drilling of the three oil wells and one water injection well is complete, the drill rig would be removed from the Project Site. As each well is drilled, the produced fluids from that well would go thorough production and testing, as described above

2.4.2.4 Phase 2 Drilling and Testing Personnel and Equipment Requirements

The vehicles, equipment, and employees estimated for Phase 2 are provided in detail in Appendix A. A summary of the vehicles trips is shown in Table 2.8. Parking for the employees

would be provided in an adjacent parking area as previously discussed for Phase 1. Since Phase 1 prepares the Project Site for Phase 2, the conceptual landscape plan and elevations provided above for Phase 1 would also be applicable to Phase 2.

Table 2.7 Phase 2 Project Schedule

Activity	Schedule (Weeks)																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	thru 54
Install trailer and associated utilities	■																								
Deliver and set up drill rig/equipment		■	■																						
Install oil, water, and gas equipment							■	■	■	■	■	■													
Drill 3 test wells and water well				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■			
Testing of wells														■	■	■	■	■	■	■	■	■	■	■	■
Remove drill rig and equipment																							■	■	

Source: Project Application, Amendments and Appendices

Table 2.8 Phase 2 Vehicle Trip Summary

Activity	3-axle Trucks, Maximum RT/day*	2-axle trucks, Autos, Maximum RT/day	Total, Maximum RT/day
Install trailer and associated utilities	2	5	7
Deliver and set up drill rig/equipment	7	20	27
Install oil, water, and gas equipment	6	15	21
Drill 3 test wells and water well	9	10	19
Testing of wells	13	5	18
Remove drill rig and equipment	5	20	25
Greatest number of trips in one day	18 (during weeks 15, 17, 19, 21-24)	25 (during weeks 7-12)	37 (during week 7)

Notes: * According to the 1993 CUP, which is valid pursuant to the Settlement Agreement, the number of truck trips shall be limited to a maximum of 18 rounds trips per day, except in an emergency.
Trucks are 3+ axle or greater or trucks with trailers. Autos are automobiles or pickups/trucks with 2 axles. Trips are round trips.
Maximum truck activity occurs during drilling and testing of wells.
Maximum auto activity occurs during weeks 7-12 with the installation of oil, water and gas equipment and the drilling of wells. Maximum activity trucks and autos combined occurs during week 7.
Truck maximum and auto/PU maximum do not necessarily occur on the same day, so the total maximum is not necessarily a simply addition of the two. See appendix.
See Appendix A for a detailed breakdown of vehicles, employees, trucks and construction equipment for each week.
Source: Project Application, Amendments and Appendices

2.4.3 Phase 3 Final Design and Construction

If it is determined that the production of oil and gas on the Project Site would be economically viable, the Applicant would begin Phase 3 of the Proposed Oil Project. The purpose of Phase 3 would be to utilize the production information from Phase 2 to prepare the final design of the facility, prepare the onsite area for facility installation, install the permanent oil and gas production facilities, and construct offsite pipelines.

PHASE 3

Final Design and Construction: 16 Months

2.4.3.1 Phase 3 Onsite Construction

Phase 3 onsite activities would involve the following construction activities:

- Preparation of final engineering design;
- Removal of temporary production equipment;
- Removal of three remaining trees;
- Removal of 32-foot sound attenuation wall and perimeter fencing;
- Installation of 16-foot sound attenuation wall;
- Implementation of remedial action plan;
- Construction of remaining retaining walls and final grading;
- Completion of construction of well cellars;
- Construction of 16-foot split-face block wall;
- Removal of 16-foot sound attenuation wall;
- Construction of small office building;
- Installation of permanent production equipment;
- Construction of final site improvements;
- Construction of final street improvements along Project frontage;
- Installation of final landscaping;
- Installation of 32-foot sound attenuation wall;
- Setting of conductor pipe; and
- Installation of lighting systems.

Each of these activities is detailed in the discussion that follows. A site plan for Phase 3 is shown in Figure 2.14. The conceptual grading plan, site plan, elevations (with the 32-foot sound attenuation wall), and conceptual landscape plan for the Proposed Oil Project at the completion of Phase 3 are shown in Appendix A.

Prepare Final Engineering Design

The final design of the permanent oil and gas production facilities, to be implemented during the first few months of Phase 3, would be based on the oil and gas analysis and production results from Phase 2 activities. Final design would include the sizing and development of the exact specifications for the oil, gas, and water separation production equipment and the detailed engineering to prepare the required final construction drawings.

Remove Temporary Production Equipment

The temporary oil, water, and gas production equipment installed on the Project Site during Phase 2 would be removed. The wells drilled during Phase 2 would be shut in, and steel plating would be placed on top of the well cellar.

Remove Remaining Trees

The three remaining mature trees along the frontage of the Project Site along Valley Drive would be removed to allow for the construction of final site improvements including a perimeter wall and the installation of permanent landscaping.

Remove 32-Foot Sound Attenuation Wall and Perimeter Fencing

The 32-foot sound attenuation wall and the 6-foot perimeter chain link fencing would be removed from the Project Site.

Install 16-Foot Sound Attenuation Wall

Prior to the initiation of earthmoving activities, a temporary 16-foot sound attenuation wall would be brought to the Project Site. The sound walls would be designed to be movable and would be relocated within the Project Site as needed to attenuate noise and dust associated with the earthmoving activities needed for the implementation of the Remedial Action Plan and the final grading of the Project Site. The temporary sound walls would be removed from the Project Site after the onsite earthmoving and grading activities are completed.

Implementation of Remedial Action Plan

The Remedial Action Plan would be implemented to address lead, barium, arsenic and total petroleum hydrocarbon (TPH) contaminated soil and groundwater within and beneath the former landfill area in the northeastern portion of the Project Site. It is anticipated that approximately 9,000 cubic yards of lead contaminated soil would be removed from the Project Site in accordance with the Remedial Action Plan and hauled to a Class 1 landfill at the Kettleman Hills Facility, approximately 190 miles from the Project Site. The TPH contaminated soil (approximately 4,500 cubic yards located deeper than 25 feet) would be treated onsite via vapor extraction. For a detailed discussion of the soil remediation that would occur prior to final grading of the Project Site, refer to the Remedial Action Plan provided in Appendix A. Groundwater contamination attributed to historic use of the site has been documented (Brycon 2013). The DTSC and the RWQCB have indicated that the contamination is below the levels of concern for the area and that groundwater remediation would not be necessary for the site.

Construction of Remaining Retaining Walls and Final Grading

Retaining walls (up to 6 feet high) would be constructed 10 feet back from the Valley Drive and 6th Street property lines, along the eastern boundary of the Project Site and along the eastern portion of the southern boundary of the Project Site (see Figure 2.14). In addition, retaining walls would be constructed within the Project Site for the containment area associated with the production equipment. After the completion of the retaining walls, the Project Site would be graded to allow for the installation of Project equipment and to allow for proper site drainage. The final grading of the Project Site would not require the import or export of fill material.

Appendix A provides the conceptual grading plan that indicates the location of the retaining wall locations and the final grading of the Project Site.

Complete Construction of Well Cellars

The cement well cellar constructed in Phase 2 would be extended, and a second well cellar would be constructed to allow for the drilling of the remaining wells in Phase 4. At completion, the well cellars would be approximately 8 feet wide by 120 feet long by 12 feet deep, with stairs at each end and covered with expanded metal grating. The well cellars would be equipped with storm water collection sumps and pumps to direct the storm water to the drain sump. From the drain sump, water would be directed into the processing system and injected, by the water injection wells drilled in Phase 4, into the oil-producing reservoir below the oil water contact. Figure 2.14 shows the location of the well cellars.

Construction of 16-Foot Split-Face Block Wall

A 16-foot split-face block wall would be constructed around the perimeter of the Project Site. The wall would be set back 10 feet from the Valley Drive and 6th Street property lines to allow for a landscape area. The wall would have a gated entrance off Valley Drive (set back 70 feet from the sidewalk) and a gated exit to 6th Street. The gates would be metal and motor operated. The appropriate signage would be provided, as is consistent with City requirements.

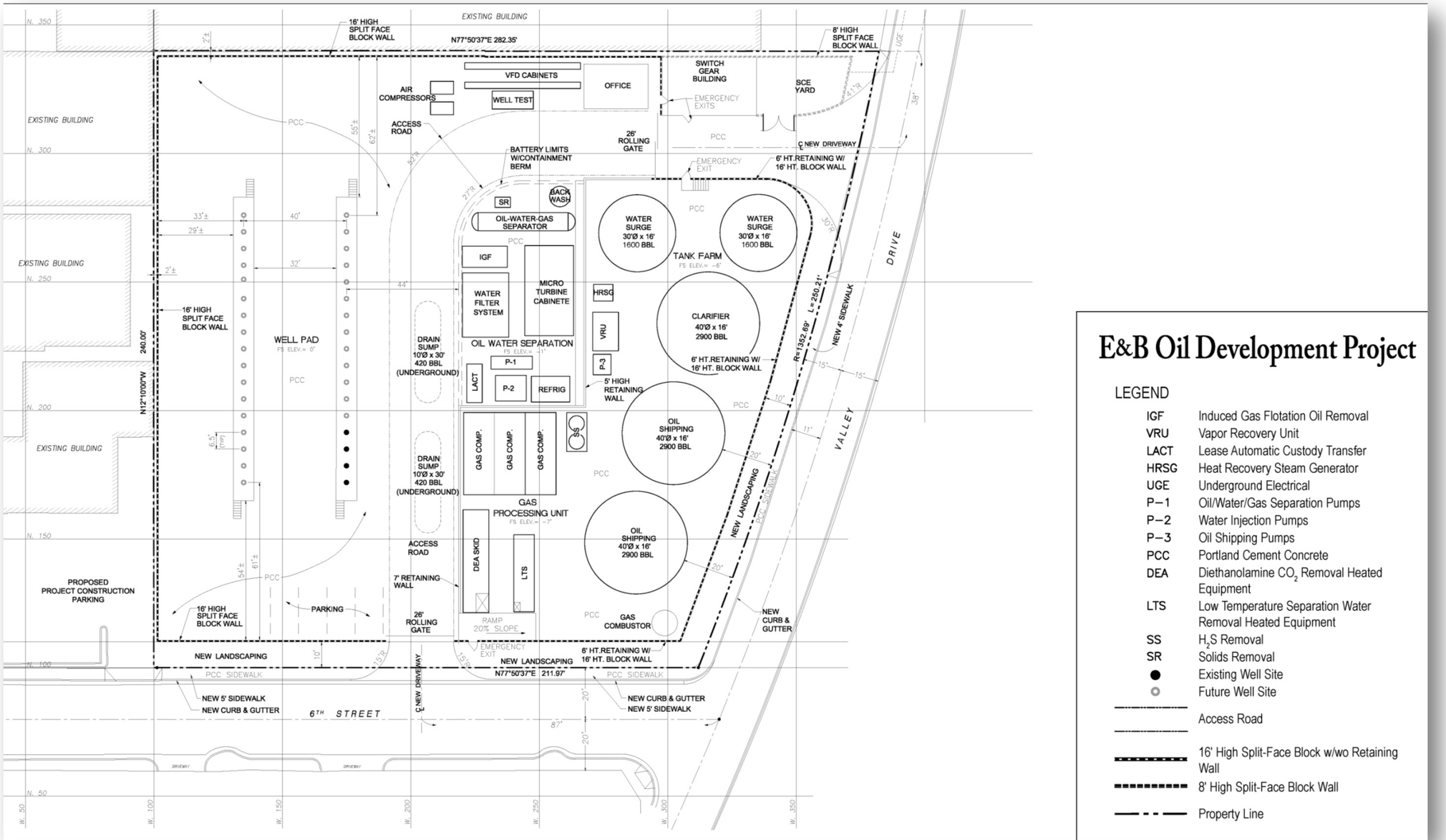
Remove 16-Foot Sound Attenuation Wall

After the completion of the Remedial Action Plan, final site grading, and construction of the well cellars and perimeter wall, the 16-foot temporary sound attenuation wall would be removed from the Project Site.

Construction of Small Office Building

A small office building approximately 650 square feet in size would be constructed in the northeast portion of the Project Site to house employee offices and control and monitoring equipment. The building would have a restroom and break room. The improvements extended to the Project Site in Phase 1 would provide for associated utilities, including water, sewer, natural gas, and telephone. The California Water Service Company and the City would provide water and sewer service, respectively. Southern California Gas Company (SCGC) would provide natural gas, and electricity would be provided by Southern California Edison (SCE). Verizon would provide telephone service. Office related solid waste services would be provided by Athens Services or a future city franchisee.

