APPENDIX A

INITIAL STUDY FOR BREITBURN SANTA FE SPRINGS BLOCKS 400/700 UPGRADE PROJECT

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Initial Study for: Breitburn Santa Fe Springs Blocks 400/700 Upgrade Project

State Clearinghouse No.

TBD

Executive Officer
Barry Wallerstein, D. Env.

Deputy Executive Officer,
Planning Rules, and Area Sources
Elaine Chang, DrPH

Assistant Deputy Executive Officer,
Planning, Rule Development, and Area Sources
Philip Fine, Ph.D,

Director of Strategic Initiatives
Planning and Rules
Susan Nakamura

Submitted to:
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Prepared by:
ENVIRON INTERNATIONAL CORPORATION

Reviewed by:
Michael Krause – Program Supervisor
Cynthia Carter – Air Quality Specialist
William Thompson – Senior Engineering Manager
Gary Turner – Air Quality Analysis and Compliance Supervisor
Maria Vibal – Air Quality Engineer II
Mohsen Nazemi, P.E. – Deputy Executive Officer
Veera Tyagi – Senior Deputy District Counsel
Nicholas Sanchez – Senior Deputy District Counsel

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
GOVERNING BOARD

Chairman: WILLIAM A. BURKE, Ed.D.
Speaker of the Assembly Representative

Vice Chairman: DENNIS YATES
Mayor, City of Chino
Cities Representative, San Bernardino County

MEMBERS

MICHAEL D. ANTONOVICH
Supervisor, Fifth District
Los Angeles County Representative

BEN BENOIT
Mayor Protem, City of Wildomar
Cities Representative, Riverside County

JOHN J. BENOIT
Supervisor, Fourth District
Riverside County Representative

JOSEPH BUSCAINO
Councilmember, City of Los Angeles
Cities Representative, City of Los Angeles

MICHAEL CACCIOTTI
Councilmember, City of South Pasadena
Cities Representative, Los Angeles County, Eastern Region

JOSIE GONZALES
Supervisor, Fifth District
San Bernardino County Representative

DR JOSEPH K. LYOU
Governor's Appointee

JUDITH MITCHELL
Mayor, Rolling Hills Estates
Cities Representative, Los Angeles County, Western Region

SHAWN NELSON
Supervisor, Fourth District
Orange County Representative

DR CLARK E. PARKER, SR.
Senate Rules Committee Appointee

MIGUEL PULIDO
Mayor, City of Santa Ana
Cities Representative, Orange County

EXECUTIVE OFFICER
BARRY WALLERSTEIN, D. Env.

TABLE OF CONTENTS

TABLE OF CONTENTS CONTINUED

LIST OF FIGURES FOR CHAPTER 1

CHAPTER 1

PROJECT DESCRIPTION

Introduction
Agency Authority
Background
Current Operations
Project Description
Construction Schedule
Operating Scenarios

CHAPTER 1 – PROJECT DESCRIPTION

1.1 INTRODUCTION

Breitburn Operating LP (Breitburn) is proposing a project to upgrade and augment its fluid (e.g. oil, gas, and water) handling systems at its Santa Fe Springs facilities (Breitburn Santa Fe Springs Facilities) to facilitate an increase in the amount of produced fluids that can be treated at the site. The systems used to handle produced fluids, particularly produced water, are currently operating near or at maximum capacity. As such, Breitburn has been limited in its ability to continue operating at current production rates, or to potentially increase production at the site in the future. To account for this, Breitburn proposes to modify on-site equipment, as well as add a new crude oil loading system, oil/gas/water separation system, and wastewater treatment/injection system, that require South Coast Air Quality Management District (SCAQMD) permits or permit modifications.

In addition, in late December 2013, several new wells were drilled into a "gassy" pocket, resulting in an unexpected and abnormally large volume of field gas production for several months. This abnormally high level of gas production began declining within three months after the peak level was reached and has been steadily declining since. The unexpected increase in field gas production necessitated the use of a various locations rental thermal oxidizer used as a flare (GEM flare) in addition to the permitted flare currently used onsite.[1] Although field gas levels are expected to return to historic gas/oil ratios, Breitburn is proposing additional flaring capacity in the event that another "gassy" pocket is unexpectedly encountered in the future. The GEM flare generates higher emissions than the permanent burners included in the proposed Project, but it generates less emissions than the currently permitted flare operating onsite.

Breitburn submitted three separate permit applications to the SCAQMD for the Breitburn Santa Fe Springs Facilities. The first permit application, submitted March 26, 2013, and modified July 1, 2014, is for a new produced fluid processing facility at the 400 Block (SCAQMD ID #150207) that would include a new crude oil/water/gas separation system, wastewater treatment and injection system, and a new vapor recovery system. The second permit application, dated March 20, 2014, is for the Consolidated Bulk Truck Loading System, which is for the addition of a new crude oil truck loading connection adjacent to the existing connection, and minor modifications to the existing thermal oxidizer and existing crude oil/gas/water separation system to allow venting of loading vapors to the thermal oxidizer. These actions would occur at the Main Facility (SCAQMD ID #150201) and the Baker Humble Lease Facility (SCAQMD ID #150216), which is located entirely within the Main Facility in the 700 Block. The third permit application, submitted April 11, 2014, is for the replacement of the existing flare with one new low-emissions Flare Industries CEB-800 burner, plus up to three more identical CEB-800 burners at the 400 Block (SCAQMD ID #150207). (See Section 1.3 for details and block descriptions) In August 2014, the SCAQMD consolidated SCAQMD ID #150207, 150201, and 150216, as well as 150199, and 120088, into a single facility ID #150201. Obtaining permit approvals and implementing the proposed Project is necessary to allow Breitburn to continue operating at

[1] The rental flare (GEM flare) is listed as a thermal oxidizer on the permit. However, it was used as a produced gas flare and will be referred to as such (flare or GEM flare) for the entirety of this document. The GEM flare will be removed on or before December 31, 2014.

current production rates or to accommodate any potential increases in production that may occur in the future, up to the maximum allowed capacity of the equipment.

1.2 AGENCY AUTHORITY

The California Environmental Quality Act (CEQA), Public Resources Code §21000 et seq., requires that the environmental impacts of proposed "projects" be evaluated and that feasible methods to reduce, avoid, or eliminate significant adverse impacts be identified and implemented. Breitburn's proposed facility modifications constitute a "project", as defined by CEQA. The lead agency is the public agency that has the principal responsibility for carrying out or approving a project that may have a significant effect upon the environment (Public Resources Code §21067). Because the proposed Project requires discretionary approval from the SCAQMD for modifications to existing stationary source equipment and for installation of new stationary source equipment, the SCAQMD has the principal responsibility for supervising or approving the Project as a whole. Therefore, the SCAQMD is the most appropriate public agency to act as the lead agency for the CEQA process (CEQA Guidelines §15051(b)).

To fulfill the purpose and intent of CEQA, the SCAQMD, the "lead agency" for the proposed project, has prepared a Notice of Preparation of an Environmental Impact Report (EIR) and Initial Study (NOP/IS) to evaluate any potentially significant adverse environmental impacts associated with the proposed Project at the Breitburn Santa Fe Springs Facilities.

1.3 BACKGROUND

1.3.1 PROJECT PROPONENT

Breitburn has been operating in California for over 25 years. Breitburn has interests in and operates approximately 480 productive wells in California. Breitburn acquired its facilities in the Santa Fe Springs Oil Field (Field) in 1998, making it one of the five largest fields that Breitburn operates (Breitburn 2014).

1.3.2 HISTORICAL OPERATIONS AT THE SANTA FE SPRINGS OIL FIELD

The Santa Fe Springs Oil Field is one of approximately 70 oil fields in the Los Angeles Basin (Figure 1-1). California is the third largest oil producing state in the U.S. (U.S. Energy Information Agency 2014). In addition, the Los Angeles Basin is the richest oil basin in the world based on the volume of hydrocarbons per volume of sedimentary fill (Biddle 1991). The Los Angeles Basin represents, from a global perspective, the optimum conditions for the generation and entrapment of hydrocarbons.

Figure 1-1. Oil Fields of the Los Angeles Basin.
For full size, see Figures section at the end of the Chapter 1.

Santa Fe Springs has a long history of oil production. Oil was first discovered in the Santa Fe Springs Oil Field in 1919, and at that time it was considered one of the richest pools in petroleum history (Biddle 1991). Overall oil production at the Field peaked at a rate of 223,000 barrels (bbl) of oil per day in 1923. Since the first well was installed, more than 1,900 oil wells have been drilled within the Field with a cumulative production of 632 million barrels (MMbbl) of oil. However, the Santa Fe Springs Oil Field is mature. Production levels have declined over time.

According to the California Department of Oil, Gas, and Geothermal Resources (DOGGR), approximately 40 different providers have actively operated in the Santa Fe Springs Oil Field since 1977 (on-line DOGGR records for oil production from the Field go back as far as 1977). Currently, there are approximately 13 active oil and gas producers in the Santa Fe Springs Oil Field in addition to Breitburn. Breitburn is the largest operator in the Field, with approximately 286 active production and injection wells compared to one or two active wells operated by each of the other entities.

1.3.3 PROJECT LOCATION

The Breitburn Santa Fe Springs Facilities, under the newly consolidated SCAQMD Facility ID 150201, are located in the City of Santa Fe Springs in Los Angeles County. They are located near the intersection of I-5 and I-605, between the cities of Whittier and Downey and approximately 12 miles southeast of downtown Los Angeles. Figure 1-2 shows the regional location of the facility.

Figure 1-2. Regional Location Map.
For full size, see Figures section at the end of the Chapter 1.

Figure 1-3 shows the Project site location map. The Project site is bounded to the north by Bell Ranch Drive, to the east by Shoemaker Avenue and Painter Avenue, and to the west by Norwalk Boulevard. Florence Avenue bisects the Project site just north of the southern boundary. Two major streets also bisect the site, Telegraph Road from east to west and Bloomfield Avenue from north to south. More specifically, the proposed Project is located at three facilities located in Santa Fe Springs (Figure 1-4). The Main Facility is located at 12720 Telegraph Road in the 700 Block, and Baker Humble Lease Facility is located entirely within the Main Facility. The new facility, called the "400 Block Reinjection Facility," will be located at 10065 Bloomfield Avenue in the 400 Block.

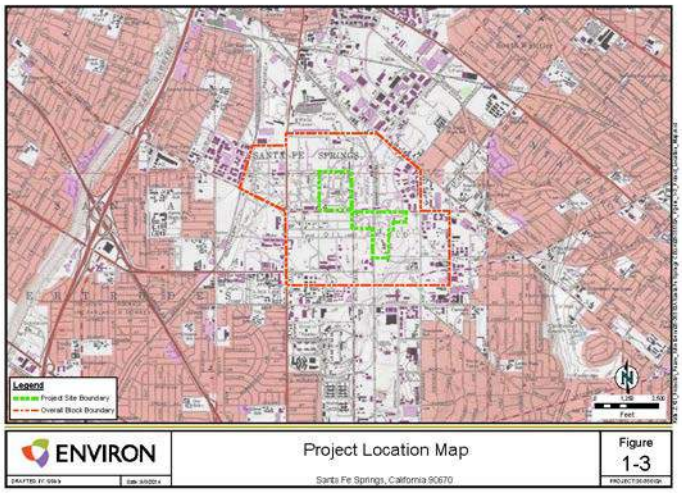


Figure 1-3. Project Location Map.
For full size, see Figures section at the end of the Chapter 1.