Figure 2.14 Phase 3 Proposed Conceptual Site Plan



Source: Applicant application

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Installation of Permanent Production Equipment

Permanent oil, water, and gas production equipment would be installed on the Project Site. The permanent oil production facilities would include tanks, vessels, piping, pumps, filters, and supporting metering equipment. These are listed in Table 2.9. A retaining wall around all of the vessels, tanks and other equipment containing oil would provide secondary containment. The design capacity of the secondary containment would exceed the fluid capacity of the largest tank by 110 percent plus the precipitation from a 100-year storm event.

In Phase 4, the oil production facility would be used to separate gas, water, and solids from the oil, after which the oil would be stored in tanks prior to transport via pipeline from the Project Site. The separated water would be accumulated in tanks, filtered, and then injected into the oil-bearing reservoir by the four water injection wells. Gas from each well would be treated on the Project Site and then sold to the SCGC. The permanent gas production facilities would have compressors, vessels, a H_2S and carbon dioxide (CO_2) removal system, a moisture removal system, and an odorizing system. The use of this equipment is discussed in Section 2.4.4, Phase 4 Development and Operations.

Table 2.9 Phase 3 and 4 Processing Equipment Listing

Equipment	Size and Number
Oil Shipping Tanks	40 foot diameter by 16 feet high, 2900 BBLS, 2 tanks
Water Clarifier	40 foot diameter by 16 feet high, 2900 BBLS, 1 tank
Water Surge	30 foot diameter by 16 feet high, 1120 BBLS, 2 tanks
Gas compressors	30 foot by 40 foot - 3 compressors
DEA Skid (acid gas removal)	12 foot by 40 foot, 1 skid
Low Temperature Separation (LTS) skid (propane refrigerant)	12 foot by 40 foot, 1 skid
Flare/Gas Combustor	10 foot diameter by 22 feet high
Vapor Recovery Compressor	17 foot by 28 foot
IGF Skid	18 foot by 8 foot, 1 skid
Filter Skid	25 foot by 18 foot, 1 skid
Micro Turbines (five turbines)	200 kw each, 30 foot by 40 foot
3-Phase Separator	7 foot diameter by 35 feet long
Lease Automatic Custody Transfer (LACT) Skid	5 foot by 12 foot

Source: Project Application, Amendments and Appendices. BBLS=barrels (42 gallons), skid=a pre-fabricated unit.

Construction of Final Site Improvements

In addition to the areas where the concrete well cellar, the containment area, and the oil and gas production equipment have been constructed, the ground surface of the Project Site would be paved with concrete or asphaltic concrete and designed so that no fluids, including rain water up to a 100-year storm event, would leave the Project Site. Liquids, including rainwater, would be

captured in the containment areas or in the well cellars, processed through the production facility, and injected into the oil-bearing reservoir via four water injection wells.

Construction of Final Street Improvements Along Project Frontage

The Proposed Oil Project would include the construction of street improvements along the frontage of the Project Site on 6th Street and Valley Drive. The improvements would include the installation of new curbs, gutters, and sidewalks.

Installation of Final Landscaping

Permanent landscaping would be provided along the perimeter of the Project. To the extent feasible, plant materials used in the temporary landscape plan installed in Phase 1 would be reused in the permanent landscaping. Reclaimed water supplied by the West Basin Municipal Water District would be used for irrigation. Appendix A provides the conceptual landscape plan and plant materials for the permanent landscaping that would be provided at the completion of Phase 3.

Installation of 32-Foot Sound Attenuation Wall

At the completion of the improvements in Phase 3, a 32-foot sound attenuation wall would be erected inside the 16-foot block wall to provide for noise attenuation during Phase 4 drilling. Appendix A provides the elevations of the Project Site, including the sound attenuation walls with the block walls, from Valley Drive and 6th Street at the completion of Phase 3.

Set Conductor Pipe

Prior to drilling in Phase 4, a dry-hole digger/auger would be used to set the conductor casing in the well cellars for all of the intended wells on the Project Site in a manner similar to the setting of the conductor pipe in Phase 2. A hole approximately 18 inches in diameter would be drilled to a depth of approximately 80 feet. A conductor pipe would be lowered to the bottom of the hole and cemented in place. This would form the seal of the near-surface formation and serve as a steel conduit to allow the drilling fluid used in the next stage of the well to be circulated to the surface without washing away the shallow near-surface dirt. All conductors necessary to develop the Proposed Oil Project would be set, and the dry hole digger/auger would be moved off the Project Site.

Lighting Systems

The permanent lighting for the Proposed Oil Project would be installed as a part of Phase 3. The lighting, as proposed in the Applicant's Lighting Plan, would be designed to be directed downward and shielded in order to avoid obtrusive light spillage beyond the Project Site, reflective glare, and illumination of the nighttime sky.

2.4.3.2 Phase 3 Offsite Pipeline Construction

During Phase 3, offsite pipelines for oil and gas would be constructed to transport the oil and gas to markets. Each route is discussed in the following subsections.

Gas Pipeline Route

As it leaves the Project Site, the offsite underground pipeline for the transport of gas would be constructed for a distance of 0.43 miles in the ROW of southbound Valley Drive (which is a one way street south of 2nd Street) in the City of Hermosa Beach to a tie-in to a SCG gas line in the Southern California Edison (SCE) Utility Corridor east of N. Francisca Avenue in the City of Redondo Beach. See Figure 2.15 for the proposed pipeline routes. Appendix A contains detailed drawings of the route and valve box options.

This portion of the gas pipeline would consist of two parallel pipelines, 4 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 does not meet SCG standards. The metering station site, which would be provided as a part of the Proposed Oil Project and is owned by SCG, would be approximately 40 by 60 feet in size and surrounded by an 8-foot high block wall.

As shown in Figure 2.15, this first portion of the gas pipeline is bounded to the east by the Greenbelt and Ardmore Park and, further to the east, by Ardmore Avenue and residential development in the City of Hermosa Beach; to the west by the Beach Cities Self Storage facility, light manufacturing land uses, South Park, and residential development in the City of Hermosa Beach; and to the west in the City of Redondo Beach by facilities associated with the AES Power Plant. The gas line is designed for a maximum operating pressure of 465 pounds per square inch gauge (psig), but would typically operate at approximately 225 psig of pressure.

Once the proposed gas pipeline from the Project Site ties into the SCG point of receipt at the proposed metering station, SCG would construct a six-inch gas pipeline that extends northeast for approximately 1.4 miles to connect to an existing SCG pipeline transmission facility (Line 1170) located on the south side of 190th Street near its intersection with Green Lane, between Flagler Lane and Beryl Street, in the City of Redondo Beach. After the first portion of the new six-inch gas pipeline leaves the proposed metering station and continues northeast, it would be located in an existing SCG easement within the SCE Utility Corridor between N. Francisca Avenue and Pacific Coast Highway. The new pipeline would exit the SCE Utility Corridor on the south side of the intersection of Herondo Street/Anita Street with Pacific Coast Highway, extend across Pacific Coast Highway, and continue northeast within the ROW of Anita Street/190th Street to its point of connection with the existing SCG pipeline transmission facility (Line 1170). If for some reason the first portion of the new pipeline could not be located within the existing SCG easement within the SCE Utility Corridor between N. Francisca Avenue and Pacific Coast Highway, it would leave the proposed metering station and continue for a short distance north within the ROW of N. Francisca Avenue and turn northeast at Herondo Street within the ROW until it reaches the intersection of Herondo Street/Anita Street with Pacific Coast Highway. At that point it would continue to the northeast as described previously. Although SCG would obtain the necessary permits and construct the new gas pipeline, the Applicant would pay for the associated costs of construction.

The proposed gas line from the proposed metering station to the existing SCG pipeline transmission facility is bounded to the north by commercial land uses and residential

development in the City of Redondo Beach and to the south by commercial land uses, residential development, and public facilities including Dominguez Park and Redondo Beach Dog Park in the City of Redondo Beach.

Oil Pipeline Route

The offsite underground pipeline for the transport of oil to an area refinery via a connection to a valve location in the City of Torrance would be constructed for a distance of approximately 3.55 miles in one of three potential pipeline scenarios that would follow a route through the Cities of Hermosa Beach and Redondo Beach and terminate in Torrance. The selection of the pipeline route would occur after Project approval. Appendix A shows the pipeline route scenarios in detail.

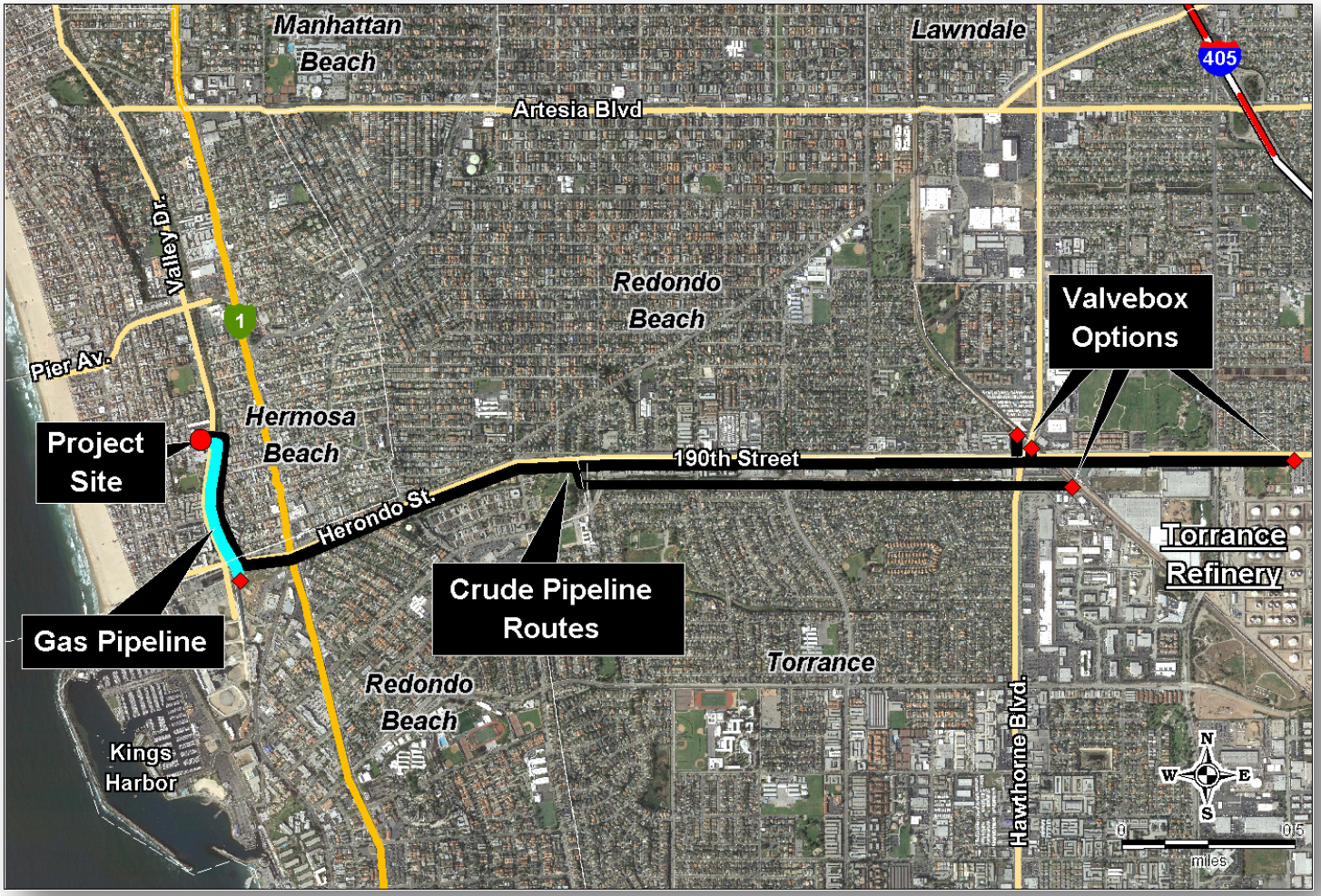
The pipeline would be 8 inches or less in diameter, located at a depth of approximately 3.5 to 4 feet bgs depending on the grade. At one of four potential valve box locations, the pipeline would tie-in to an existing pipeline that transports oil to a refinery. Appendix A provides the proposed alignments of the three oil pipeline scenarios, the respective jurisdictional boundaries, and the adjacent land uses. Appendix A provides the four valve box location options that the pipeline could tie into. More details are included in Appendix A.

Pigging

Passing a device through a pipeline that cleans or inspects the pipeline. A pig is usually a small rubber device slightly smaller in diameter than the pipeline. The pig is forced through it by product flow. Usually cylindrical or spherical, pigs sweep the line by scraping the sides of the pipeline and pushing debris ahead

The oil line would be designed for a maximum operating pressure of approximately 500 psig, but would typically operate at approximately 100 to 200 psig of pressure. The pipeline would include pigging stations 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 Oil Project. Pigging refers to the practice of using pipeline inspection gauges or 'pigs' to perform various maintenance operations on a pipeline without stopping the flow of the product in the pipeline (refer to sidebar for more information).