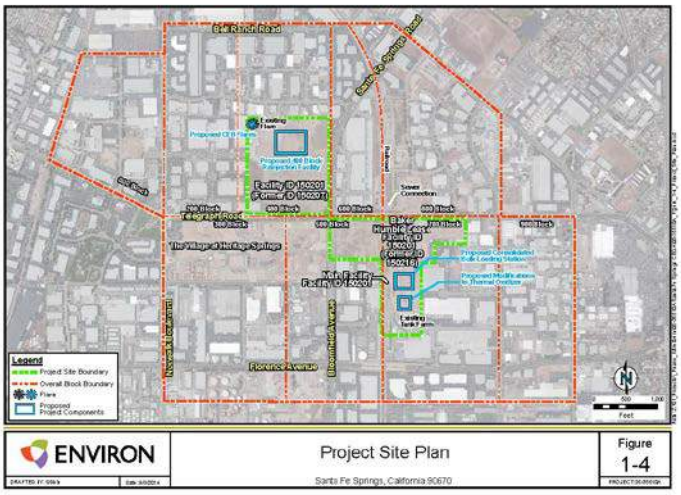


Figure 1-4. Project Site Plan.
For full size, see Figures section at the end of the Chapter 1.

The Breitburn Santa Fe Springs Facilities are in an area zoned as M-2 Industrial by the City of Santa Fe Springs' Municipal Code Zoning regulations, which allows for oil and gas development as a principal permitted land use (City of Santa Fe Springs Planning Department 2013). Breitburn operates in accordance with the provisions of the Municipal Code and applicable DOGGR regulations for oil well-related activities; therefore drilling and operations within the Santa Fe Springs Oil Field may occur independent of approval of the proposed Project.

The area surrounding the Breitburn Santa Fe Springs Facilities consists of distribution centers and warehouses. There is one new residential area located south of Telegraph Road between Norwalk Boulevard and Bloomfield Avenue.

1.4 CURRENT OPERATIONS

Breitburn operates on ten city "blocks" within the Field that cover approximately 784 acres (Figure 1-4). The proposed Project site covers approximately 2 acres of the Field for the Reinjection plant (an approximately 480' by 220' area for the plant), as well as less than one acre for a new, paved access road (approximately 1,200' by 24'). The Main Facility and Baker Humble Lease Facility, located in the 700 Block, contain a variety of tanks and processing equipment. The existing flare is located at the 400 Block, which is also the location of the proposed new "400 Block Reinjection Facility." These are the only Blocks that contain SCAQMD-permitted equipment, although there are oil and water wells located in other Blocks. Oil field production is described in detail in Section 1.5.1; the next section focuses on the processing systems and facilities for the fluids extracted from the oil field (i.e., oil/water/gas pumped from the wells).

1.4.1 CURRENT PROCESSING SYSTEMS AND FACILITIES

Total fluids (oil, process gas and water) produced from the wells are gathered into a pipeline system and delivered under well head pressure to the Main Tank Farm located at the Main

Facility, south of Telegraph Road. At the facility, the oil, gas, and water are separated by a three stage process – each stage removing incrementally less oil until the water has an oil content of typically less than 10 ppm. The process also removes solids, mainly sands, which are entrained in the fluid stream. The separation process, described in more detail in Section 1.5.1, includes one or more free water knockout tanks, clarifier tanks, and WEMCO® flotation separators (WEMCOs), as well as surge tanks, slop tanks, crude oil holding tanks and a vapor recovery unit.

The separated oil is generally exported on a continuous basis to a third-party commercial pipeline system, the Crimson Pipeline. Export via pipeline is the preferred method based on costs, safety and environmental reasons. However, the Crimson Pipeline provides service to many producers, so the volume and pressure of the separated oil that Breitburn can export to Crimson Pipeline may be reduced on occasion. Moreover, the pipeline is occasionally shut down for maintenance and repairs. A crude oil buffer storage tank allows for changes in production or pipeline shipping availability, but it is not always large enough to account for a lack of Crimson Pipeline capacity. As such, a portion of the crude oil may be taken from the site by truck. Trucking oil offsite also allows a portion of the oil to be sold in a different market. The oil is loaded at a truck loading station at the 700 Block. Currently, approximately three truckloads of oil (approximately 150-165 bbl in each truck for a total of approximately 475 bbl per day [bpd]) may be transported from the site daily.

The separated produced water is treated and reinjected (without added chemicals) into the existing injection wells. Initially, the water is treated to reduce total suspended solids (TSS) and remove any basal sediments. The water is fed to a buffer tank using a series of electric pumps. The pumps operate at a discharge pressure sufficient to reinject the water into the well reservoirs for enhanced secondary oil recovery. This technique is not the same as hydraulic fracturing that applies high pressure water injection to break up the reservoir. A pipeline system delivers the water to the injection wells which are scattered throughout the Field. In 2013, average water injection into various zones was about 144,000 bpd (4.536 million gals/day [gpd]) of water.

Some produced water (without added chemicals) is also disposed of via the Los Angeles County Sanitation Districts (LACSD) public sewer system. Breitburn operates under an Industrial Wastewater Discharge Permit to discharge up to 12,500 bpd (532,000 GPD) of water via the LACSD public sanitation system. Prior to discharge into the public sanitation system, the produced water is treated onsite in a wastewater treatment system connected to an air stripper, which removes benzene and other organics. These vapors are combusted in the thermal oxidizer at the Main Facility. The water is transported by pipeline to the sewer connection, located in the southwest corner of the 800 Block. In 2013, approximately 11,000 bpd (346,500 gpd) of water were discharged into this system. The proposed Project will not result in a modification to the existing wastewater pipeline or the associated discharge limit under Breitburn's Industrial Wastewater Discharge Permit.

The produced field gas is separated in the oil/gas/water separation system. A portion of the produced gas (approximately 300,000 - 400,000 cubic feet per day) is used to power 20 small third-party microturbines located onsite at the 700 Block. These microturbines produce approximately 1.3 MW to generate electricity for onsite equipment. The majority of the operational equipment onsite is electrically driven, including all of the pumps, with a total load

of approximately 17 MW; thus, most of the electricity comes from Southern California Edison (SCE), via a small SCE substation located onsite. The remainder of the produced gas is moved by pipeline to the existing SCAQMD-permitted flare.

During most of 2014, Breitburn Santa Fe Springs Facilities has had two flares on site – the SCAQMD-permitted John Zink Company ground Bell flare (Bell flare) and a third-party rental flare from GEM Mobile Treatment Services (GEM flare; to be permanently removed on or before December 31, 2014). As discussed above, an unexpectedly high gas production peaked in December 2013 exceeding the capacity of the existing Bell flare. For much of 2014, the temporary SCAQMD-permitted various-locations GEM flare, was staged in the 400 Block to help accommodate the excess gas. Gas levels are decreasing, but have not yet returned to the lower levels historically encountered at the site.

1.5 PROJECT DESCRIPTION

The Breitburn Santa Fe Springs Facilities are currently operating near or at the maximum capacity for the fluids processing systems. In addition, although produced gas levels are declining to the lower historical levels, any future excursion to the type of high levels seen in late 2013/early 2014 could exceed current flaring capacity resulting in the need for an additional on-site burner. Breitburn has determined that it is likely that sufficient reserves remain at the Santa Fe Springs Oil Field to economically justify construction of additional facilities. The proposed Project aims to provide additional capacity to accommodate existing well production capacity, including any future gassy pockets. But it would also accommodate potential future increases in production currently authorized by DOGGR for future well drilling. Therefore, while there are no current plans to expand production, Project will analyze increases in daily production up to the maximum design capacity of the subject equipment.

The scope of the Project is divided into three components that are covered by three distinct SCAQMD permit application submittals. Each component is independent, i.e., not contingent on the permitting and/or implementation of the others.

Component 1: A new oil/water/gas processing plant in the 400 Block, referred to as the "400 Block Reinjection Facility," would serve the following purposes:

1. Separate the oil, gas, and water that is produced from wells within a proposed new crude oil/water/gas separation system, able to process up to the equipment design maximum of an additional 4,000 bpd of oil, 196,000 bpd of produced water, and 2 million standard cubic feet per day (MMscfd) of produced gas for the Breitburn Santa Fe Springs Facilities;
2. Export the oil via the existing Crimson Pipeline system or via the truck loading system discussed in Component 2;
3. Recover gas, up to approximately 2 MMscfd, from the new storage tanks and process vessels in the new proposed vapor recovery system; and
4. Treat water, up to a total of 196,000 bpd, using a proposed new wastewater treatment system so that it can be reinjected (without chemicals).

Any produced gas not used for electricity production in the microturbines would be sent to the flares discussed in Component 3 below.

Component 2: An upgrade to the existing truck loading system, located at the Main Facility (700 Block) would increase the volume of oil that could be transported from the site via trucks. The proposed upgrade is referred to as the "Consolidated Bulk Truck Loading System" and includes:

1. Addition of new crude oil truck loading connection;
2. Modification to the existing thermal oxidizer (Figure 1-5) to control emissions from the new loading connection; and
3. Modification of the existing truck loading connection on the crude oil/gas/water separation system to accommodate the new connection.

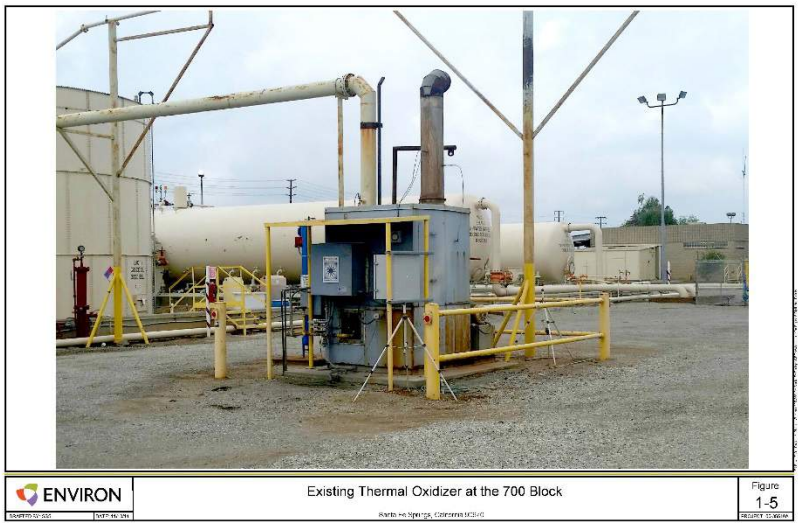


Figure 1-5. Existing Thermal Oxidizer at the 700 Block.
For full size, see Figures section at the end of the Chapter 1.

These additions and modifications would accommodate the additional oil that is processed at the new "400 Block Reinjection Facility" discussed in Component 1. Oil would continue to be exported via the Crimson Pipeline pursuant to Crimson's conditions and requirements at the time, as discussed in Section 1.4.1. This expanded truck loading system will serve as a back-up to the Crimson Pipeline if the Pipeline is undergoing maintenance, testing, is under repairs or is otherwise unable to transport the Santa Fe Springs crude oil to market. The truck loading may occasionally be used to transport crude oil to other refineries/markets not served by Crimson due to favorable market conditions on a short term basis. The Crimson Pipeline remains the main method of crude oil shipment.

Component 3: Replacement of the existing flare system, located within the 400 Block, with low-emission burners to dispose of volumes of produced gas anticipated during oil field operations and any unanticipated high produced gas/oil levels as in early 2014. Note that the high gas levels seen in early 2014 are atypical and that high levels of gas production are not necessarily related to oil production levels. Two CEBs would be sufficient for such high gas levels, which had rarely been experienced before in this field. Two additional CEBs (for a total

of four) were added to the proposed Project to provide redundancy and a large margin of safety in the event high gas levels are experienced again.

1. Replace the SCAQMD permitted Bell flare with one new, low-emission enclosed burner, Flare Industries CEB-800-CA (CEB); and
2. Add three additional identical CEBs to accommodate the additional produced gas from the wells or a reoccurrence of an atypical high gas pocket in the wells.

The four CEB units will be capable of running at full capacity to accommodate disposal of any produced gas not burned in the microturbines.

Existing and proposed Project components are pictured in Figure 1-4. The following sections provide additional detail on each proposed Project component.

1.5.1 400 BLOCK REINJECTION FACILITY (TOTAL FLUIDS PROCESSING FACILITY)

A new total fluids handling system is proposed to be installed within the 400 Block.

The facility would be located north of Telegraph Road and approximately 0.25 miles west of the existing 700 Block facilities. The new facility would occupy less than one acre of the 37-acre 400 Block (Figure 1-4). The primary purpose of the proposed new 400 Block Reinjection Facility is to process the total produced fluids. The facility has been designed in two phases, each with a capacity of 100,000 barrels of total fluids (i.e. oil and wastewater) per day[2]. The proposed facility components and processes, construction, and operation are described in detail below.

1.5.1.1 OVERVIEW OF 400 BLOCK REINJECTION FACILITY EQUIPMENT AND PROCESSES

A mixture of oil, gas, and water would be pumped via flowlines and gathering lines from producing wells to the new 400 Block Reinjection Facility. The mixture, which is normally approximately 98% water and 2% oil, would be processed by the proposed new oil/gas/water separation system to separate it into its components. The oil/gas/water separation system includes two free water knockout tanks, a crude oil storage tank with a capacity of 2,000 bbls, one 100 bbl slop tank, one pressure vessel, and miscellaneous electric pumps. The wastewater treatment and injection system includes two WEMCOs, two water surge tanks (7,500 bbls and 3,000 bbls), one 7,500 bbl clarifier tank, and miscellaneous electric pumps. The vapor recovery system will consist of two compressors and several pressure vessels.

The produced fluid comes out of the well at a pressure of 30 psi and temperature of ~180 degrees Fahrenheit and would first travel through the free water knockout (Figure 1-6). Because the produced fluid temperature is naturally high, separation of the constituents is easier than for lower-temperature produced fluids. The free water knockout is a pressure vessel built to American Society of Mechanical Engineers (ASME) code and rated for a pressure of 75 psi. In

[2] The maximum capacity of the facility was established based on the largest unit easily transportable by road; Breitburn concluded that there would be no significant economic savings in installing a smaller unit.

the extremely unlikely event of overpressure, the pressure release valve would vent to the atmosphere via the pressure safety valve blowout vessel. It should be noted that an overpressure event is highly unlikely because this is a very mature, de-pressurized field. Therefore, fluids in a well do not flow out of the well on its own, and the inlet pressure is a function of the design of the downhole pumps, which would not be rated to produce 75 psi at the processing facility.

Figure 1-6. Free Water Knock Out Vessel at the 700 Block Main Facility.
Two comparable Free Water Knock Out Vessels will be included at proposed 400 Block Reinjection Facility.
For full size, see Figures section at the end of the Chapter 1.

After this stage the oil is "dry" enough to meet required pipeline specifications. The oil would be temporarily stored in a proposed 2,000 barrel oil storage tank (Figure 1-7) before it is pumped to a metering system in the 700 Block Main Facility and then transferred to the Crimson Pipeline system connection. There would be no loading of crude oil or other petroleum hydrocarbons to trucks at 400 Block facility. Instead, if the oil is not shipped via the Crimson Pipeline once at the Main Facility, the oil would be loaded to trucks at the new Consolidated Bulk Truck Loading station at the 700 Block (Figure 1-8).

Figure 1-7. Storage Tanks at the 700 Block Main Facility.
Similar to those that will be a part of Proposed 400 Block Reinjection Facility.
For full size, see Figures section at the end of the Chapter 1.

Figure 1-8. Existing Truck Loading Connection.
In the foreground of the Baker Humble tank, located at the 700 Block. The proposed new connection would be added immediately adjacent to existing connection.
For full size, see Figures section at the end of the Chapter 1.

From the free water knockout, the water flows to the clarifier. This is a large tank that is designed to allow sufficient time for the oil that remains in the water to float to the surface. This oil is occasionally skimmed off the water and sent to a slop tank.

The water from the clarifier tank flows to the WEMCOs (Figure 1-9). Each WEMCO would have the capacity to process approximately 4.12 million gpd (~130,800 bpd). This is the last stage of separation, and by this point most of the oil has already been removed and the only remaining oil is emulsified in the water. The WEMCOs generate air bubbles in the water at the bottom of the tank, and as they rise to the surface oil droplets and small solids cling to them. The residue is skimmed off of the surface of the water and sent to the slop tank. The liquids that are collected in the slop tank, primarily oily water, are pumped back into the inlet of the separation and treatment system for reprocessing. The WEMCOs are divided into four cells in series that progressively reduce the oil in the water until the oil content is about 10 ppm (for comparison, the offshore produced water discharge limit is 29 ppm oil averaged monthly).

Figure 1-9. WEMCO Separator at the 700 Block Main Facility.
Similar to that which will be installed at the proposed 400 Block Reinjection Facility.
For full size, see Figures section at the end of the Chapter 1.

From the WEMCO unit, the clean water is pumped to a surge tank where it is held briefly before it is reinjected into the producing reservoir wells; currently there are 80 active and 3 idle

reinjection wells at the Breitburn Santa Fe Springs Facilities (Figure 1-10). Injection occurs using large horsepower electric pumps that are each designed to inject about 25,000 barrel per day at approximately 2,000 psi. Water is reinjected more or less continuously. As noted in Section 1.4.1, up to 12,500 bpd of produced water are also permitted to be disposed of in the public sewer system via pipeline to the connection in the 800 Block (Figure 1-11).

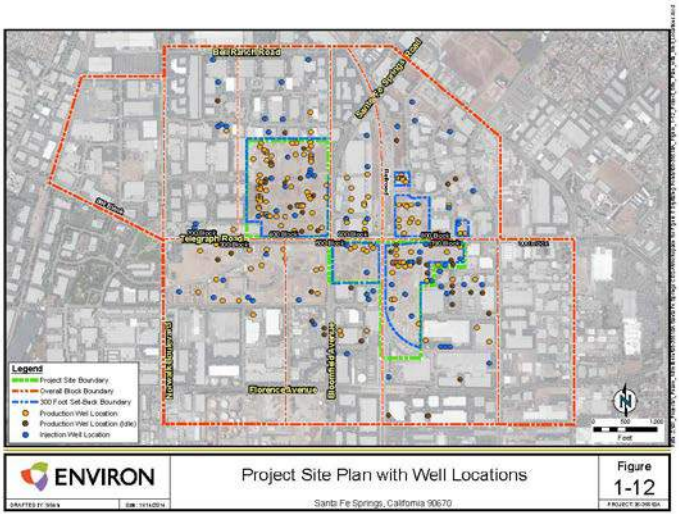


Figure 1-10. Project Site Plan with Well Locations.
For full size, see Figures section at the end of the Chapter 1.

Figure 1-11. 700 Block Main Facility Pump and Ancillary Equipment Area.
For full size, see Figures section at the end of the Chapter 1.

The sand that is entrained in the produced fluid drops out during the free water knockout and clarifier tank stages of the separation process. These solids are dewatered and these nonhazardous components are trucked off-site for proper disposal regularly (e.g., up to several times per month). The solids removed by the WEMCOs are much smaller. The free water knockout, the clarifier tank and the water surge tank all utilize pipework and nozzles to propel the accumulated sand into a slurry that is sent to the cone bottom tank. The solids settle in that tank, where they are removed by a vacuum truck and sent off-site for proper disposal about once every 5 to 10 years. Breitburn does not anticipate the need for additional haul trucks to remove the settled solids from the cone bottom tank at a more frequent occurrence than once every 5 to 10 years. More frequent removal of some accumulated solids directly from the free water

knockout, the clarifier tank and the water surge tank does occur to lessen the amount of residue that is eventually routed to the cone bottom tank, thus prolonging the time between cleanouts of the cone bottom tank, since this requires a shutdown during the cleaning process. At full capacity of 196,000 barrels of water per day, these periodic solids removals would not require shutdown of equipment, and could produce approximately 37 to 42 barrels per day of a wet solids/slurry mixture that will be trucked offsite. Approximately 11 to 13 trucks per month of this mixture will be transported offsite from the new 400 Block Facility. For comparison, the current operation at the 700 Block, with approximately 160,000 barrels of water per day, produces approximately 30 barrels per day of solids, requiring about 9 trucks per month to transport the mixture offsite.

Gas that is dissolved in the oil is for the most part released during the free water knockout phase and is sent to a vapor recovery unit. Small amounts of gas may be released from the oil during each subsequent phase of the separation process; this gas would also be piped to the vapor recovery unit. As the gas cools in the vapor recovery unit, liquids may drop out. The liquids are collected in the vapor recovery unit inlet knockout vessel and pumped to the slop tank. Two rotary screw compressors provide the suction for the vapor recovery system. After the gas is compressed it is cooled in a heat exchanger to induce any remaining liquids to drop out. The compressed gas would then be delivered to the proposed low emission burners, as described in Section 1.5.3. The vapor recovery system would operate at a 95% or greater control efficiency, as required by SCAQMD Rule 463, *Organic Liquid Storage*. Actual control efficiency is approximately 98%.

1.5.1.2 400 BLOCK REINJECTION FACILTIY CONSTRUCTION AND OPERATIONAL PHASES

The 400 Block Reinjection Facility would be developed in two phases that would be spaced at least 12 months apart.

During the first phase, Breitburn anticipates that approximately 2,000 bpd wet oil would be produced from wells, processed at the 400 Block Reinjection Facility, and transferred to the export system of the 700 Block Main Facility, which includes export via the Crimson Pipeline or via truck using the Consolidated Truck Loading System discussed in Section 1.5.2. All produced water, up to 98,000 bpd, would be treated and injected into reinjection wells. All rainwater would also be treated and injected. All gas would be transferred to the new flare system discussed in Section 1.5.3 or utilized for electricity production in the microturbines.

During the second phase, Breitburn proposes to double the processing capacity described above for the first phase. As such, processing would increase from approximately 2,000 bpd to 4,000 bpd of oil, which would continue to be transported to the Main Facility for export. All additional produced water would be treated and injected, up to a maximum of 196,000 bpd. The proposed 400 Block Reinjection Facility would allow for an increase in current oil processing capacity at the Breitburn Santa Fe Springs Facilities by 4,000 bpd, but it may also be used to transfer some fluid service from the current main 700 Block fluid handling facility to this newer, more efficient facility.