Figure 2.15 Proposed Pipeline Routes



Source: Project Application, Amendments and Appendices

As shown in Figure 2.15, the oil pipeline would be constructed for a distance of 0.39 miles in the ROW of southbound Valley Drive (which is one-way starting at 2nd Street) in the City of Hermosa Beach to the corner of Valley Drive/N. Francisca Avenue and Herondo Street in the City of Redondo Beach. At this point, the oil pipeline would turn to the east along one of the following three pipeline scenarios (see Appendix A):

- Scenario 1 consists of the construction of the oil pipeline towards the east within the ROW of Herondo Street, Anita Street, and 190th Street in the City of Redondo Beach to the intersection of 190th Street/Hawthorne Boulevard in the City of Torrance. At this point, Scenario 1 would continue to one of the four valve box options presented later in this discussion;
- Scenario 2 consists of the construction of the oil pipeline towards the east within the ROW of Herondo Street and Anita Street in the City of Redondo Beach and the ROW of 190th Street in the City of Torrance to the intersection of 190th Street/Hawthorne Boulevard. At this point, Scenario 2 would continue to one of the four valve box options presented later in this discussion; and
- Scenario 3 consists of the construction of the oil pipeline towards the east within the SCE Utility Corridor in the Cities of Redondo Beach and Torrance. When the oil pipeline meets Hawthorne Boulevard in the City of Torrance, Scenario 3 would continue to one of the four valve box options presented later in this discussion.

The function of the valve box is to house the valve on the new oil pipeline to isolate it from the main oil transmission line and allow for inspection, operation, and maintenance of the valve and line to be performed as required by Federal and State regulations.

The site requirement for a valve box for the Proposed Oil Project would be approximately six feet wide by eight feet long by six feet high. The valve box would be a precast concrete box with walls that are typically eight to ten inches thick. The valve box would be located below grade and designed to State of California Highway "traffic-rated" standards to allow for vehicle travel over it. A standard 36-inch or 42-inch manhole cover would provide access down into the valve box from grade. The manhole cover, the weight of which takes two people to remove and replace, would be bolted into place with special tools, providing security for the valve box. The oil pipeline would end at one of the following valve box locations:

- Valve Option 1 – For Pipeline Scenarios 1 and 2, the pipeline would continue from the Hawthorne Boulevard/190th Street intersection down 190th Street to the Exxon Mobil Refinery, where it would connect with a valve box location within the refinery site. For Pipeline Scenario 3, the pipeline would turn north in Hawthorne Boulevard and east in 190th Street to the refinery site;
- Valve Option 2 - For Pipeline Scenarios 1 and 2, the pipeline would turn south in Hawthorne Boulevard to the SCE Utility Corridor where it would turn east to the valve box location. For Pipeline Scenario 3, the pipeline would continue east in the SCE Utility Corridor across Hawthorne Boulevard to the valve box location;
- Valve Option 3 – For Pipeline Scenarios 1, 2, and 3, the pipeline would turn north in Hawthorne Boulevard to the valve box location adjacent to the Santa Fe Rail Road line; and

- Valve Option 4 - For Pipeline Scenarios 1, 2, and 3, the pipeline would turn north in Hawthorne Boulevard to the valve box location northeast of the intersection of 190th Street/Hawthorne Boulevard.

The oil pipeline would be equipped with a supervisory control and data acquisition system (SCADA), which would monitor pipeline pressure and flow and, if a leak is suspected, would notify the operators. The percentage that is set in the SCADA system would notify the operator of potential oil leak. The detection timeframes set by the Applicant would vary depending on the crude oil flow rate in the pipeline. When the flow rate is at the maximum anticipated production rate of 8,000 barrels per day, flowing on a continuous basis, the flow rate would be 5.5 barrels per minute, and the following would apply:

- 15 minute time interval 5 % or 4.1 barrels
- 1 hour time interval 2 % or 6.7 barrels
- 24 hour time interval 1 % or 80 barrels

If oil production is considerably less than the 8,000 barrels per day, the percentages would be adjusted upward to maintain essentially the same volume of oil previously noted based on the reduced flow rate in the pipe.

Pipeline Construction Methods

The gas and oil pipelines would be installed utilizing conventional trenching methods within either one trench or two separate trenches within the roadway ROW. The construction and installation process would occur in stages consisting of approximately 237 feet in length each. Two stages would be constructed per day (a segment of 237 feet would be 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 previously discussed. A construction spread is a clustering of construction equipment that moves along the pipeline route, sequentially removing asphalt roadway, trenching, laying pipe, filling, re-paving, and cleaning up. A pipeline construction spread consisting of several units would be organized to proceed in the following order:

- Pre-construction activities
- Asphalt removal and ditching or ROW 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 (Scenario 3 pipeline route), 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 of the pipelines and Figure 2.16 depicts a typical pipeline construction spread.

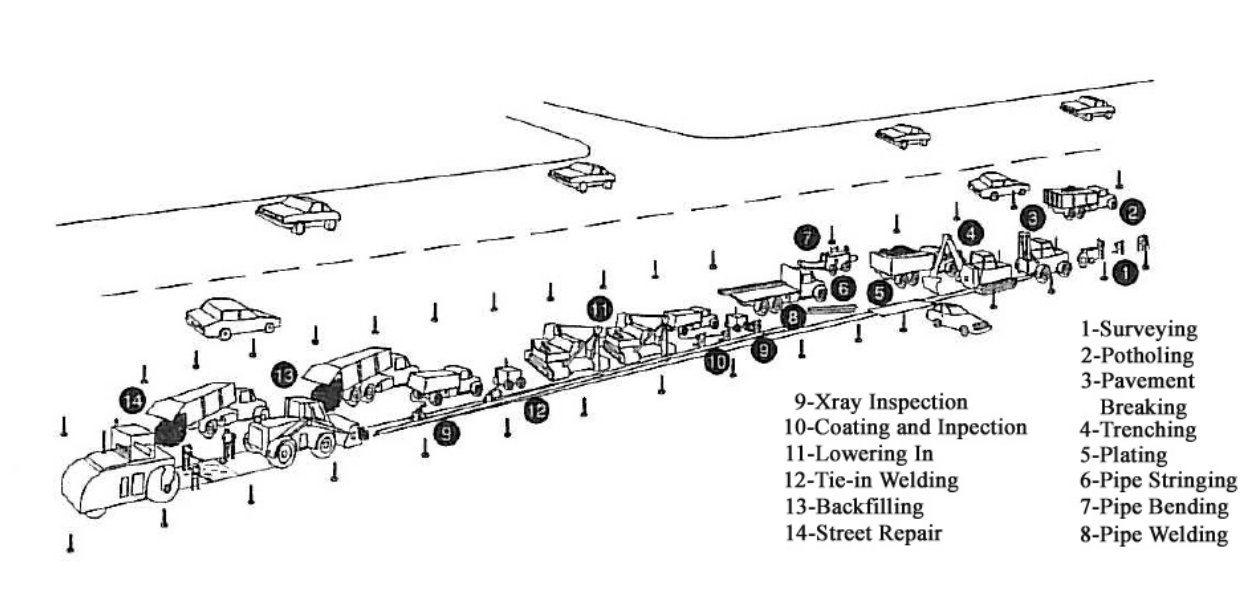
Pre-Construction Activity

The pipeline alignment ROW would include roadways and/or land in existing paved streets and other property, potentially including private property. Approval to construct and operate a pipeline would be obtained from or authorized by franchise agreements or permits from the agency with jurisdiction over the roadways and, if needed, from affected property owners.

The construction requirements in the municipal codes and ordinances of 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; and
- Torrance: 8:30 a.m. to 3:30 p.m. on weekdays. No construction on weekends and holidays.

Figure 2.16 Typical Pipeline Construction Spread



Note: All activities may not occur simultaneously.

The pipeline construction activities would occur on weekdays between the hours of 9:00 a.m. and 4:00 p.m., a time frame which is after morning peak commute hours (i.e., 7:00 a.m. to 9:00 a.m.) and before evening peak commute hours (i.e.: 4:00 p.m. to 6:00 p.m.) on the affected roadways. The Applicant proposes no construction activities during weekends and holidays.

The Applicant would prepare a Construction Traffic Management Plan (CTMP) that would include the following:

- Require the pipeline contractor(s) to obtain and follow Street Construction Permits in the affected Cities of Hermosa Beach, Redondo Beach, and Torrance, and Caltrans facilities (Pacific Coast Highway 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 conflicts to adjacent residents and businesses;
- Develop truck route plans to reduce traffic on the street network during peak traffic commute hours;
- Avoid construction-related traffic to occur during peak travel periods; and
- 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. Because 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, trenching 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. 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 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 require pipe bends that are not able to 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 the line-up crew lays the

pipe, line-up clamps would hold the pipe sections in position until approximately 50 percent of the first welding pass is completed. The welding crew would then apply the remaining weld passes to comply with API 1104, ASME B31.4, or ASME 31.8.[2] 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, one of the following would be applied: two-part epoxy, heat-shrink polyethylene sleeves or polyethylene tape and tape primer.

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 in instances where 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.

[2] ASME - American Society of Mechanical Engineers; API – American Petroleum Institute

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 gas-metering station would be required at the custody transfer location where the Applicant's proposed gas pipeline interconnects with the existing SCG pipeline. The metering station would measure and record gas volumes, gas quality, and gas characteristics and provide custody transfer of the gas to SCG. The metering station would be located adjacent to N. Francisca Avenue, southeast of the intersection of Herondo Street and N. Francisca Avenue. SCG would then construct a new six-inch pipeline to a tie-in location with the existing SCG pipeline transmission facility (Line 1170) as previously discussed in Section 2.3.3.2, Phase 3 Offsite Pipeline Construction.

In addition to the metering station, a pigging station would be installed at the metering station and Project Site for the gas pipeline, as required by SCG, and at the tie-in point for the oil pipeline.

An odorant station would be installed at the Project Site consisting of a 500 gallon odorant tank that would be filled approximately annually. The gas would be odorized before it leaves the site.

2.4.3.3 Phase 3 Hazardous Materials

Hazardous materials used as part of Phase 3 would be associated with construction activities, including diesel fuels, lubricating oils, pipe coatings, solvents, etc. No storage of hazardous materials beyond standard consumer quantities (a few gallons) is anticipated in this phase.

2.4.3.4 Phase 3 Schedule

It is anticipated that Phase 3 would occur for a period of approximately 14 months as indicated in the schedule provided in Table 2.10.

2.4.3.5 Phase 3 Personnel and Equipment Requirements

The vehicles, equipment, and employees estimated for Phase 3 are provided in Table 2.11. The vehicle trips required to transport employees and equipment for Phase 2 are also provided in Table 2.11.

2.4.4 Phase 4 Development and Operations

PHASE 4

Development and Operations: 2.5 years drilling program. Operations - ongoing

The purpose of Phase 4 would be to maximize oil and gas recovery from the reservoirs by drilling additional wells and operating the permanent facility. To accomplish this, Phase 4 would involve the drilling of wells; the operation of the permanent oil production equipment; the transport of the oil and gas by pipeline to their respective destinations; and the ongoing maintenance of the Proposed Oil Project. The Proposed Oil Project would be designed for a maximum capacity of 8,000 barrels of oil per day and 2.5 million cubic feet of gas per day.

Figure 2.17 provides the conceptual site plan for Phase 4. Elevations and the conceptual landscape plan for the Proposed Oil Project during Phase 4 are included in Appendix A.

2.4.4.1 Phase 4 Drilling

Phase 4 drilling would involve delivery and setup of the drilling rig and the drilling of the remaining wells.

Delivery and Set Up of Drill Rig

The drilling rig and its associated equipment would be brought to the Project Site by trucks with trailers permitted by the City and the California Highway Patrol. The approximately 87-foot high drill rig would be powered by electricity. A large crane with a 150-foot boom would be used to erect the drill rig. The crane would be removed from the Project Site after the drill rig and supporting equipment have been set in place. Support equipment for the drill rig would include pipe racks, mud and cutting system, pumps, hydraulic equipment, and an accumulator. In the event of a loss of power from SCE, the generator, which would be a non-road portable diesel-fuel generators certified by the California Air Resources Board (CARB), would provide power for the safe shutdown of the drilling operation. The drill rig and its associated equipment would require the same setup as described under Section 2.4.2, Phase 2 Drilling and Testing.