The majority of the new equipment would be installed during Phase 1, including one free water knockout, the water tanks, the oil storage tank, the water surge tanks, one WEMCO flotation

separator, oil transfer and skim pumps, water charge pumps, injection pumps and the vapor recovery system. During Phase 2, additional equipment would be installed to accommodate increased processing, including the second free water knockout tank and the second WEMCO; additional oil skim, water charge and injection pumps, and additional collection lines on the vapor recovery unit.

No additional employees would be required on-site to operate the new equipment.

The tank farm would be enclosed within a secondary containment system consisting of generally concrete block walls, and the tanks contained within it would be painted according to the City of Santa Fe Springs requirements and have maximum heights of approximately 32 feet. The tanks would all have leak detection systems as required by DOGGR. Non-hydrocarbon equipment, such as the injection pumps, would be located outside the secondary containment system. In addition, there would be new sources of light at the 400 Block Reinjection Facility.

Construction of the tank farm enclosure and storage tanks, and installation of the pumps and compressors would require grading of approximately two acres during Phase 1. Installation of the new 400 Block Reinjection Facility would involve bringing new equipment on-site and installing the equipment, requiring a large crane for tank construction, installation of the WEMCOs and free water knockout; however, construction would not require any demolition. During the installation of new equipment, Breitburn would comply with SCAQMD Rule 403, *Fugitive Dust*, to minimize fugitive dust during construction. Additional truck and commuter trips will be generated during the construction phase; however, this will be short term and is expected to be small.

1.5.2 CONSOLIDATED TRUCK LOADING SYSTEM PROJECT COMPONENTS

The primary proposed action for the Consolidated Truck Loading System at the 700 Block Main Facility is the modification of the truck loading connection, which includes the addition of a new loading connection and the minor modification of the existing thermal oxidizer system. This is necessary to accept vapors from the one modified truck loading connection and the new truck loading connection.

1.5.2.1 OVERVIEW OF CONSOLIDATED TRUCK LOADING SYSTEM EQUIPMENT AND PROCESSES

The Main Facility is currently the primary oil and water processing facility for Breitburn's operations; however, with the addition of the proposed 400 Block Reinjection Facility, oil, gas, and water would be separated and processed at both facilities. After processing and temporary storage in a holding tank, all of the oil would be transported to the Main Facility, and the majority of the oil would be sold and transported via the Crimson Pipeline. However, a portion of the oil would continue to be trucked offsite, primarily when there are pressure balance issues with the Crimson Pipeline and/or when warranted by market conditions.

The oil is currently loaded to trucks from a single loading connection at the Baker Humble Lease facility, immediately adjacent to the Main Facility tank farm. The proposed new Consolidated Bulk Truck Loading System would add a new loading connection near the existing Baker

Humble Lease connection. The purpose of the Consolidated Bulk Truck Loading System is to accommodate current production and potential increases in production.

The new loading connection would be positioned so that two trucks could load simultaneously within the loading station. Breitburn would load crude oil directly from the shipping tanks at the Main Facility tank farm to either of these two loading connections, in addition to retaining the ability to transport crude oil offsite via pipeline. The existing truck loading station has a maximum and average loading rate of approximately 476 bpd. Current operations allow for loading of only approximately three trucks per day. The proposed future maximum loading rate would be approximately 3,100 bpd, less than the 4,000 bpd oil processing capacity of the 400 Block Reinjection Facility, with an average expected future loading rate of approximately 1,860 bpd and loading of approximately 12 trucks each day on average, and up to a maximum of 20 trucks per day. Typically, however, there will be no additional trucks on a given day. It takes approximately one hour to load a truck, and it would be possible for two trucks to be loaded simultaneously. The trucks would be loaded mostly during daylight hours; however, scheduling may require loading at night if up to 20 trucks arrive in one day.

The proposed modification would involve the installation of one new connection, two hoses and vapor recovery lines, as well as minimal modifications to other system components to adjust for the second connection, described below (Figure 1-12).

Figure 1-12. Existing Truck Loading Connection/Hoses at 700 Block.
The proposed new connection would add one crude oil loading hose and one vapor recovery line such that trucks could be loaded simultaneously.
For full size, see Figures section at the end of the Chapter 1.

At the Main Facility on the 700 Block, the existing thermal oxidizer controls vapors vented from the air stripper that is used to remove volatile organic compounds (VOCs) and toxics from produced water that is treated prior to discharge to the sewer connection. The primary purpose of the proposed thermal oxidizer modification is to enable the system to accept vapors from both loading connections associated with the Consolidated Bulk Truck Loading System. The vapors would join in a header prior to being sent to the modified thermal oxidizer. The thermal oxidizer would be used to control hydrocarbons vented from the wastewater that goes into the air stripper system.

Pressure and flow transmitters would provide measurements to the control system to optimize combustion of the combined vapors removed from the produced water currently vented from the Main Facility air stripper and the truck loading system in the thermal oxidizer. There is a vacuum relief valve on the truck loading header to protect the truck tank against vacuum or over pressure. The thermal oxidizer, which runs continuously, is fueled by make-up gas from the vapor recovery unit.

The Consolidated Bulk Truck Loading System would be designed, installed and operated in compliance with SCAQMD Rule 462 for Organic Liquid Loading for a Class A loading operation, with a volume loaded greater than 20,000 gallons in any one day. In addition to the increased loading capacity, the major change would be to improve the vapor recovery efficiency. This would be accomplished with the installation of a blower that would send the vapor to the small existing thermal oxidizer.

No additional employees would be required on-site to operate the new equipment. There will be up to an additional 17 truck trips per day (for a maximum of 20 trucks per day) as a result of the increased capacity provided by the Consolidated Bulk Truck Loading System. Consistent with current configurations, the trucks would access the loading station by traveling eastbound on Telegraph Road. Once loaded, the trucks would exit and continue eastbound onto Telegraph Road, turn south onto Shoemaker Avenue and turn west onto Florence Avenue to access I- 5 or I-605.

1.5.2.2 CONSOLIDATED TRUCK LOADING SYSTEM CONSTRUCTION

No demolition or ground disturbing activities are required during modification of the bulk loading station. Construction of the modified bulk loading system will be limited to the equipment required to bring new Project components on-site and install them. Installation of new equipment or modification of existing equipment would require light duty trucks and welding equipment over the course of approximately two weeks.

1.5.3 FLARE REPLACEMENT (400 BLOCK)

Breitburn currently operates one permitted John Zink ground flare (Figure 1-13), located in the 400 Block, which has a maximum capacity of 0.450 MMscfd. In December 2013/early 2014, Breitburn experienced an unexpected and atypical surge in gas production resulting in a volume of gas production of up to 1.4 MMscfd (see Section 1.1). In response, Breitburn brought a rental GEM flare on site to combust the excess gas, which has declined over the last several months to a gas-to-oil ratio that is more typical of historic produced fluid ratios at the Breitburn Santa Fe Spring Facilities. In the future, an increase in oil production could also increase gas production (although generally not on a 1:1 ratio). Owing to a combination of the natural characteristics of the petroleum-bearing reservoir, and the manner in which it is developed, the ratios of oil, gas, and water typically change over time. This ratio is monitored by the operator and used to modify the extraction and injection array as needed. The Project proposes to replace the existing John Zink flare with a newer, lower-emitting CEB-800 burner with a gas-combusting capacity of up to 0.70 MMscfd capacity. In addition, Breitburn proposes to install up to three additional new, identical lower-emitting burners on-site, which would more than double the gas combustion capacity required historically on-site.

Figure 1-13. Existing Flare Located at the 400 Block.
This will be replaced with new, low emitting flares in the same location.
For full size, see Figures section at the end of the Chapter 1.

1.5.3.1 FLARE REPLACEMENT EQUIPMENT AND PROCESSES

Breitburn proposes to replace the existing flare unit with one new burner (specifically, lower-emission enclosed burners). In addition to the replacement burner, three additional identical enclosed burners would be installed, one to handle more gas at the peak levels and two for redundancy. As such, the proposed burners would be capable of handling double the recent peak capacity of gas. The four new proposed burners would be Flare Industries CEB-800-CA units (CEBs) with a heat rating of 39 MMBTU/hr each. Each would have a maximum capacity of approximately 0.70 MMscfd. While the capacity is larger, the new CEBs have more efficient burners and lower emission guarantees, with a destruction and removal efficiency of at least 99% for each unit (99.9% based on manufacturer's specifications). Even if future production levels call for operation of all four units, the installation of the new CEBs will reduce emissions from flaring activities at the Project site.

1.5.3.2 FLARE REPLACEMENT EQUIPMENT CONSTRUCTION AND OPERATION

The CEBs would be located in the 400 Block to the west of the proposed 400 Block Reinjection Facility. The CEBs would combust produced gas from both the proposed new facility and the existing 700 Block Main Facility. The CEBs would be brought online and made operational as needed to accommodate increased gas production with the ability to run full time if necessary. The CEBs would combust the produced gas at the Breitburn Santa Fe Springs Facilities only for gas above that which is beneficially reused in the existing 20 third-party microturbines, as well as in the new 14 Breitburn-owned microturbines installed in November 2014. At this time, there is no foreseeable possibility of selling the gas. In addition, reinjection of the gas is not yet available pending DOGGR negotiations.

The installation of the CEBs would require the removal and hauling off of the existing Bell flare, as well as removal of the rental GEM flare. Minimal grading is anticipated for installation of the concrete foundations for the new CEBs because the new CEBs have a footprint of about 250 square feet per CEB. Welding equipment and a lightweight crane (20 ton) will be required to install the new CEBs. Additional traffic generated during the construction phase would be

minimal consisting of truck trips for delivery of the two CEBs (two are already on-site), removal of the existing flare, and commuter trips for workers to install the four units.

1.5.4 RELATED OIL FIELD ACTIVITIES

Although these activities are not part of the proposed Project, the potential indirect environmental impact of these activities will be evaluated within the appropriate resource area discussions.

As part of its ongoing operations, Breitburn plans to continue to operate and produce oil within the Santa Fe Springs Oil Field. Existing wells located throughout Breitburn's oil field lease area (Figures 1-3 and 1-4) may be reworked, as necessary, as part of on-going maintenance and production activities at the Field. In addition, wells that are currently shut-in may be brought back on-line. Breitburn may also drill reinjection and/or production wells throughout its oil field lease area. These activities are a part of normal, ongoing operations and necessary for prudent reservoir management (See Section 1.5.4.1 below). No new drilling will occur in the one residential area near the site.

Based on the chemical disclosure lists provided by oil field contractors, reworking and drilling typically involves primarily (99%) sand and water with minimal amounts of non-hazardous additives to improve viscosity and provide a pH buffer. Any chemical container is maintained within appropriate secondary containment or in a location where fluids cannot spill offsite.

These activities would all be performed in accordance with the City of Santa Fe Springs Municipal Code Zoning regulations for M-2 and applicable DOGGR regulations for oil well-related activities. None of these activities require discretionary permits. Breitburn also has installed fourteen new microturbines that operate on field gas. The microturbines are CARB distributed generation (DG)-certified to run on this fuel and do not require permits (see Section 1.5.4.2 below).

1.5.4.1 OIL FIELD PRODUCTION

The production of oil from a reservoir is never completely efficient. Worldwide, oil recovery efficiency is typically around 35%. The Santa Fe Springs Oil Field is a mature oil field, and it is not unusual for a mature oil field to have significant remaining reserves that are untapped due to inefficient drainage, declining pressure, sand production problems, aging production systems, uneconomic conditions, and recent evolution in production technology. At the Santa Fe Springs Oil Field, even a 0.5% increase in recovery would produce on the order of 8 million barrels. A significant amount of effort is needed to extract oil from the Field today. Maintaining and potentially increasing recovery requires a detailed understanding of the geology and reservoir conditions and the application of new technologies.

Oil and water injection wells (Figure 1-14 and 1-15) are present throughout the Project site and additionally in the lease Blocks that overlay the Field. Under normal operating conditions, Breitburn operates about 250 active wells: 169 production wells and 80 injection wells. In 2013, Breitburn produced an average of approximately 2,850 barrels of oil per day from the approximately 129-149 active production wells. In addition, there are 55 idle production wells, and 3 idle injection wells. Moreover, 20 of the 169 active wells are typically off-line due to

capacity limitations, mechanical problems or uneconomic oil production rates. These wells, if brought back on-line, could potentially produce approximately 287 barrels of oil per day and approximately 35,000 barrels of produced water per day (although production rates naturally vary dependent on the arrangement of wells on-line at any one time and the characteristics of the reservoir at the location point of each well). This incremental projected increase in produced fluids is sufficient for Breitburn to economically justify the construction of the Proposed 400 Block Reinjection Facility.

Figure 1-14. Typical Well with Electric Pumpjack Located at 700 Block.
For full size, see Figures section at the end of the Chapter 1.

Figure 1-15. Typical Water Injection Well Located at 700 Block.
For full size, see Figures section at the end of the Chapter 1.

In the future, additional wells may be drilled to maintain production at the Field (i.e. to replace wells that are no longer economically viable or to improve waterflood efficiency). The rate of drilling new wells varies substantially each year. For example, between January 2012 and January 2014 approximately 40 wells were drilled. In contrast, between 2010 and 2012, approximately 7 wells were drilled. Breitburn conducts evaluations of the geology of the Field to help increase recovery and optimize locations for new wells. Also, a modern well logging tool has been used in about 100 wells[3]. New developments in well logging technology may further

[3] The well log provides information about the characteristics of the rock at every depth over the productive zones. Incremental knowledge about the reservoir is gained with each new well. At the Santa Fe Springs Oil Field, the productive zones extend more or less continuously from the Foix reservoir at 3,400 feet to the Bell 100 reservoir at a depth of 9,100 feet. Not every well is drilled to the deepest producing horizon. Geologists combine the log

enhance the ability to further evaluate the Field. Consequently, at this time there are no established plans or applications for new well permits to be filed by Breitburn for the Breitburn Santa Fe Springs Facilities, and any estimates about future drilling would be speculative. However, it is reasonably foreseeable that new wells will be drilled in the future, in connection with Breitburn's ongoing operations in an active oil field. In addition, the new facilities proposed as part of this Project would increase the capacity to process an increase in produced water and gas which would accompany any increases in oil production (achieved through new wells, reestablishing shut-in wells, or other common means as described below).

Current production rates would also be maintained or increased in ways other than the drilling of new wells. There are a number of methods to achieve this, especially at a mature oil field. The oil bearing sands are continuous in some parts of the field and one well can drain a fairly wide area. Therefore, another method to enhance production without drilling new wells is to recomplete an unproductive well at a different depth by isolating the existing perforations, closing off production from that layer and then perforating the well at a more productive depth. For idle or uneconomic wells, this approach is normally used. Another method is to change the depth or the size of the downhole pump. This method can help sometimes by producing more fluid and by sometimes increasing the percentage of oil produced in comparison to water. In addition, it is common to convert uneconomic production wells to water injection wells if they are favorably located to enhance secondary oil recovery[4].

Breitburn uses a large variety of tools and equipment that can be placed within an existing well bore to reduce the percentage of produced water, increase the percentage of produced oil, reduce sand production, or increase the lifespan of a pump. Breitburn uses the waterflood method of enhanced oil recovery, which utilizes carefully placed water injection wells to sweep the remaining oil towards the production wells. Breitburn may change the distribution of wells that are shut-in and online based on review of water production/oil production ratios may also increase production. Well workovers are performed continuously throughout the year, which can help increase production. Most workovers are for maintenance, replacing a pump, removing scale build up, replacing worn tubing or pump rods, etc. As such, water production is independent of drilling operations and rates can increase without the drilling of new wells.

Therefore, Breitburn has established that it is possible to increase oil production enough to necessitate the proposed Project even without drilling any new wells. Nonetheless, this IS and the subsequent EIR will evaluate the potential impacts of drilling one new well at a time because it is reasonably foreseeable that Breitburn may drill new wells in the future to maintain or increase production as related to the operation of the newly proposed facilities (the proposed Project is located on an active oil field, where drilling and oil production are part of baseline operations. As such, only the increase in production and/or oil well drilling that could be attributable to the proposed Project would be analyzed for impacts).

---

data with the seismic data to produce structure maps at each producing zone, which show the sands that are most likely to be hydrocarbon bearing. The reservoir engineers can then estimate the location and likely volumes of remaining oil in the formations.

[4] Secondary oil recovery is a form of enhanced oil recovery that uses Class 2 injection wells (permitted through the Safe Drinking Water Act (SDWA) Underground Injection Control program) to inject water (typically treated produced water) into the producing formation at locations and depths that result in greater rates of oil recovery. Secondary recovery also minimizes the potential for ground subsidence.

Breitburn would not drill more than one new well at any given time at the Project site. For this purpose, Breitburn has included an analysis of the potential impacts of drilling one new well at any given time. Drilling one new well would be completed in no more than 20 days and involve a number of pieces of equipment.[5] Environmental impacts from any increased oil production resulting from one new well on a given day or any other oil field enhancements described above would be considered as part of the analysis of the operations of the proposed 400 Block Reinjection facility and other Project oil-related equipment modifications.

1.5.4.2 FOURTEEN NEW MICROTURBINES

Based on current operations, the baseline assumes that Breitburn sends a portion of its produced gas to 20 microturbines located onsite, which are owned and operated by a third-party. These third-party microturbine operations are part of the existing baseline and will continue to operate.

In early November 2014, Breitburn installed 14 additional microturbines (Figure 1-16), owned and operated by Breitburn, to increase on-site electricity capacity. The proposed turbines are CARB DG-certified microturbines (Capstone, 65kW). The installation of these 14 microturbines did not require a discretionary SCAQMD air permit because they are exempt per SCAQMD Rule 219(b)(1) (i.e., CARB certified, less than 2MW in total). However, as required, they have been registered with the SCAQMD pursuant to Rule 222. Breitburn anticipates beginning operation of the microturbines by the end of November 2014.

Figure 1-16. Breitburn's Microturbines.
These have been installed but are not yet operational. Noise dampers are visible on the top of each turbine.
For full size, see Figures section at the end of the Chapter 1.

1.6 CONSTRUCTION SCHEDULE

Construction activities for the proposed Project are expected to begin when the EIR is certified and required agency permits and approvals are received. The actual dates of each construction phase may change, but the construction analysis and emissions will remain the same (i.e., the construction analysis is conservative and all reported emissions will be the same or greater than actual emissions if construction is delayed). An estimated construction schedule will be provided in the EIR.

[5] No unconventional resources exist beneath the Santa Fe Springs Oil Field; therefore, no wells would be completed using hydraulic fracturing techniques.

1.7 OPERATING SCENARIOS

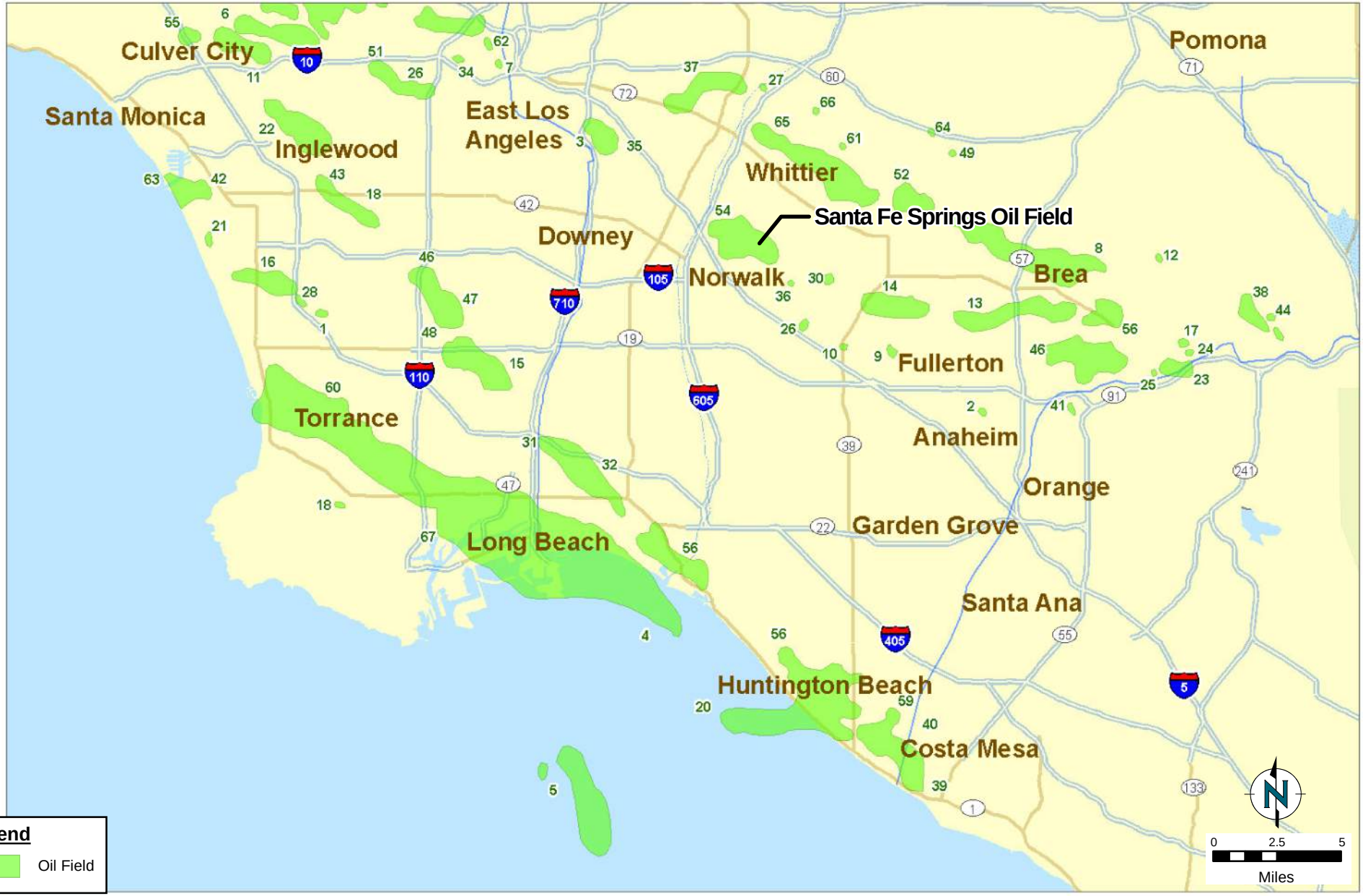
The multiple components of the proposed Project will be implemented in phases after the EIR is approved and the required permits are obtained. An estimated operational start date for each Project component will be provided in the EIR, illustrating the transition from current operations to full proposed Project implementation.