Table 2.10 Phase 3 Project Schedule

Activity	Schedule (Weeks)																																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28-38	39-53	54	55	56	57	58	59	60	61	62	63	64
Remove temporary equipmen	■	■																																					
Remove trees along Valley					■																																		
Remove 32-foot sound wall			■	■																																			
Implement RAP						■	■	■	■	■	■	■	■																										
Construct retaining walls														■	■	■	■																						
Final grading																		■																					
Construct well cellars																			■	■	■	■	■																
Construct 16-foot block wall																			■	■	■	■	■	■	■	■													
Remove 16-foot sound wall																											■												
Construct/install facilities																						■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
Construct street improvements																																		■	■					
Install landscaping																																				■	■			
Construct offsite pipelines																													■	■										
Start-up of equipment																																				■	■	■	■	
Install 32-foot sound wall																																					■	■	■	
Set conductor																														■	■	■	■	■	■	■	■	■	■	

Note: Days are weekdays Source: Project Application, Amendments and Appendices

Table 2.11 Phase 3 Vehicle Trip Summary

Activity	3-axle Trucks, Maximum RT/day	2-axle Trucks, Autos, Maximum RT/day	Total, Maximum RT/day
Remove production equipment	6	15	21
Remove trees along Valley Drive	2	4	6
Install 16-foot noise wall	6	8	14
Implement Remedial Action Plan	18	8	28
Construct retaining walls	3	20	24
Final grading (balanced)	4	6	10
Construct well cellars	9	15	25
Construct 16-foot perimeter wall	5	20	25
Remove 16-foot noise wall	5	5	10
Construct/install onsite facilities	18	40	47
Construct street improvements	11	9	20
Install landscaping	1	7	7
Construct pipeline	18	22	54
Start-up production equipment	0	7	7
Install 32-foot sound wall	6	9	16
Set conductor	2	5	7
Greatest number of trips in one day	18 (during weeks 6-13, 23, 54)	62 (during weeks 39-53)	78 (during week 39-53)

Notes: * According to the 1993 CUP, which is valid pursuant to the Settlement Agreement, the number of truck trips shall be limited to a maximum of 18 rounds trips per day, except in an emergency.
Trucks are 3+ axle or greater or trucks with trailers. Autos are automobiles or pickups/trucks with 2 axles.
Trips are round trips (RT).
Maximum truck activity occurs during week 6-13 with RAP activities, week 23 with construct well cellars, perimeter wall and onsite facilities and week 54 with construction of onsite facilities, pipeline construction and conductor setting. However, the majority of the pipeline construction traffic would occur away from the Project Site except during the installation of the sections of the pipeline located very close to the Project facility.
Maximum auto activity occurs during weeks 39-53 with the facilities construction.
Maximum activity trucks and autos combined occurs during weeks 39-53, however, the majority of the vehicles for the pipeline construction would be parked at the contractor's facilities or near the pipeline alignment.
Truck maximum and auto/PU maximum do not necessarily occur on the same day, so the total maximum is not necessarily a simply addition of the two. See appendix.
See Appendix A for a detailed breakdown of vehicles, employees, trucks and construction equipment for each week.
Source: Project Application, Amendments and Appendices

2.4.5 Drill Remaining Wells

The drilling of the remaining oil wells and water injection wells, up to a total of 30 oil wells and four water injection wells, would involve the same activities as described for Phase 2. As previously discussed regarding Phase 2, once the drilling of a well is complete, the cemented casing would be run from the surface to the bottom of the wellbore where the well penetrates the oil-producing reservoir. The well would be plumbed into the temporary production equipment and pump system that had been installed. The pump system, installed below ground, would bring the oil, gas, and water to the surface for processing. In addition, up to three additional water injection wells (in addition to the single water injection well drilled during Phase 2) would be drilled to allow for the injection of processed produced water back into the oil-producing reservoir. The drill rig would operate continuously for 24 hours per day, seven days per week, until the appropriate depth and bottom-hole location for each well has been reached. It is estimated it would take approximately 30 days to drill each well. After the drilling of the wells is complete, the drill rig would be removed from the Project Site. Including set up for each well and removal from the Project Site, the total drilling time for Phase 4 would be about 30 months (2 ½ years).

Drilling each well would require approximately 130,000 gallons (or 0.4 acre-feet) of water. The water would be reclaimed water provided by the West Basin Municipal Water District conveyed via extension of an existing waterline serving the Greenbelt east of Valley Drive. The West Basin Municipal Water District has provided the Applicant with a "will serve" letter.

The drilling process requires the use of drilling mud to circulate drilled rock cuttings out of the well hole, retain the integrity of the well hole, and control reservoir pressure. The drilling mud would be collected onsite in tanks. Although most of the mud would be reused on subsequent wells, some mud would be removed from the Project Site and disposed at Anterra's Oxnard Licensed Class 2 Disposal Facility or a similar facility. All other waste generated by the test drilling would be transported by truck to Clean Harbors Buttonwillow Landfill or a similar facility closer to the Project Site.

Noise abatement would be incorporated into the drilling process in the same manner as described for Phase 2, including a 32-foot high sound attenuation wall. After the drilling of the wells is completed, the 32-foot sound attenuation wall would be removed from the Project Site.

Re-Drilling of Wells

Re-drilling of a well occurs if production from a well declines substantially or if problems exist with the well, affecting the well's efficiency or viability. The same activities would be required for re-drills as for initial drilling, except that conductor piping would not have to be installed again, as the same conductor piping would be used for the re-drill.

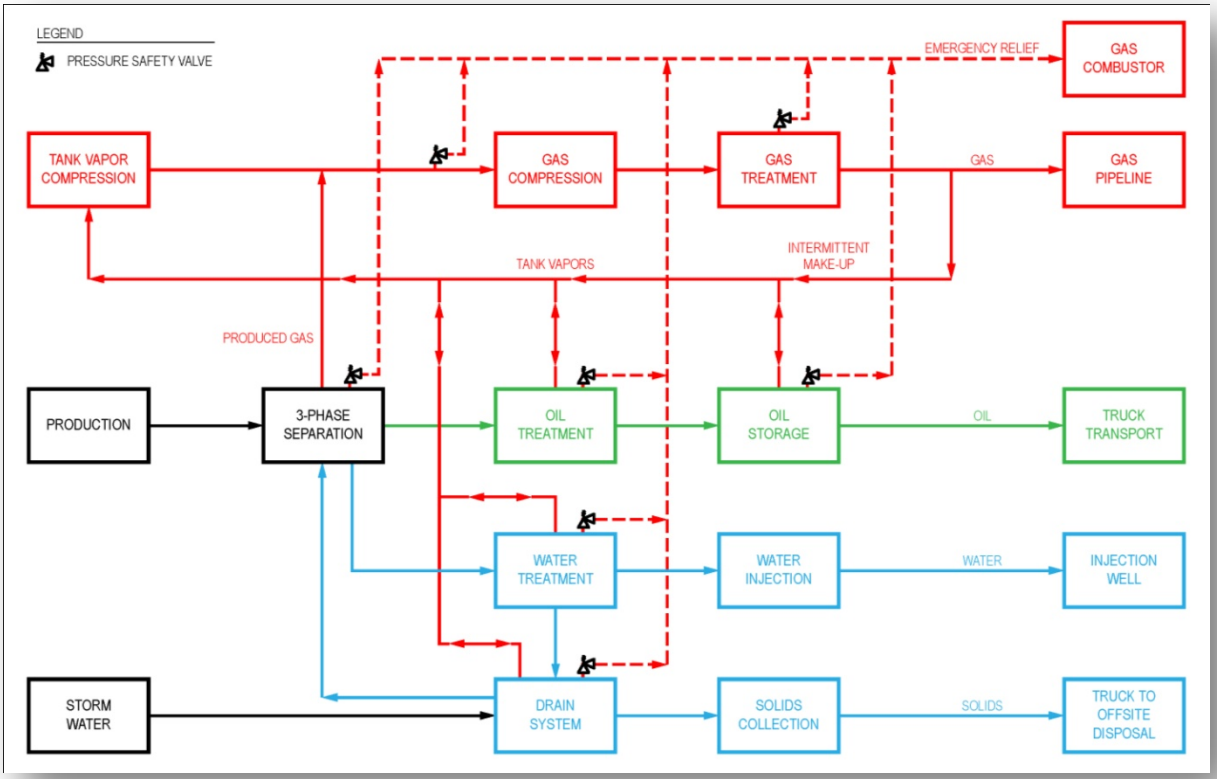
Although the Applicant indicates no anticipation for the re-drilling of wells, the activity may be required under extraordinary circumstances. Depending on the circumstances, a workover rig might be able to be used to complete a re-drill. However, for the purpose of providing a worst-case analysis, the Applicant estimates that up to 30 re-drills could occur over the life of the Proposed Oil Project, with up to five re-drills occurring during any given year. In the event that

a re-drill would occur, noise attenuation design features, including the use of a 32-foot sound attenuation wall and acoustical covers, would be implemented on the Project Site.

2.4.5.1 Phase 4 Processing and Operations

During the drilling of the remaining oil wells and water injection wells, the production of the extracted oil would occur. Figure 2.18 shows the steps involved in processing the oil, water, and gas produced from the wells during Phase 4. The permanent production equipment on the Project Site would be used to process the oil and gas to a standard that would be suitable for sale. The produced water would be processed and injected into the oil-producing reservoir. The gas produced would be processed and sold to the gas company. The oil and gas produced would be transported offsite via pipelines constructed during Phase 3.

Figure 2.18 Phase 4 Process Flow Diagram



Source: Applicant application

Noise abatement would be incorporated into operational practices and permanent production equipment. The anticipated personnel on the Project Site would be four personnel for a 12-hour daytime shift, two personnel for an 8-hour graveyard shift, and two personnel for an 8-hour swing shift. Therefore, personnel would be present 24 hours per day on the Project Site.

During the ongoing operation of the Proposed Oil Project, active wells would require periodic routine service. These activities could include the replacement of down-hole pumps, piping, and cleaning. These maintenance activities would typically be accomplished by utilizing a service rig, or "workover" rig, approximately 110 feet high. The workover rig would be operated on the Project Site a maximum of 90 days per year. The workover rig would be operated between the hours of 8:00 a.m. and 6:00 p.m. on weekdays only (excluding holidays).

In addition, there would be an occasional need for other services such as facilities repair and solid and liquid waste pick-up. Preventative maintenance would be performed on a routine basis to ensure the integrity of the operating equipment. The pipelines would be periodically inspected to ensure their continued integrity.

The permanent production facility would be utilized to separate and treat produced oil, gas and water. The separation and treatment of these fluids allows for the oil and gas to be sold and subsequently transported via pipeline and for the water to be injected into the oil-producing reservoir below the oil water contact line. Figure 2.18 provides a simplified 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

After a well has been drilled and completed (final down-hole equipment installed), the extracted fluids would be piped to the permanent production facility on site. The combination of fluids (i.e., oil, gas, and water mixture) is referred to as an emulsion. This emulsion would be sent via pipes to a production header, where it is commingled with the emulsion from all the wells 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 before the three-phase separator. The well test station allows for the testing of each well quality and flow characteristics. After 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, the oil exits the middle, and the water exits the bottom of the separator. Each of these fluids enters a specific system of treatment, as is discussed in the following subsections.

Oil Treatment System

After the produced oil leaves the three-phase separator, it would enter a stock tank, where it may need to be heated depending on the quality of the crude oil. This heating would allow excess water to drop from the oil. Heating, if necessary, would be provided by the microturbine exhaust waste heat recovery system. From the stock tank, the oil would be measured using a Lease Automated Custody Transfer Unit (LACT) and transported via pipeline to the purchaser. Any water that drops out of the oil would be routed to the water treatment system. Vapors would be directed to the gas processing systems through the vapor recovery unit.

Gas Treatment System

During this phase, gas would be treated, sold, and subsequently transported via pipeline to the SCGC. Treatment of the gas would be required to meet gas pipeline specifications. After the

gas leaves the three-phase separator, it would be sent 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 removal of H_2S from the gas utilizing triazine using the SulfaScrub system. SulfaScrub is a non-regenerative batch process that requires replacement of the SulfaScrub materials periodically. The SulfaScrub process is a "scavenging" process, meaning it is used to remove H_2S in process gas at low concentrations (up to concentrations of approximately 200 ppm).

After leaving the SulfaScrub system, the gas would be sent through the amine system. This amine system removes CO_2 from the gas. After leaving the amine system, the gas would pass through the second stage compressor, where pressure is increased prior to the gas' entry into the low temperature separation system. The low temperature separation system removes any remaining moisture (mostly water) and gas liquids from the gas prior to sale. Propane would be utilized as a refrigerant in the low temperature separation system. Before the gas leaves the Project Site, it would be odorized using an odorizing substance (mercaptan or equivalent) as required by law. The gas would then be sent via pipeline through a metering station to a SCG pipeline constructed in Phase 3 located near the corner of Herondo Avenue and N. Francisca Drive to the south of the Project Site.