1.8 REQUIRED PERMITS

The proposed project will require Permits to Construct and to Operate from the SCAQMD. Breitburn may drill additional injection and/or production wells, or rework an existing well, as needed. These activities would all be performed in accordance with the City of Santa Fe Springs Municipal Code Zoning regulations for M-2 and applicable DOGGR regulations for oil well-related activities. A building permit will be required for the tank farm structure at the 400 Block Reinjection Facility. Grading permits are not required for the miscellaneous project construction activities per applicable ordinances. No other permits are expected to be required.

FIGURES

CHAPTER 1



Path: Z:\01_Projects_Phase_\Breitburn\05-35510A Santa Fe Springs CEQA\05-35510A_Figure_1-1_Oil Fields of the Los Angeles Basin.mxd

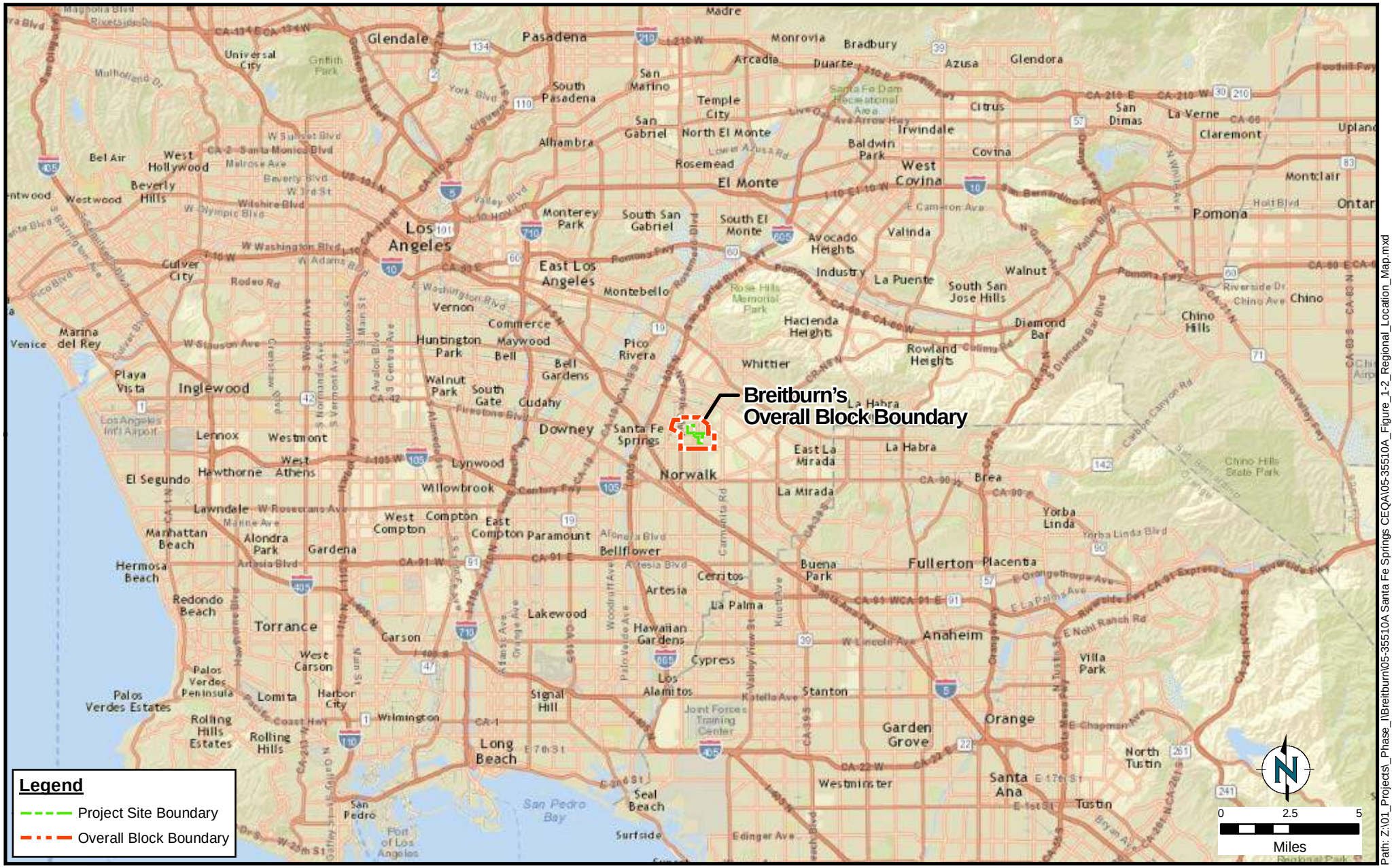
ENVIRON

Oil Fields of the Los Angeles Basin

Santa Fe Springs, California 90670

Figure 1-1

DRAFTED BY: SShin | Date: 9/3/2014 | PROJECT: 05-35510A



Path: Z:\01_Projects_Phase_I\Breitburn\05-35510A Santa Fe Springs CEQA\05-35510A_Figure_1-2_Regional_Location_Map.mxd

ENVIRON

Regional Location Map

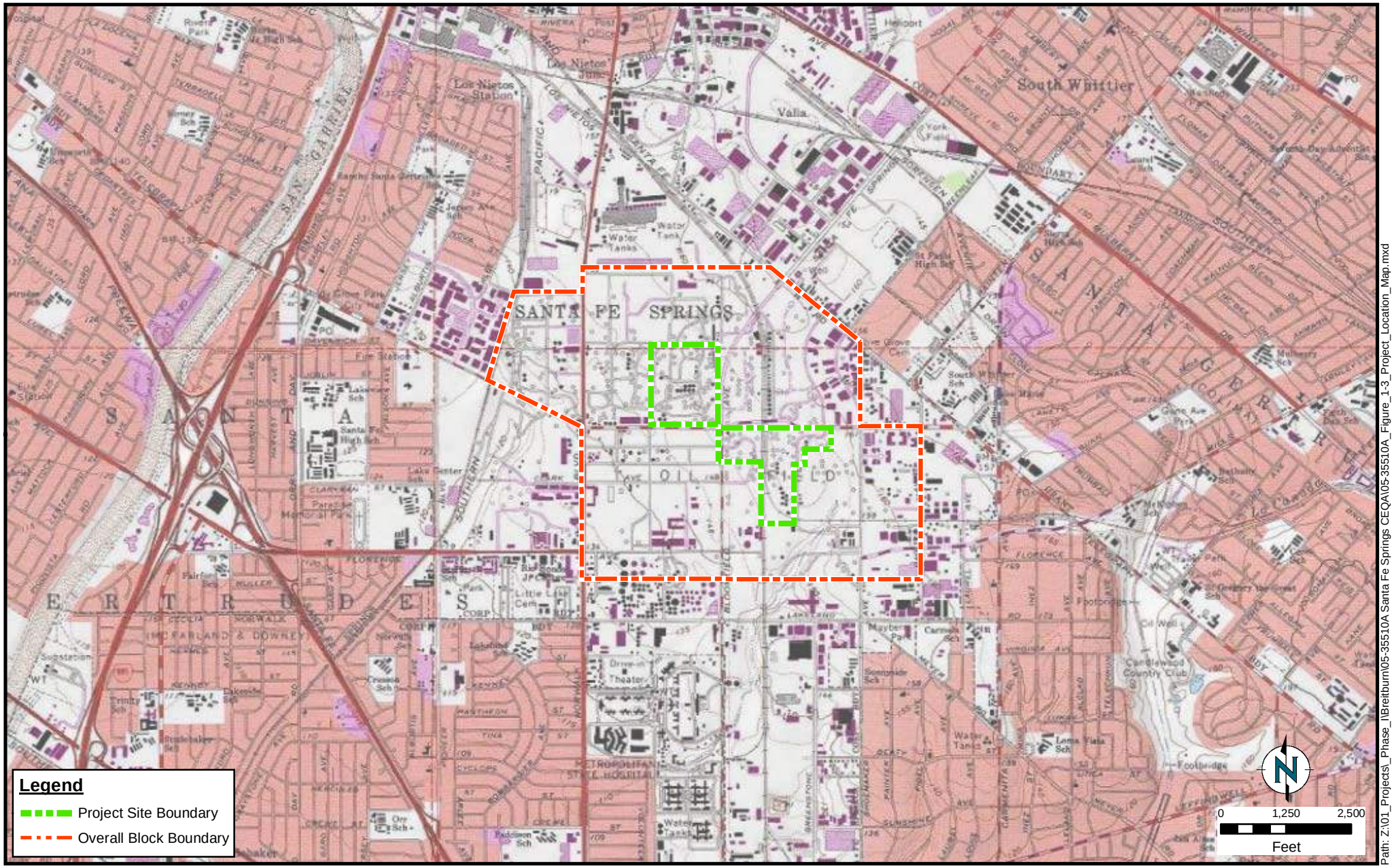
Santa Fe Springs, California 90670

Figure
1-2

DRAFTED BY: SShin

Date: 9/3/2014

PROJECT: 05-35510A



Path: Z:\01_Projects_Phase_I\Breitburn\05-35510A Santa Fe Springs CEQA\05-35510A_Figure_1-3_Project_Location_Map.mxd

ENVIRON

Project Location Map

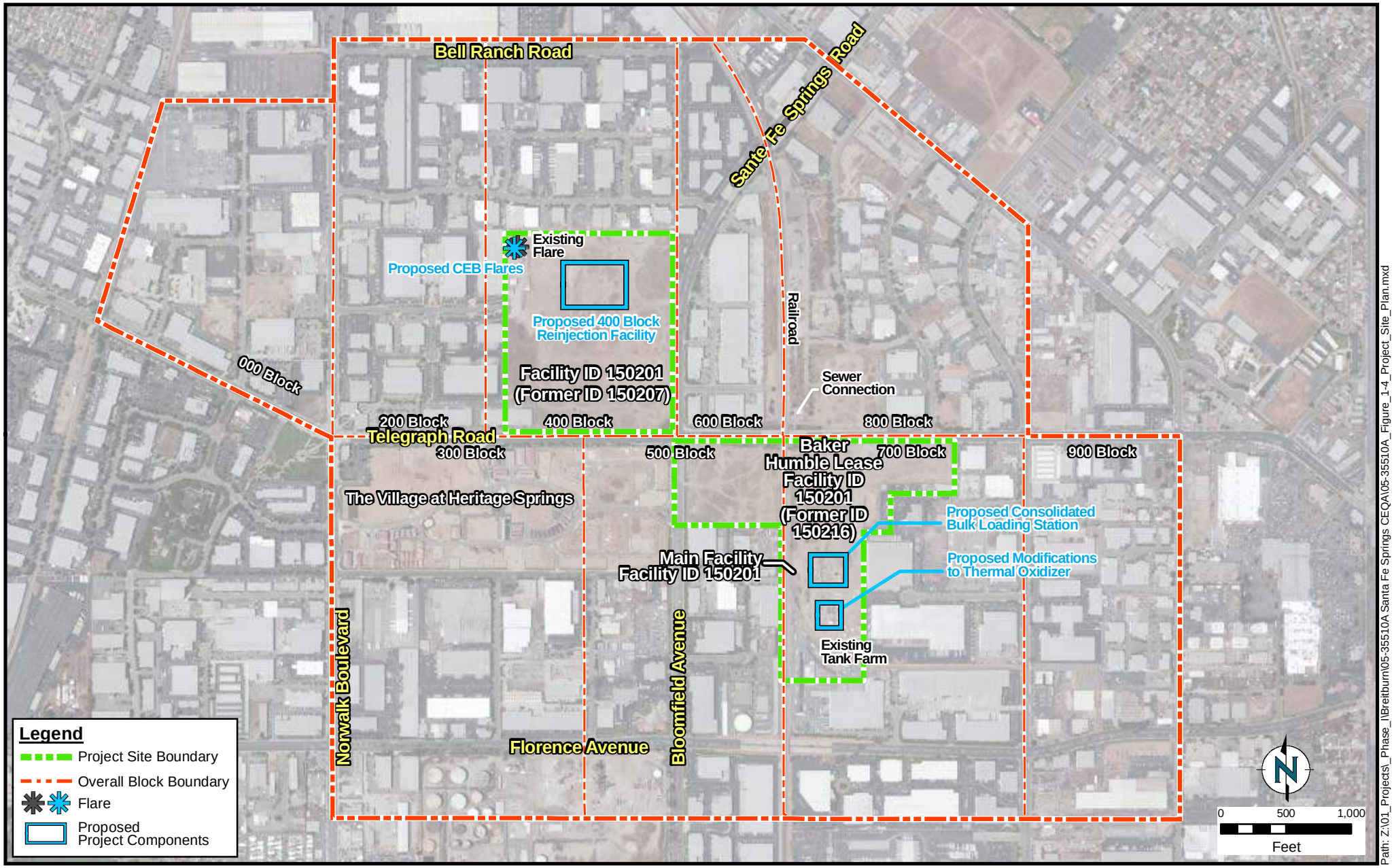
Santa Fe Springs, California 90670

Figure 1-3

DRAFTED BY: SShin

Date: 9/3/2014

PROJECT: 05-35510A



Path: Z:\01_Projects_Phase_I\Breitburn\05-35510A Santa Fe Springs CEQA\05-35510A_Figure_1-4_Project_Site_Plan.mxd

ENVIRON

Project Site Plan

Santa Fe Springs, California 90670

Figure 1-4

DRAFTED BY: SShin | Date: 9/3/2014 | PROJECT: 05-35510A

ENVIRON

DRAFTED BY: SSS | DATE: 11/13/14

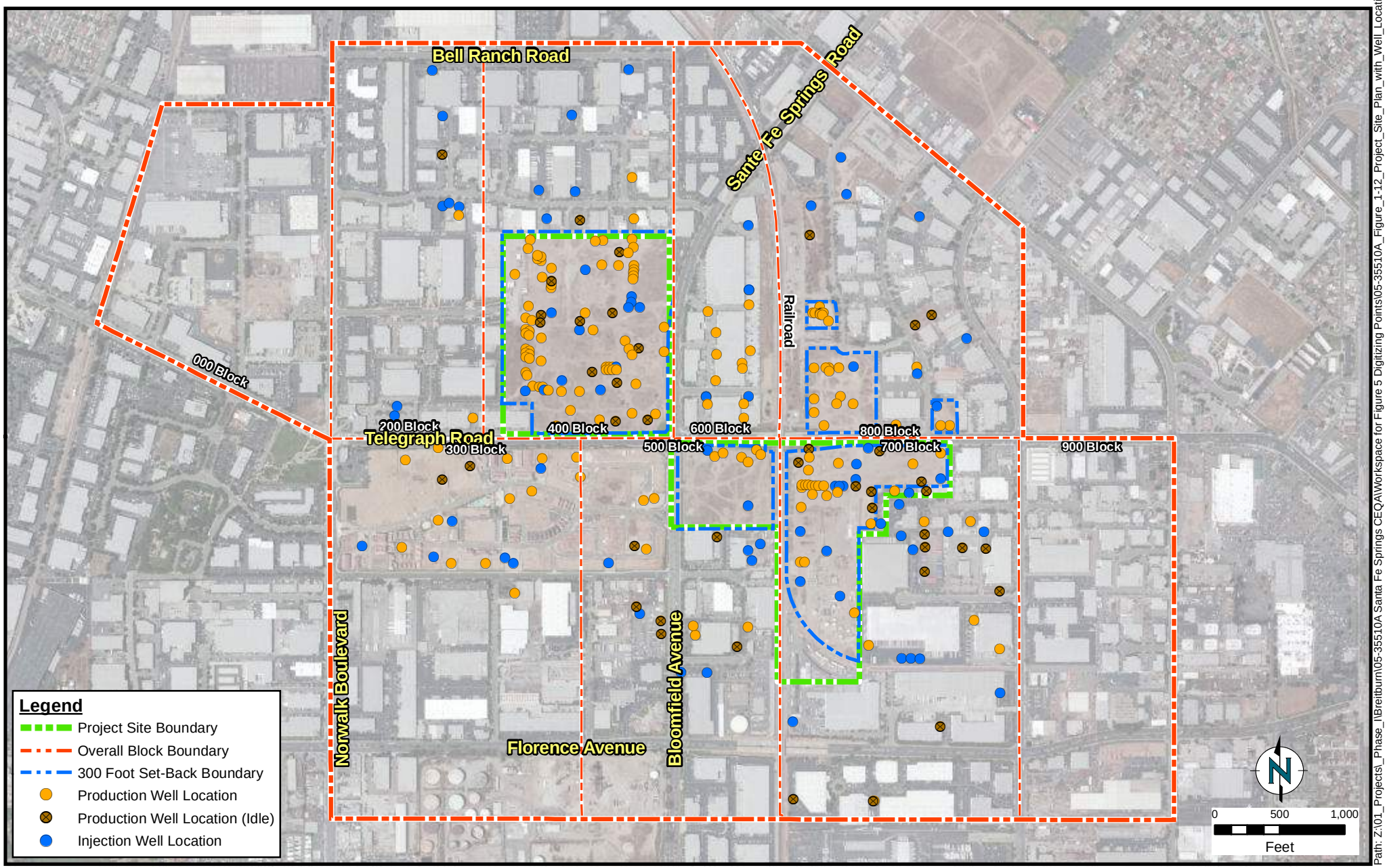
Existing Thermal Oxidizer at the 700 Block

Santa Fe Springs, California 90670

Figure
1-5

PROJECT: 05-35510A

FILE: \\ Z:\01_Projects_Phase_I\Bridbum\05-35510A Santa Fe Springs CEQA\Workspace for Figure 5 Digitizing Points



Path: Z:\01_Projects_Phase_I\Breitburn\05-35510A Santa Fe Springs CEQA\Workspace for Figure 5 Digitizing Points\05-35510A_Figure_1-12_Project_Site_Plan_with_Well_Locations.mxd

ENVIRON

Project Site Plan with Well Locations

Santa Fe Springs, California 90670

Figure 1-10

DRAFTED BY: SShin | Date: 11/14/2014 | PROJECT: 05-35510A

Figure 1-6: Free Water Knock Out Vessel that is part of the 700 Block Main Facility. Two comparable Free Water Knock Out Vessels will be included at proposed 400 Block Reinjection Facility.

Figure 1-7: Storage Tanks at the 700 Block Main Facility, similar to those that will be a part of Proposed 400 Block Reinjection Facility.

Figure 1-8: Existing Truck Loading connection in the foreground of the Baker Humble tank, located at the 700 Block. The proposed new connection would be added immediately adjacent to existing connection.

Figure 1-9: 700 Block – WEMCO separator at the 700 Block Main Facility, similar to that which will be installed at the proposed 400 Block Reinjection Facility.

Figure 1-11: 700 Block Main Facility pump and ancillary equipment area.

Figure 1-12: Existing Truck Loading Connection / Hoses at 700 Block. The proposed new connection would add additional hoses and vapor recovery lines such that trucks could be loaded simultaneously.

Figure 1-13: Existing Flare, located at the 400 Block, will be replaced with new, low emitting flares in the same location.

Figure 1-14: Typical well with electric pumpjack, located at 700 Block.

Figure 1-15: Typical water injection well located at 700 Block.

Figure 1-16: Breitburn's microturbines, which have been installed but are not yet operational. Noise dampers are visible on the top of each turbine.

CHAPTER 2

ENVIRONMENTAL CHECKLIST FORM

CHAPTER 2
ENVIRONMENTAL CHECKLIST

INTRODUCTION

The environmental checklist provides a standard evaluation tool to identify a project's potential adverse environmental impacts. This checklist identifies and evaluates potential adverse environmental impacts that may be created by the proposed Project.

GENERAL INFORMATION

Project Title: Breitburn Santa Fe Springs Blocks 400/700 Upgrade Project

Lead Agency Name:	South Coast Air Quality Management District
Lead Agency Address:	21865 Copley Drive Diamond Bar, CA 91765
Contact Person:	Mike Krause
Contact Phone Number:	(909) 396-2706
Project Sponsor's Name:	Breitburn Operating LP
Project Sponsor's Address:	515 South Flower Street, Suite 4800 Los Angeles, CA 90071
General Plan Designation:	Industrial
Zoning:	M2
Description of Project:	Breitburn Operating LP (Breitburn) is proposing a project to upgrade and augment its fluid handling systems at its Santa Fe Springs facilities (Breitburn Santa Fe Springs Facilities) to facilitate an increase in the amount of produced water that can be treated at the site. The systems used to handle produced fluids, particularly produced water, are currently operating near or at maximum capacity. With its current oil/water/gas separation system at capacity, Breitburn has been limited in its ability to continue operating at current production rates, or to potentially increase production at the site in the future. Breitburn submitted three separate permit application packages to the South Coast Air Quality Management District for Facilities to help increase capacity, and, at the request of the District, to prepare for unexpected increases in substances requiring handling and/or disposal. The first permit application, submitted March 26, 2013, and modified July 1, 2014, is for a new produced fluid processing facility that would include a new crude oil/water/gas separation system, produced water treatment and injection system, and a new vapor recovery system at the 400 Block (SCAQMD ID #150207). The second permit application, dated March 20, 2014 is for a Consolidated Bulk Truck Loading System, which includes addition of a new crude oil truck loading connection adjacent to the existing connection, modification to the existing thermal oxidizer and modification to the existing crude oil/gas/water separation system. The latter two modifications are

	necessary to accommodate the proposed new truck loading connection. These actions would occur at the Main Facility (SCAQMD ID #150201) and the Baker Humble Lease Facility (SCAQMD ID #150216), which is located entirely within the Main Facility. A third permit application, submitted April 11, 2014, is for the replacement of the existing flare with one new low-emissions Flare Industries CEB-800 burner, plus up to three more identical CEB-800 burners at the 400 Block (SCAQMD ID #150207).
Surrounding Land Uses and Setting:	The Breitburn Santa Fe Springs Facilities are located in an area of mixed uses of commercial development, light industrial and single- and multi-family residences.
Other Public Agencies Whose Approval is Required:	None

POTENTIALLY SIGNIFICANT IMPACT AREAS

The following environmental impact areas have been assessed to determine their potential to be affected by the Project. As indicated by the checklist on the following pages, environmental topics marked with an "✓" may be adversely affected by the Project. An explanation relative to the determination of impacts can be found following the checklist for each area.