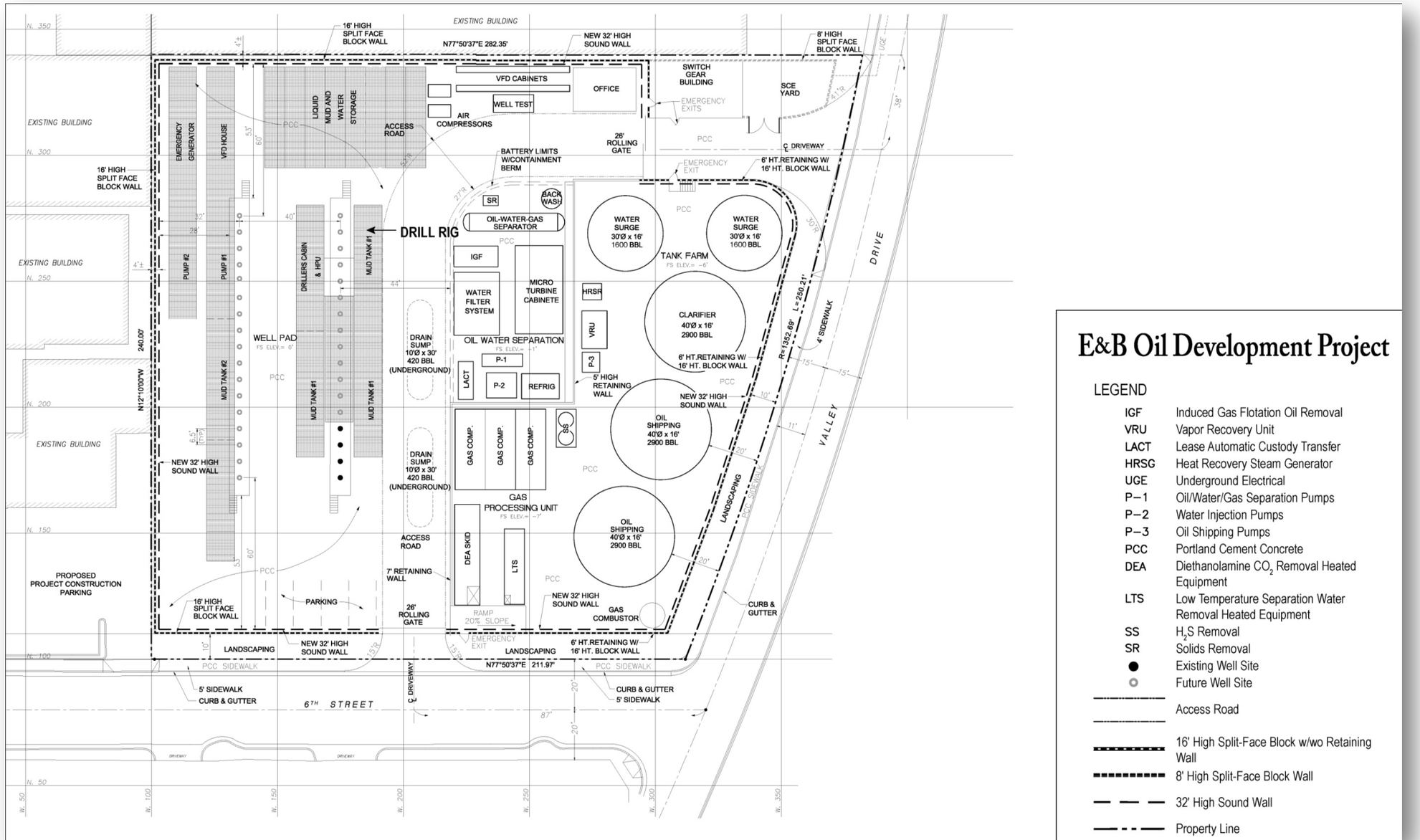
Water Treatment System

After 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 then enter the induced gas flotation unit for the removal of suspended matter, such as oil or solids. The induced gas flotation unit removes oil by injecting gas bubbles into the water. The bubbles adhere to the suspended matter, causing the suspended matter to float to the surface and form a froth layer, which is then removed by a skimmer.

From the induced gas flotation unit, the water would then pass through a filter unit. The filter unit would be used to clean the water of any remaining oil and solids, such as sand. After the water has left the filter unit, it would enter the water surge tanks for storage before injection.

From the water surge tank, the water would then flow through pumps and be sent to the injection wells for injection into the oil producing reservoir.

Figure 2.17 Phase 4 Site Plan with Drilling Rig



Source: Applicant application

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Vapor Recovery System

Gas from all tanks and vessels not part of the gas processing system (the oil and water processing tanks and vessels), as well as pressure relief valves, would be gathered through pipes into a closed-system and directed to a vapor recovery compressor unit. The vapor recovery compressor would compress the gas and then add it to the gas in the gas processing system (from the three-phase separator, etc), where it would be processed and sent via pipeline to the metering station and the SCG system.

Process Drain System

All equipment would be connected to a drain system that would be directed to a 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 to an offsite approved disposal facility.

Electrical Generation System

The facility would utilize a Microturbine system, which would consist of five 200 kw Capstone turbines configured as a single 1,000 kw package. Anticipated NOx emissions would be 4 ppm. Gas produced on the Project Site would be utilized as fuel for the turbines.

Facility Storm Drainage System

The Proposed Oil Project Site is designed to retain, process, and inject storm water within the perimeter fence or wall for a 100-year storm event. All rainwater falling on the site would be collected and pumped into the water processing system for injection into the oil reservoir. In addition, any spills on the site would also be contained, both within process system walls/berms around equipment and site walls/berms around the Project Site. Process walls/berms would be designed to contain at least 110 percent of the largest vessel plus the precipitation from a 100-year storm event.

Waste

Waste would be generated as part of the facility operations and the production process. Regular waste would include typical municipal trash such as paper, trash bags, food, and cups. Process waste would include generic oil field waste such as sandy oil (from the tank bottoms), spent H_2S scavenger, spent filters, oily cloths (i.e., rags), gloves and Tyvek® suits. Intermittently the facility could generate hazardous waste. These wastes could include empty drums, rinse water, painting supplies, spilled chemicals, spent media, and hydraulic fluids. The Applicant indicates that the Project Site would have an Environmental Protection Agency (EPA) and Department of Toxic Substances Control (DTSC) Identification Number.

Phase 4 Safety and Security Systems

The Fire Protection Plan for Phase 4 would be provided by the Applicant for review and approval by the City of Hermosa Beach Fire Department (Fire Department) and incorporated into the Phase 4 Site Safety Plan. Emergency access would be incorporated into the design of the Proposed Oil Project. An additional fire hydrant would be provided adjacent to the Project Site as a component of the Proposed Oil Project. The location of the hydrant would be

determined by the Fire Department, and installation would occur as a part of the construction completed in Phase 3.

A fire suppression system for the ongoing operation of the Proposed Oil Project in Phase 4 would be installed during Phase 3. The fire suppression systems would include a foam injection system and automated detection and annunciation systems. Automated alarm systems would be installed for the detection of chemicals and fire hazards to notify onsite personnel that an emergency situation is potentially occurring. If it is determined that a chemical fire or fire emergency exists, the onsite operator would activate the emergency shutdown system and notify the Fire Department. The Fire Department and their allied agencies would respond as indicated in their mutual and automatic aid agreement contracts. The onsite personnel for the Proposed Oil Project would not be trained as first responders to a fire or spill emergency and would rely on the Fire Department for response activities.

The fire detection system would consist of thermal fire detection and optical surveillance systems that would monitor potential fire zones and activate warning indicators.

The Applicant proposes Subsidence and Induced Seismicity Monitoring Programs to detect subsidence as a result of drilling activities. This would ensure that subsidence would not be tolerated to the degree that it could endanger the facility, offsite structures, and the shoreline. Also, an Induced Seismicity Monitoring Program would be designed to detect seismic activity that might result from drilling activities.

The security system for the ongoing operation of the Proposed Oil Project in Phase 4 would be installed and initiated during Phase 3. Security on the Project Site would be provided by onsite personnel and a site security program that would include a Closed Circuit Television System, a gate access system, and an intrusion and motion detection system. The security system would control all access to and from the Project Site.

During the final design of the Proposed Project and submission of plans to the appropriate agencies for permits, the following plans and programs would be developed by the Applicant as part of the facility drilling and operations phases (Phase 2 and Phase 4 activities):

- Odor Minimization Plan;
- Air Monitoring Plan;
- Fire Protection Plan;
- Safety and Environmental Management Program;
- Mechanical Integrity Program;
- Hazardous Materials Business Plan;
- Subsidence and Induced Seismicity Monitoring Programs;
- Noise Monitoring Plan;
- Quiet Mode Drilling Plan; and
- Various plans related to grading, equipment design, electrical design, landscaping, etc.

Safety devices would be installed within the piping, vessels, and tanks in the processing system. Safety devices would provide early warning, corrective action, or shut down of a specific

segment of the system or the entire facility, if necessary. A number of safety devices are required or recommended by codes, standards and regulations, including:

- High level warning systems;
- High pressure warning systems;
- Automatic shutdown valves;
- Vessel and pipe design requirements;
- Vapor recovery and component leakage limits; and
- Fuel contaminant limits.

Detailed piping and instrument diagrams would be provided by the Applicant during the detailed permitting stages, and reviews of the final design would be undertaken at that time. Specific measures to reduce the risk of hazardous material releases are addressed in Section 4.8, Safety, Risk of Upset, and Hazards.

Phase 4 Hazardous Materials

The operation would require the use of hazardous chemicals. The chemicals would be stored onsite with secondary containment. The chemicals would be documented in a required Hazardous Materials Business Plan and submitted to the Los Angeles County Fire Department as the Certified Unified Program Agency (CUPA) and the Hermosa beach Fire Department. Typical chemicals utilized in the permanent production facility and the maximum quantities that would be onsite at any time are listed in Table 2.12.

Hydrogen Sulfide

The Applicant indicates that low levels of potential "native" 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 Oil 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. After treatment with the SulfaScrub system, the H_2S levels of the gas would be reduced to less than 4.0 ppm. SCG's specifications limit the H_2S concentrations in gas delivered to the meter from a producer to less than 4.0 ppm.

The Proposed Project provides for the injection of treated produced water from the drilling and production process back into the oil reservoir using water injection wells. Untreated produced water can result in the creation of H_2S concentrations in the reservoir above the existing levels in the oil reservoir (referred to as the "native" condition). Prior to the injection of produced water from the oil extraction process, surface runoff from precipitation that collects on the Project Site, or any additional injected water, the water would be treated by a biocide to eliminate sulfate-reducing bacteria (SRB). Once wells begin production, the extracted water would be tested for SRBs to determine if treatment is needed. In addition, the surface runoff and additional water would be tested. SRBs are an assemblage of specialized bacteria that thrive in the absence of oxygen and obtain energy for growth by oxidation of organic nutrients, with sulfate being reduced to hydrogen sulfide (H2S). SRBs are treated by the use of a biocide and this treatment could be a batch or continuous treatment. There are numerous antibacterial agents available on the market that could be used for this specific treatment if it is determined to be needed.

Table 2.12 Phase 4 Drilling Chemicals

Common/Trade Name	Use	Maximum Quantity Onsite (Gallons)
Odorant/Mercaptan	Odorize the sales gas	500
H_2S Scavenger/Pertrosweet HSE700	Gas treatment for H_2S	9,000
Emulsion Breaker/Phasetreat 6378	Help separate oil and water	60
Water Clarifier/Floctreat 7991	Water additive	40
Emulsion Breaker/Waxtreat 3610	Help separate oil and wax	50
Corrosion Inhibiter Cor7182	Additive to reduce corrosion	400
Surface Cleaner/4U	General purpose cleaner	165
Scale Dissolver/Techni Solve 1780	General purpose scale remover	55
Scale Inhibitor/Techni Hib 7621	Additive to reduce scaling	120
Glycol/TEG	Gas treatment for water removal	55
Amine/DEA	Gas Treatment for H_2S removal	110
Methanol	For oil treatment	55
Biotreat 8415	Water treatment prior to re-injection	55

Note: Project Application, Amendments and Appendices

2.4.5.2 Phase 4 Schedule

It is anticipated that Phase 4 would occur for a period of approximately 30 to 35 years, as indicated in the schedule provided in Table 2.13. The drilling of the remaining wells would occur during the first 30 months of Phase 4.

The permanent production equipment would operate 24 hours a day, seven days per week. The Project Site would be staffed 24 hours a day, seven days per week.

Table 2.13 Phase 4 Project Schedule

Activity	Schedule (Weeks)													
	1	2	3	4	5 through 131					132	133	134	135	Life of Project
Deliver and Set up drill rig	■	■												
Drill remaining 30 wells			■	■	■	■	■	■	■					
Remove drill rig										■	■			
Remove 32-foot noise wall												■	■	
Facility operations and maintenance	■	■	■	■	■	■	■	■	■	■	■	■	■	Continuous
Re-drills														Periodically
Well workovers														Max 90 days per year

Source: Project Application, Amendments and Appendices. To re-drill a well, a drilling rig similar to the one initially used to drill the wells would be used with the same setup, drilling and removal procedures. Workovers would use an 110-foot tall truck mounted drilling rig and would be conducted a maximum of 90 days per year.

2.4.5.3 Phase 4 Vehicle Requirements

The number of vehicles estimated by the Applicant to be necessary for Phase 4 operations are provided in Table 2.14. During drilling, parking for Project employees would be provided as previously described under Section 2.4.1.1, Phase 1 Construction Activities, under the subsection Clearance of the Project Site. Parking for Project employees would be provided on the Project Site after the drilling of all the wells is completed and the drill rig has been removed from the Project Site.

2.4.6 Parking Requirements

The Proposed Project construction and operation activities would result in increased parking demand. The elimination of existing parking would also make necessary the replacement of spaces lost. Parking requirements addressed in this DEIR include the following:

- Temporary parking for a maximum of 40 Project employee vehicles, varying between approximately 20 and 40 employee vehicles during construction and/or drilling activities in Phases 1-4, excluding ongoing production in Phase 4;
- Long-term parking for four Project employees during the ongoing operation of the Proposed Project and four additional spaces for maintenance workers in Phase 4;

Replacement of 15 parking spaces currently located at the City Maintenance Yard that supply free remote public parking on weekends under the City's Preferential Parking Program approved by the Coastal Commission. These spaces are used by:

- Maintenance Yard employees during working hours (i.e., Monday through Thursday from 7:00 a.m. to 6:00 p.m. excluding holidays) and by the public at other times; and
- Replacement of two on-street public parking spaces that would be eliminated by improvements to the southwest corner of 6th Street and Valley Drive. These spaces are not part of the City's Preferential Parking Program.

Table 2.14 Phase 4 Vehicle Trip Summary

Activity	3-axle Trucks, Maximum RT/day	2-axle Trucks, Autos, Maximum RT/day	Total, Maximum RT/day
Deliver and Set up drill rig	6	20	26
Drill remaining 30 wells	12	11	23
Remove drill rig	5	20	25
Remove 32-foot sound wall	4	8	12
Facility operations and maintenance	5	13	18
Well workovers/Major Maintenance	4	14	18
Greatest number of trips in one day	17 (during drilling)	34 (during drilling)	44 (during drilling)

Notes: * According to the 1993 CUP, which is valid pursuant to the Settlement Agreement, the number of truck trips shall be limited to a maximum of 18 rounds trips per day, except in an emergency.
Trucks are 3+ axle or greater or trucks with trailers. Autos are automobiles or pickups/trucks with 2 axles.
Trips are round trips.
Maximum activity occurs during drilling of wells with facility operations and maintenance.
Truck maximum and auto/PU maximum do not necessarily occur on the same day, so the total maximum is not necessarily a simple addition of the two. See Appendix A.
Re-drilling would produce the same level of traffic as traffic produced during drilling activities.
See Appendix A for details regarding vehicles, employees, trucks and construction equipment necessary for Project operations each week.
Source: Project Application, Amendments and Appendices

In order to comply with the City's Preferential Parking Program and Coastal Development Permit requirements and be consistent with the City's Coastal Land Use Plan (titled Local Coastal Plan) policies,, 17 public parking spaces would have to be generated under the Proposed Oil Project to replace the 15 parking spaces removed at the current City Maintenance Yard and the 2 on-street public parking spaces removed from 6th Street, Table 2.15 provides the Applicant's assessment of parking demand for each phase of the Proposed Oil Project and the Applicant's proposal for the development of the required parking as a component of the Proposed Oil Project. As indicated in Table 2.15, Phases 1, 2, and 3 and the drilling portion of Phase 4 would require temporary offsite parking.

Table 2.15 Proposed Oil Project Parking Requirements

Phase and Peak Activities	Peak Number of Employees	Number of Offsite Parking Spaces Needed	Comments
Phase 1: construct fence, wells cellar and install electrical service	27	20	Some employees would park onsite and others would use temporary parking lot.
Phase 2: Install equipment and drill test wells.	22	12	Two 5 person shifts for drilling, some carpooling assumed.
Phase 3: Construct wall, remove soundwall, construct onsite facilities	30-60	40	Peak employees occurs for constructing onsite facilities. Assumes some carpooling.
Phase 4: Drilling and Operations	10	4	5 persons per shift with 2 shifts per day. Carpooling is assumed.
Phase 4: Operations Only	2-4	0	No offsite parking needed.

Source: Applicant submittals January 2014

The following information summarizes E&B's proposal in the Project Application to meet parking demands.

Cypress Parking Lot: Parking for 20 employees during temporary construction and drilling activities during Phases 1, 2, 3, and the drilling portion of Phase 4 would be provided in an offsite temporary parking lot to be developed at 636 Cypress Avenue adjacent to the western Project boundary (referred to as the temporary parking lot).

The Applicant states it has entered into an agreement with the current owner of the subject property at 636 Cypress Avenue (Assessor Parcel No. 4187-031-22) for this use. Access to the parcel is provided from Cypress Avenue. While adjoining the Project Site at 555 6th Street, the temporary parking lot will not be accessible from the Project Site due to an elevation difference between the properties and the need for secured points of entry onto the Project Site.

The 6,000-square foot parcel at 636 Cypress Avenue is a relatively level property. It is currently developed with a single-story building that occupies approximately 75 percent of the parcel and a parking lot with approximately 6 parking spaces. The development of the parcel would comply with all City requirements. Development would require demolition of the existing building, removal of the current asphalt parking area, and minimal grading. The Cypress Parking Lot would be completed before the commencement of construction activities to occur under Phase 1 Site Preparation of the Proposed Project.

Improvements that would be made to the new 60-foot by 100-foot parking lot with 20 parking spaces would include drainage, landscaping with irrigation, lighting, a trash container, and other elements to comply with the City of Hermosa Beach Municipal Code. Details of the redeveloped parcel are shown in Figure 2-18.

The Applicant has requested that the City supply the required 17 replacement spaces as part of the City Maintenance Yard relocation. If the No Added Parking option is constructed, then the 17 spaces would be provided on a permanent basis at the proposed temporary parking lot at 636 Cypress Avenue (see section 2.4.5). The City has not agreed to supply any replacement spaces regardless whether the Parking option or No Added Parking option were to be constructed

Additional 20 Temporary Parking Spaces (Phase 3): During peak construction activities in Phase 3, parking for a maximum of 20 temporary parking spaces, in addition to the 20 temporary parking spaces provided at the Cypress Parking Lot, would be provided at one or more sites, not yet identified, that would be leased or rented by the Applicant. Employees would walk to or be shuttled to the Project Site.

The Applicant proposes to ensure to the City, through the submittal of any required documentation, that the parking spaces would be available during the temporary construction and drilling activities for the Proposed Project. If spaces are "remote," located farther than 5 to 8 blocks from the Project Site as defined by the Applicant, a van pool shuttle service from the remote parking spaces would be provided to the Project Site by the Applicant. The Applicant proposes to obtain all required approvals and entitlements from the City and to make any required modifications to conform with City codes, identified as mitigation measures in the certified EIR, and any other requirements that may be imposed as a result of the Development Agreement or ballot measure.

Construction Vehicle Parking (Phases 1-4 excluding permanent operations): The Applicant indicates that it has an agreement to utilize the below-ground parking area at 601 Cypress Street for non-hazardous equipment storage and parking. Parking for construction vehicles and staging would be provided both at the Project Site at 555 6th Street and within the building at 602 Cypress Street during Phases 1-4.

Parking for Ongoing Operations in (Phase 4): The long-term parking for a maximum of four Project employee vehicles during ongoing operations and maintenance will be supplied by four marked parking spaces on the Project Site at 555 6th Street. Additional parking required for maintenance activities for ongoing operations would also be accommodated onsite along the perimeter wall as indicated in Figure 2-18. No additional offsite parking would be required for long-term Project operations.

Replacement of Spaces Eliminated by the Project: Fifteen parking spaces at the Project Site at 555 6th Street are used by City Maintenance Yard employees during working hours of Monday through Thursday from 7:00 a.m. to 6:00 p.m. excluding holidays. These spaces also supply free remote public parking on weekends under the City's Preferential Parking Program, approved by the Coastal Commission, and are otherwise used by the public when available. The Application proposes to replace 15 spaces for free remote public parking in the offsite temporary parking lot at 636 Cypress Avenue and as indicated below. The City would be responsible to supply parking for its Maintenance Yard employees as part of its City Maintenance Yard relocation plan.

Two on-street public parking spaces would also be eliminated by Project improvements to the southwest corner of 6th and Valley Drive; these spaces are not part of the City's Preferential

Parking Program. The Application proposes to replace these two spaces in the offsite temporary parking lot at 636 Cypress Avenue.

The Application indicates potential overlap with onsite employee scheduling during the drilling portion of Phase 4, requiring four parking spaces at 636 Cypress Avenue to be vacant as one shift arrives and another shift is leaving. This results in the availability of 16, rather than 17, parking spaces for a period of approximately one hour.

The Application indicates that relocation of the 17 public parking spaces requires a coordinated approach between the Applicant and the City and proposes that this relocation be governed by the Lease Agreement (Section 13). The Applicant proposes the relocated City Maintenance Yard be developed in a manner which could supply the permanent public parking spaces on weekends and at night, similar to the way in which the existing parking spaces at the current City Maintenance Yard are utilized. If the relocation of the City Maintenance Yard does not become the location for the permanent public parking spaces, then the Applicant proposes to provide 15 replacement public parking spaces as well as the additional 2 public parking spaces, prior to the commencement of Project operations, at the offsite temporary parking lot at 636 Cypress Avenue or to provide other suitable public parking spaces consistent with requirements of the City's Preferential Parking Program, the California Coastal Act, and a framework proposed by the Applicant.

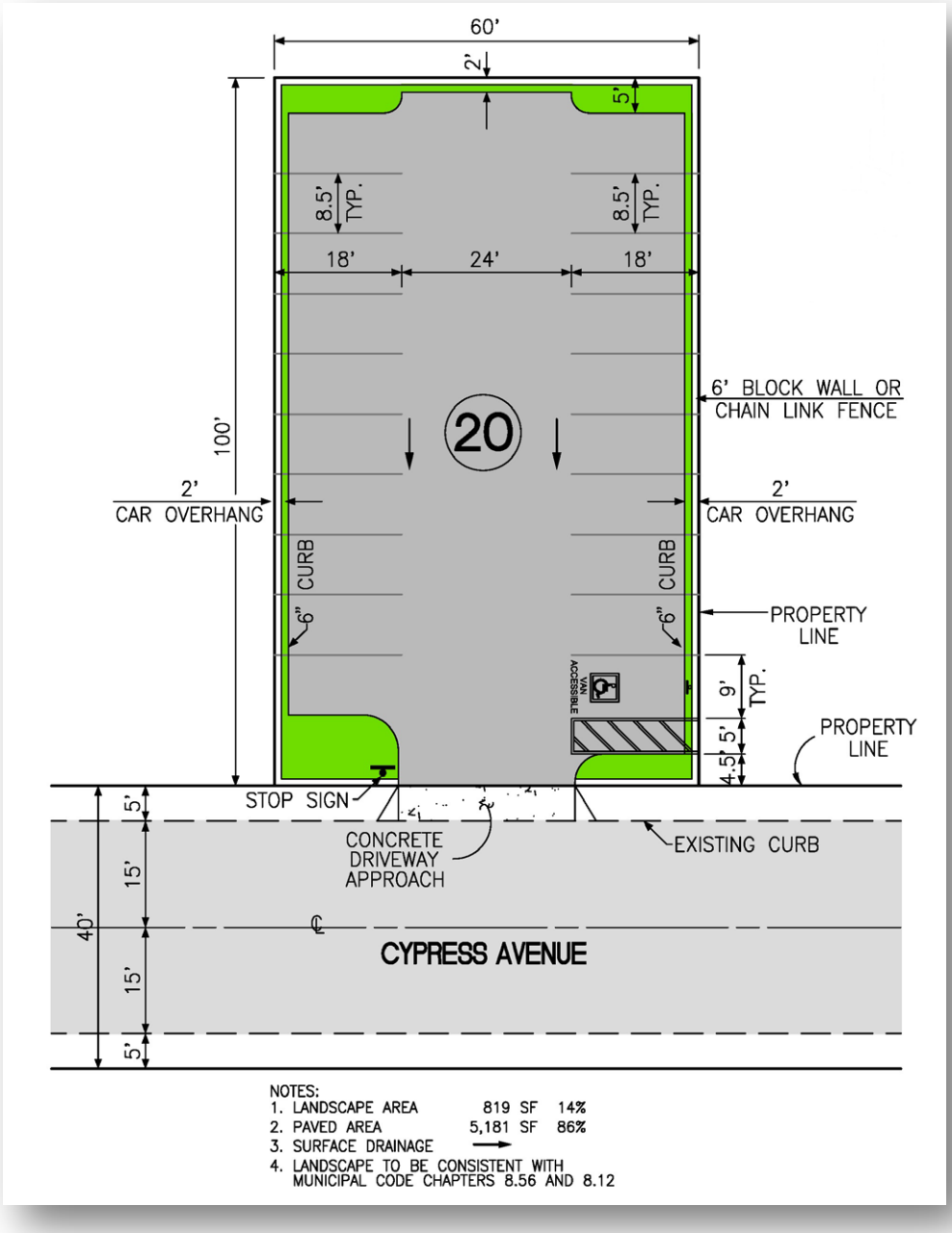
2.4.7 Project Life and Decommissioning

Under the Proposed Oil Project, the oil and gas resources would be developed until they are depleted and developing them is no longer economically viable, for up to 35 years. Currently, the amount of crude oil that could be produced from the field is unknown, and future crude prices are difficult to assess. According to the Lease Agreement, the Proposed Oil Project could operate for up to 35 years. Figure 2.19 shows the estimated crude oil, gas and water production for the life of the Proposed Oil Project.

If during Phase 2 the Applicant does not consider the level of production from the Project Site to be economically feasible, then decommissioning of the installed equipment would commence. Decommissioning would involve the removal of the drilling and temporary testing equipment and would include abandonment of wells according to the Division of Oil, Gas and Geothermal Resources (DOGGR) requirements. The Project Site would be left as a graded site with site improvements including the retaining walls, the perimeter chain link fence, and the perimeter landscaping.

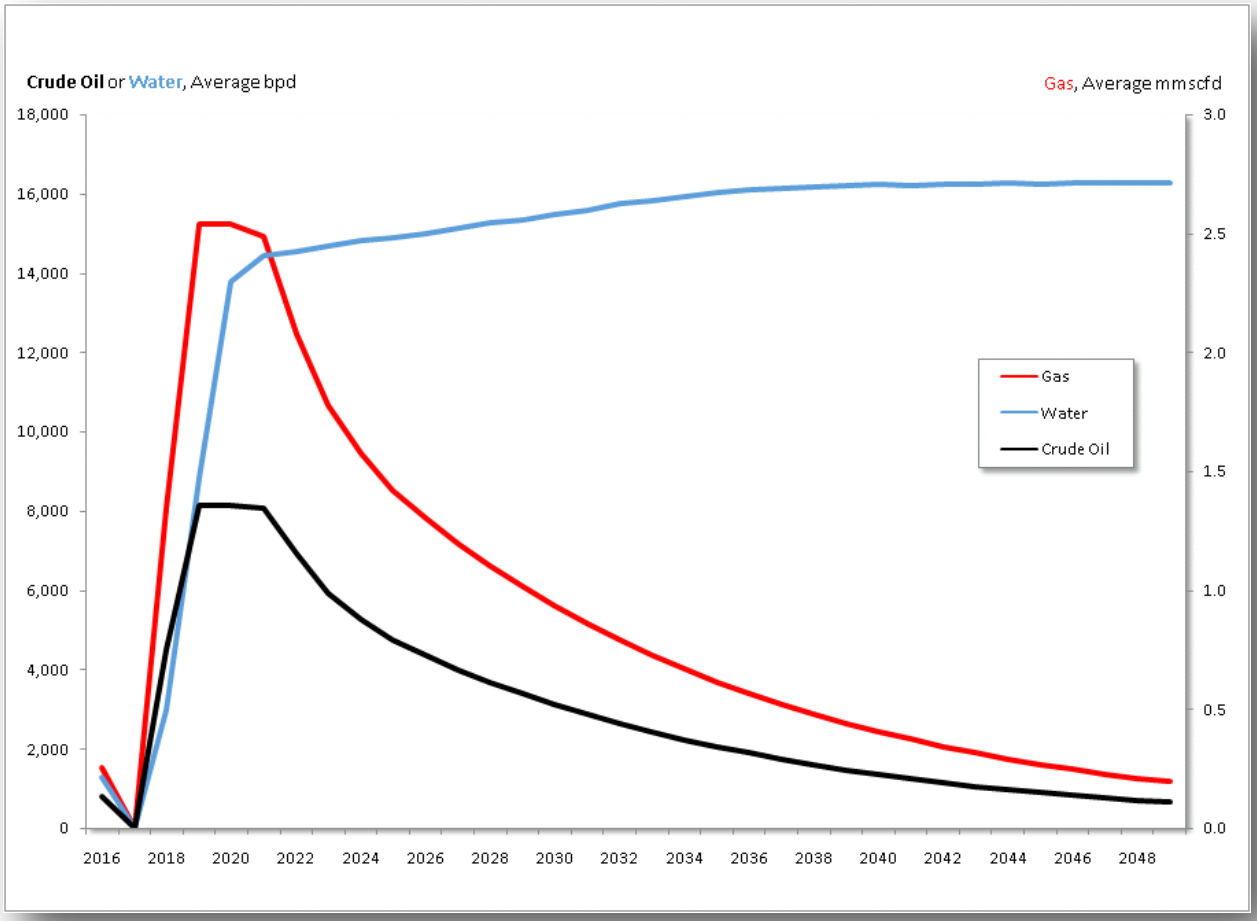
At the end of the Proposed Oil Project, when the owner applies to DOGGR and to the City to abandon the facility, a separate permit process and CEQA environmental review would be required to evaluate decommissioning of the entire Project Site. Since the timing of the decommissioning is unknown, the Applicant has not submitted a detailed decommissioning plan, and therefore any assessment of decommissioning activities would be speculative at this time.

Figure 2-18 Cypress Parking Area



Source: E&B Updated Parking Plan 1/8/2014

Figure 2.19 Estimated Production Levels



Source: Based on Applicant submitted estimates

2.5 Proposed City Maintenance Yard Project

The current use on the Project Site, the City Maintenance Yard, would be relocated to the City owned properties located west of Valley Drive occupied by City Hall at 1315 Valley Drive and by the Hermosa Self-Storage Facility at 522 11th Place. The temporary City Maintenance Yard would be located at the rear of the City Hall site primarily utilizing the locations occupied by reserved employee parking and storage buildings utilized by the Police and Fire Department and Friends of the Library, as well as a small parking lot used by City vehicles and onstreet city and public parking spaces along 11th Place and Bard Street. Some of these parking spaces are a portion of the City's inventory under the City's Preferential Parking Program approved by the Coastal Commission. Traffic circulation on Bard Street and 11th Place would also be modified during the temporary relocation as Bard Street would be closed to through traffic during the temporary relocation.

The permanent City Maintenance Yard relocation site is zoned M-1 Light Manufacturing with a portion zoned OS Open Space. The permanent City Maintenance Yard would be located adjacent to and south of Hermosa Beach City Hall on the site currently occupied by the Hermosa Self-Storage Facility, which is on a month to month lease, along with 32 parking spaces. The adjacent land uses are residential uses to the south and west, the Greenbelt to the east, and the Civic Center (City Hall, Library, and Fire Station) and commercial uses to the north. The 32 parking spaces are reserved for City employees between the hours of 7:00 a.m. to 6:00 p.m. Monday through Thursday (i.e., work hours) and used by the public at other times without charge. These 32 spaces are a portion of the City's inventory under the City's Preferential Parking Program.

The proposed temporary City Maintenance Yard relocation site is zoned M-1 Light Manufacturing with a portion zoned O-S Open Space. The proposed permanent City Maintenance Yard relocation site is zoned O-S Open Space. The adjacent land uses are residential uses to the south and west, the Greenbelt to the east, and the Civic Center (City Hall, Library, and Fire Station) and commercial uses to the north.

2.5.1 Construction Phases

The construction of the City Maintenance Yard and the onsite parking spaces would occur in two phases: the construction of a temporary yard and the construction of the permanent facility. The temporary yard would be constructed prior to the initiation of any Proposed Oil Project Phase 1 site clearance at the current City Maintenance Yard in order to allow for the maintenance activities to retain their functionality during the Proposed Project. The permanent yard would be constructed at the start of Phase 3 of the Proposed Oil Project.

2.5.2 Phase 2 Unsuccessful

If Phase 2 of the Proposed Oil Project is not successful, the yard would be constructed after Phase 2 is completed. It could be constructed at either the Proposed City Maintenance Yard site or at the current City Maintenance Yard site, that would be vacated by the unsuccessful Oil Project.

2.5.3 Temporary City Maintenance Yard

For the temporary City Maintenance Yard, the existing storage building would be removed, and two temporary metal buildings would be constructed, possibly utilizing one of the metal buildings on the existing City Maintenance Yard site. Various accessory facilities would be provided to accommodate the maintenance functions. Construction of temporary buildings would take place immediately adjacent to the existing storage building (see Figure 2.20). Demolition and construction of the temporary yard is estimated to take nine months.

The temporary facility at 1315 Valley Drive would displace 30 parking spaces reserved exclusively for city employees and city vehicles at all times, currently within the rear lot (22 spaces), southerly parking lot (6 spaces) and along Bard Street (12 spaces). Also, 12 on-street spaces along 11th Place and Bard Street that are part of the City's Preferential Parking Program would be lost. The City proposes to address this issue in several ways: (1) participate in a street improvement program with Redondo Beach which would reconfigure parallel spaces along the

north side of Herondo Street into diagonal spaces thereby yielding a net increase of 9 public parking spaces that would be available for coastal public parking; (2) create 15 new diagonal spaces with 15 spaces reserved exclusively for city employee and city vehicles at all times and with 3 spaces available for coastal public parking on a paved 150 foot by 35 foot strip of city-owned property abutting Valley Drive (located north of the current City Maintenance yard); and (3) allocate 18 spaces for city employees on Monday – Thursday, 7:00 a.m. to 6:00 p.m. in the parking lot at the Community Center at 710 Pier Avenue. Because the spaces at the Community Center are currently part of the City's Preferential Parking Program, utilization of these spaces for employee parking on Monday to Thursday from 7:00 a.m. to 6:00 p.m. would reduce the required number of public spaces at these time for the duration of the temporary City Maintenance Yard. The City would continue to explore other options for city employee parking so as to not impinge on these Preferential Parking Program. These temporary changes to the City's Preferential Parking Program would require approval of the Coastal Commission.

2.5.4 Permanent City Maintenance Yard

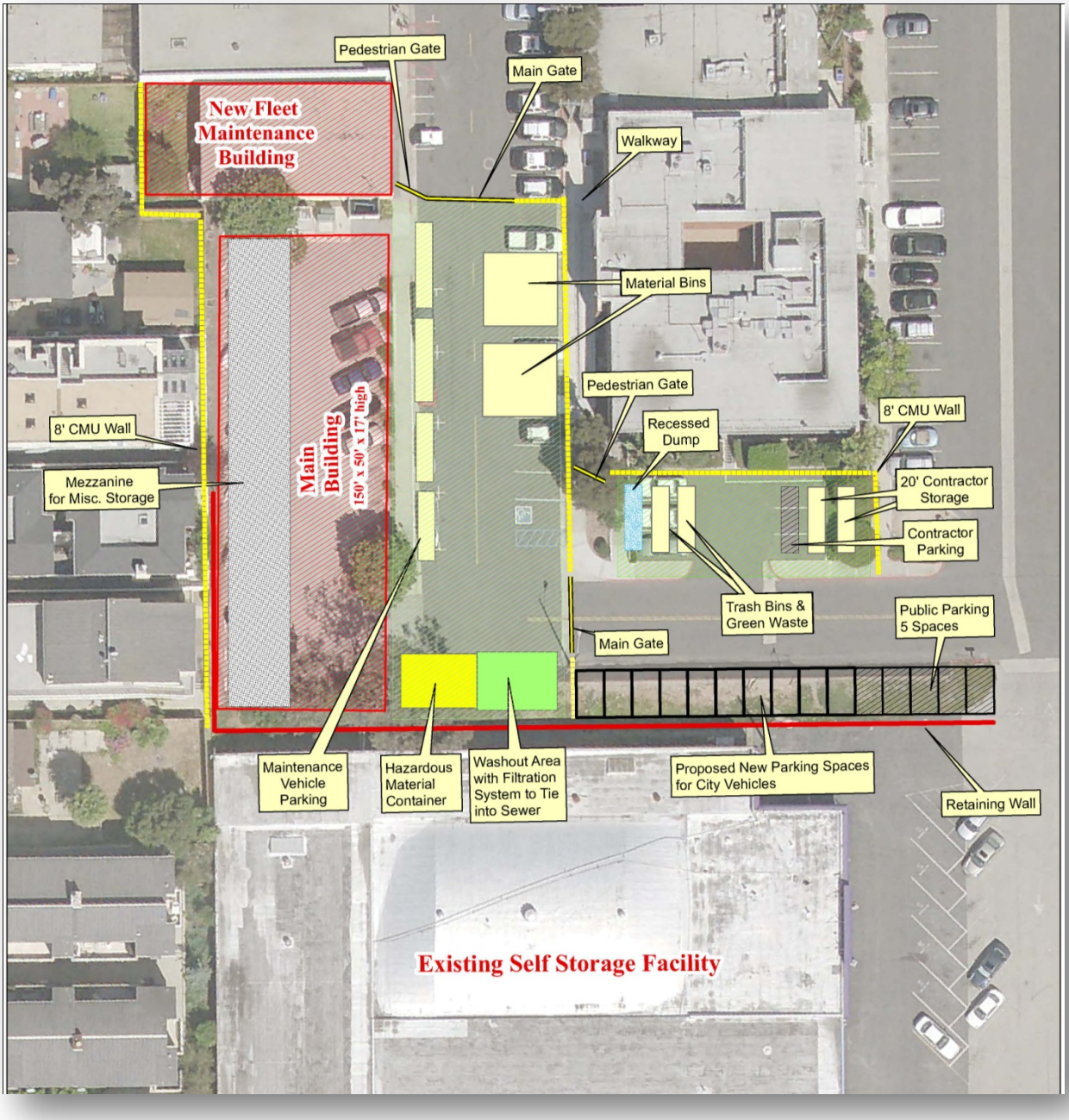
Two options for the permanent facility were assessed: one with an additional 97 parking spaces (Parking Option) and one that minimizes the footprint of the facility by not providing any additional parking (No Added Parking Option). Construction would take 20 months for the Parking Option and 17 months for the No Added Parking Option with a design and permitting lead time of 12 months for either options (including Coastal Commission approval). See Figures 2.21 and 2.22.

2.5.4.1 Parking Option

The Parking Option takes advantage of the fact that the majority of the site is already depressed, by providing a lower level parking area with a structured deck above it to accommodate the relocated City Yard. The lower level would have parking for a total of 129 vehicles. The Parking Option would include the 32 parking spaces that would be eliminated (currently next to City Hall in front of the Hermosa Self-Storage site that are reserved for City employees during work hours and the public during non-city-work hours under the City's coastal Preferential Parking Program). Therefore, while a portion of the 129 parking spaces under the relocation of the City Maintenance Yard with Parking Option would replace existing parking spaces, the remainder would be available to serve parking needs as determined by the City Council.

Access to the parking level for the Parking Option is designed to be separated from City Yard traffic, as the entry would be located on the north side of the facility where it can be reached from 11th Place and Bard Street. Vehicular access to the City Yard level from Valley Drive has been incorporated into the design of both the Parking Option and the No Added Parking option. Facilities in the Yard area have been designed to be constructed along the perimeter to maintain a clear space in the center, creating efficient and safe traffic flow.

Figure 2.20 City Yard Relocation Conceptual Site Plan: Temporary Location



Source: City of Hermosa Beach

Figure 2.21 City Yard Relocation Conceptual Site Plan: Permanent Facility Parking Option

Source: City of Hermosa Beach City Yard Relocation Study Memo Dated 19 July 2013 to Public Works Department from RNL

Figure 2.22 City Yard Relocation Conceptual Site Plan: Permanent Facility No Added Parking Option

Source: RNL for the City of Hermosa Beach, Oct 2012

Construction for the Parking Option would consist of building a two level structure to accommodate the City Maintenance Yard on the upper deck and parking for 129 cars on the lower deck. The overall gross floor area of the deck is approximately 48,000 gross square feet.

Figure 2.21 shows a proposed layout of the Parking Option. The yard's enclosed facilities would be set along the southern side of the deck, sharing its southern border with neighboring residences. The Vehicle Maintenance facility would be placed in the south-west corner of the City Maintenance Yard past the line of workshops, in front of which impediments to traffic flow would tend to emanate. These impediments would arise from the ingress and egress of vehicles being repaired and from parked vehicles waiting for service. Therefore, placement of the Vehicle Maintenance facility in this location is pertinent to efficient traffic flow within the City Maintenance Yard.

The City Maintenance Yard offices, restrooms, lockers and kitchen break room would be situated in a separate structure at the north-west corner of the deck to provide for some distance from City Maintenance Yard activities. This structure would also accommodate flexible space on two levels for public use. While the facility would accommodate uses for both the City Maintenance Yard and the public, each function would exist separately from one another, and each would have its own entry, with the former's from the deck and the latter's from grade at Bard Street.

Appendix A shows a conceptual design of the facility, as presented to the Public Works Department, along with three dimensional simulated views. The height of the facility varies from 1/2 level above grade at the 11th Place and Valley Drive edges of the deck structure to approximately 2 stories at the south-west corner of the Yard.

2.5.4.2 No Added Parking Option

The No Added Parking Option is virtually the same as the Parking Option except that under the No Added Parking Option, the entire facility would be a single story, with the City Maintenance Yard functions and facilities (vehicle maintenance, offices, restrooms, lockers and kitchen break room, etc) occupying a reduced 30-40,000 ft^2 acreage shared with the retained 32 parking spaces located along the north and east side of the facility. The building heights of the No Added Parking Option would be similar to the Parking Option, as the parking garage under the Parking Option would be below grade. See Figure 2-22. The additional 97 parking spaces would not be a part of the No Added Parking Option.

2.6 Agency Use of the Document

Section 15124(d) of the CEQA Guidelines requires that an EIR contain a statement briefly describing the intended uses of the EIR. This statement includes identifying the ways in which the Lead Agency and any responsible agencies would use this document in their approval or permitting processes.

2.6.1 Local and Regional

The City is the Lead Agency for this EIR, which will be used, among other purposes, to provide information to the voters in determining whether or not to lift the ban on oil production and approve other specified legislation for the Proposed Oil Project. All feasible mitigation measures identified in the EIR that is applicable to E&B's Proposed Oil would be adopted and incorporated into the Project (which would include a Development Agreement) or made conditions of Project approval, as appropriate before the ballot measure is presented to the voters. The adopted mitigation measures will also apply to subsequent Project approvals, including ministerial permits, if the voters approve the Project. The City would also use the EIR for permitting related to relocation of the City Maintenance Yard.

The Cities of Redondo Beach and Torrance are Responsible Agencies that would use the EIR for decision-making regarding approval of the portion of the Pipeline proposed within their respective jurisdictions. For the purposes of CEQA, the term "Responsible Agency" includes all public agencies other than the Lead Agency that have discretionary approval power over the Project. The Los Angeles County Fire Department is a California Environmental Protection Agency Certified Unified Program Agency (CUPA) for the entire County, including the City of Hermosa Beach. The CUPA oversees all programs associated with hazardous materials. This includes the Business Plan Program and the Hazardous Waste Generator Program; Underground Storage Tank Program; the California Accidental Release Program and Risk Management Prevention Program; Uniform Fire Code (UFC); and Aboveground Storage Tank Program. The Fire-Hazardous Materials Unit also oversees the Leaking Underground Fuel Tank and Site Mitigation Unit Programs, which ensure appropriate assessment and remediation of all hazardous materials releases. Included in these programs is the reporting of unauthorized releases of hazardous materials, within the Proposition 65 requirements. The Los Angeles County Fire Department is a Responsible Agency that may use the EIR to obtain additional information on the Proposed Oil Project for changes in the Hazardous Waste Generator and Business Plan.

The Los Angeles Regional Water Quality Control Board (RWQCB), Region 4, is responsible for establishing wastewater discharge requirements and issuing storm water pollution prevention plan permits. The Los Angeles RWQCB is a Responsible Agency that is expected to use the EIR in its review of the Project.

The South Coast Air Quality Management District (SCAQMD) is the agency responsible for issuance of a Permit to Construct (PTC) and a Permit to Operate (PTO), both of which would be required for the Proposed Project. To fulfill its obligations as a Responsible Agency, the SCAQMD would rely on information contained in this EIR as part of the PTO permitting process.

2.6.2 State

The California Division of Oil, Gas and Geothermal Resources (DOGGR) is the agency responsible for issuance of well permits for production and injection wells. DOGGR is expected to use the EIR in its permitting review of the Project.

The California Coastal Commission would utilize the EIR for its permitting purposes and consistency review. This would include the California Coastal Commission review of the

amendments to the City of Hermosa Beach Coastal Land Use Plan and a Coastal Development Permits for the Proposed Project.

2.6.3 Federal

The Office of Pipeline and Hazardous Materials Safety Administration (PHMSA), which is part of the United States Department of Transportation (DOT), is responsible for inspecting hazardous pipelines during construction to ensure they comply with all DOT regulations. Their inspections would include both the Pipelines and the odorant facilities. The PHMSA may use the EIR to obtain additional information on the Proposed Oil Project.

The US Environmental Protection Agency may issue requirements for the Spill Prevention Control and Countermeasure Plan (SPCCC) and may use the EIR to obtain additional information on the Proposed Oil Project.

2.7 Potential Project Permits

Various permitting requirements must be met prior to implementation of the Proposed Project. The following section, DiscretionaryPermits and Approvals, summarizes local, state, and federal permits that may be required for the Project.

2.7.1 Discretionary Permits and Approvals

The Proposed Project would require discretionary permits and approvals prior to implementation. These are listed in Table 2.15.

Agencies that may use this EIR are listed in Table 2.16.

Table 2.15 E&B Oil Drilling & Development Project Permits/Approvals

Agency	Applicable Permit/Clearance
Local Agencies	
City of Hermosa Beach	• Development Agreement by Ballot Measure • Municipal Code Text Amendment by Ballot Measure • Coastal Land Use Plan (text and Map) Amendment by Ballot Measure • General Plan Amendment • Pipeline Franchise Agreement by Ballot Measure
City of Hermosa Beach Community Development Department	• Building Permits • Grading and Excavation Permits • Demolition Permits • Oil Well Permit • Conditional Use Permit and Development Agreement Compliance

Table 2.15 E&B Oil Drilling & Development Project Permits/Approvals

Agency	Applicable Permit/Clearance
City of Hermosa Beach Fire Department	• Business Plan Approval • Compliance with NFPA Requirements • Hot Work Permits
City of Hermosa Beach Department of Public Works	• Standard Urban Storm Water Mitigation Plan • Encroachment Permits for work in the public ROW • Oversized/overweight loads to be transported on City streets
South Coast Air Quality Management District	• Authority to Construct • Permit to Operate
Los Angeles County Fire Department	• Remedial Action Plan
Los Angeles County Office of Emergency Services	• Community Action Emergency Response Plan
City of Redondo Beach	• Franchise Agreement; Encroachment Permit for Oil and Gas Pipelines and Valve Box; and Building Permit for Gas Metering Station. • Construction Traffic Management Plan • Department of Public Works Permits related to Grading Permits, any pipelines in the public rights of way, and oversized/overweight loads to be transported on City streets.
City of Torrance	• Pipeline Franchise Agreement. • Department of Public Works Permits related to Grading Permits, any pipelines in the public rights of way, and oversized/overweight loads to be transported on City streets.
State Agencies	
Division of Oil, Gas, and Geothermal Resources	• Permits to Drill • Permit to Conduct Well Operations • Class II Underground Injection Control Permit
California Department of Fish and Wildlife, OSPR	• Oil Spill Contingency Plan
California Department of Forestry and Fire Protection, Office of the State Fire Marshall (CSFM)	• Operations and Management Plan. • Integrity Management Plan. • Emergency Response Plan, Spill Response Plan.
California Department of Toxic Substances Control	• Hazardous Materials Management Plan
California Department of Transportation	• Encroachment Permit
California State Lands Commission	• Lease Agreement
Regional Water Quality Control Board	• Wastewater Discharge Requirements

Table 2.15 E&B Oil Drilling & Development Project Permits/Approvals

Agency	Applicable Permit/Clearance
	• Standard Urban Storm Water Mitigation Plan
California Coastal Commission	• Coastal Development Permit • Coastal Land Use Plan (Map and Text) amendments
Federal Agencies	
U.S. Environmental Protection Agency	• Spill Prevention, Control and Countermeasure (SPCC Rule) • Water Injection Plan Approval.
U.S. Department of Transportation	• Operations and Maintenance Plan • Pipeline Structure Permit

Table 2.16 Relocation of City Maintenance Yard Project Permits/Approvals

Responsible Agency	Applicable Permit/Clearance
Relocation of City Maintenance Yard	
Local Agencies	
City of Hermosa Beach Community Development Department	• Discretionary approvals necessary to relocate the City Maintenance Yard (Amendments to General Plan Land Use Map, Coastal Land Use Plan Map and Text, and Municipal Code Zoning Map and Text; Planned Development
City of Hermosa Beach Community Development Department	• Non-discretionary permits to demolish the existing building and prepare, construct and occupy the new facility
State or Federal Agencies	
California Coastal Commission	• Coastal Development Permit

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