☐	Aesthetics	☑	Greenhouse Gas Emissions	☐	Population and Housing
☐	Agriculture and Forestry Resources	☑	Hazards and Hazardous Materials	☐	Public Services
☑	Air Quality	☑	Hydrology and Water Quality	☐	Recreation
☐	Biological Resources	☐	Land Use and Planning	☑	Solid and Hazardous Waste
☐	Cultural Resources	☐	Mineral Resources	☐	Transportation/ Traffic
☑	Energy	☑	Noise	☑	Mandatory Findings of Significance
☑	Geology and Soils				

DETERMINATION
On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☑ I find that the project MAY have a significant effect(s) on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the project, nothing further is required.

Date: 12/02/2014 Signature: 

Michael Krause
Program Supervisor

ENVIRONMENTAL CHECKLIST AND DISCUSSION:

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
I. AESTHETICS				
Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☑
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☑
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☑	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☑	☐

1.1 Significance Criteria

The proposed project impacts on aesthetics will be considered significant if:

The project will block views from a scenic highway or corridor.

The project will adversely affect the visual continuity of the surrounding area.

The impacts on light and glare will be considered significant if the project adds lighting which would add glare to residential areas or sensitive receptors.

1.2 Environmental Assessment

1.a, b). The proposed Project is located in an existing industrial area; there are no designated scenic vistas or scenic highways in the vicinity from which the Project would be visible (Caltrans 2011). Therefore, the proposed Project would have no impact on scenic resources. No further analysis of this issue is required.

1.c). The proposed Project is located within an existing oil and gas facility and is consistent with the current ongoing operations at the facility. The proposed modifications to equipment at the 700 Block and addition of new facilities at the 400 Block would not substantially alter the appearance at the site; they would blend in with the industrial nature of the project site. (Figures 2-1 to 2-8).

Related to any well drilling, the drill rig itself would be visible while drilling a new well. The drill rig would be approximately 120 feet tall and very slender. The rig would only be on-site at any one location for the length of time required to drill the well, generally for a maximum of 20 days. Once the well is brought on-line, the rig would be removed from the site. Moreover, as noted in Chapter 1, Section 1.5.4.1, drilling operations, such as well workovers and drilling new production and/or injection wells, occur regularly in and around the Project site throughout the year and are part of baseline operations, so the visual impact resulting from a drill rig matches the existing visual character of the surrounding area. In addition, the area surrounding the Breitburn Santa Fe Springs Facilities consists mostly of distribution centers and warehouses with only one new residential area located south of Telegraph Road between Norwalk Boulevard and Bloomfield Avenue. These current and potential future drilling operations can occur within the boundaries of the overall Blocks as outlined in Chapter 1, Figure 1-4. Current and future drilling in these locations has already been approved by DOGGR. New well drilling will occur no closer than 400 feet from the nearest residential land area. The Santa Fe Springs Oil Field operations described here, including the new components, are all within the City Zoning of M-2 which allows for oil and gas drilling, production and storage activities. Overall, these other activities (drilling and oil production) also have less than significant impacts, individually and cumulatively, when considered with the Project. Breitburn reworks wells within the Block boundaries, industrial area, and within the residential area. Reworking rigs are significantly shorter than drilling rigs (40 feet vs. 120 feet). Reworking is typically done during daytime hours and the level of reworking activity is not expected to change substantially with the Project. Therefore, potential impacts on the existing visual character would be less than significant. Therefore, visual impacts to visual quality from the proposed Project would be less than significant.

1.d). The proposed Project construction activities discussed in Chapter 1, Section 1.5, are expected to occur during daylight hours and will not require nighttime lighting. The new Flare Industries CEBs do not have a visible flame (they are “enclosed burners”) and are replacing an old oil field flare at the same location; thus, the visual impact would be reduced. The proposed 700 Block modifications for the Consolidated Truck Loading System all occur at existing equipment areas with existing lighting. However, the proposed 400 Block Reinjection Facility would be equipped with new lighting. This lighting is necessary for the operation of the equipment and for the safety of the employees. All of the lighting would be shielded to direct the light away from residential receptors in the housing development, located approximately one quarter mile south of the proposed Project, immediately south of Telegraph Road. The new 400 Block Reinjection Facility is planned to be positioned towards the center of the 400 Block to allow for an additional buffer area between the facility and the residential development. Because the current night-time views already have some night-time lighting from street lighting and business premises as well as the oil field operations, impacts from lighting or increased glare from shielded, equipment-specific lighting not next to residents at a facility that currently has night-time lighting would be less than significant.

To the extent that well drilling or reworking occurs on or near the Project site, temporary additional lighting would be needed for the operation of the drilling equipment and to ensure safety of the employees and contractors operating the equipment. Drilling would occur 24 hours a day, so an increase in nighttime lighting is anticipated. Additional lighting would be placed on the drill rigs and at ground level around drilling staging areas. Lighting above ground level (positioned on the rig) would be directed inwards towards the rig and immediately surrounding area, illuminating only approximately 20-30 square feet. Additional lighting at ground level would be used to illuminate equipment throughout the entire drill site, which would cover an area of approximately 40,000 square feet. Lighting would be directed towards equipment and away from nearby residences and offices. Moreover, a sound wall would be erected around the drill rig which would serve a dual purpose of reducing impacts from lighting at ground level. Additional lighting would be temporary; it would only be in place for the time required to drill the well, approximately 20 days, as only one well is drilled at a time on any given day. Once the well is brought on-line, the temporary lighting used to drill the well is no longer required and is removed from the location with the drilling equipment. Breitburn reworks wells within the Block boundaries, industrial area, and within the residential area. Reworking rigs are significantly shorter than drilling rigs (40 feet vs. 120 feet). Reworking is typically done during daytime hours and the level of reworking activity is not expected to change appreciably with the Project. Therefore, potential impacts would be less than significant.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
II. AGRICULTURE AND FORESTRY RESOURCES				
Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☑
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☑
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code §12220(g)), timberland (as defined by Public Resources Code §4526), or timberland zoned Timberland Production (as defined by Government Code §51104(g))?	☐	☐	☐	☑
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☑
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☑

2.1 Significance Criteria

Project-related impacts on agricultural resources will be considered significant if any of the following conditions are met:

> The proposed project conflicts with existing zoning or agricultural use or Williamson Act contracts.

The proposed project will convert prime farmland, unique farmland, or farmland of statewide importance, as shown on the maps prepared pursuant to the farmland mapping and monitoring program of the California Resources Agency, to non-agricultural use.

The proposed project conflicts with existing zoning for, or causes rezoning of, forest land (as defined in Public Resources Code §12220(g)), timberland (as defined by Public Resources Code §4526), or timberland zoned Timberland Production (as defined by Government Code §51104(g)).

The proposed project would involve changes in the existing environment, which, due to their location or nature, could result in conversion of farmland to non-agricultural uses.

2.2 Environmental Analysis

2.a). No part of the Project site is designated as Prime Farmland, Unique Farmland or Farmland of Statewide Importance as shown on the Farmland Mapping and Monitoring Program of the California Resources Agency maps; the land is Urban and Built-Up Land (DOC 2014). As such, no impact to agricultural resources would occur.

2.b, e). The Project site has continuously been used as an active oil field for nearly 100 years and is currently zoned M-2 Industrial. Williamson Act Maps designate the project site as Urban and Built-Up Land, which is not subject to any contracts or protections by the Williamson Act. Therefore, no impact to existing agricultural zoning, uses, or Williamson Act contracts would occur (DOC 2013).

2.c, d). The Project site is not zoned for, nor does it contain, forest- or timber-land; the site is zoned as M-2 Industrial (City of Santa Fe Springs Planning Department, 2013). As such, the Project would have no impact on forest- or timber-lands.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
III. AIR QUALITY.				
Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☑	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☑	☐	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	☑	☐	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☑	☐	☐	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☑	☐

3.1 Significance Criteria

To determine whether or not air quality impacts from the proposed Project may be significant, impacts will be evaluated and compared to the criteria in Table III-1. If impacts equal or exceed any of the criteria in Table III-1, they will be considered significant. As necessary, all feasible mitigation measures will be identified and implemented to reduce any significant adverse air quality impacts from the proposed Project to the maximum extent feasible.

Table III-1. SCAQMD Air Quality Significance Thresholds

Mass Daily Thresholds		
Pollutant	**Construction**	**Operation**
NO_x	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
$PM_{2.5}$	55 lbs/day	55 lbs/day
SO_x	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Toxic Air Contaminants (TACs), Odor and GHG Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk $\geq$ 10 in 1 million Cancer Burden > 0.5 excess cancer cases (in areas $\geq$ 1 in 1 million) Chronic & Acute Hazard Index $\geq$ 1.0 (Project increment)	
Odor	Project creates a minimal odor nuisance pursuant to SCAQMD Rule 402	
GHG	10,000 MT/yr CO^2eq for industrial facilities	
Ambient Air Quality Standards for Criteria Pollutants		
NO_2 1-hour average annual arithmetic mean	SCAQMD is in attainment; Project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)	
PM_{10} 24-hour average annual average	10.4 $\mu g/m^3$ (construction) & 2.5 $\mu g/m^3$ (operation) 1.0 $\mu g/m^3$	
$PM_{2.5}$ 24-hour average	10.4 $\mu g/m^3$ (construction) & 2.5 $\mu g/m^3$ (operation)	
SO_2 1-hour average 24-hour average	0.25 ppm (state) & 0.075 ppm (federal – 99_{th} percentile) 0.04 ppm (state)	
Sulfate (24-hour average)	25 $\mu g/m^3$ (state)	
CO 1-hour average 8-hour average	SCAQMD is in attainment; Project is significant if it causes or contributes to an exceedance of the following ambient standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)	
Lead 30-day average rolling 3-month average quarterly average	1.5 $\mu g/m^3$ (state) 0.15 $\mu g/m^3$ (federal) 1.5 $\mu g/m^3$ (federal)	

PM_{10} = particulate matter less than 10 microns in size, $\mu g/m^3$ = microgram per cubic meter; ppm = parts per million; TAC = toxic air contaminant; AHM = Acutely Hazardous Material; NO_2 = Nitrogen Oxide, CO = Carbon Monoxide, VOC = Volatile Organic Compounds, SO_x = Sulfur Oxide; SO_2 = Sulfur Dioxide.
Source: SCAQMD 2011.

3.2 Environmental Analysis

3.a). The Project is located within the South Coast Air Basin (Basin), which is under the jurisdiction of the SCAQMD. The SCAQMD is the air pollution control agency primarily responsible for preparing the Air Quality Management Plan (AQMP), which is a comprehensive air pollution control program for making progress towards and attaining the state and federal ambient air quality standards. The most recent AQMP was adopted by the Governing Board of

the SCAQMD on December 7, 2012 (SCAQMD 2012). An inventory of existing emissions from industrial facilities is included in the baseline inventory in the 2012 AQMP, as well as projections of the future emissions which are based on source category growth factors provided by the Southern California Association of Government (SCAG). The 2012 AQMP also identifies emission reductions from existing sources and air pollution control measures that are necessary in order to comply with applicable state and federal ambient air quality standards. A significant impact would occur if the proposed Project were not consistent with the AQMP.

The 2012 AQMP is required to demonstrate that applicable ambient air quality standards can be achieved within the timeframes required under federal law. This proposed Project must comply with applicable SCAQMD rules and regulations for new or modified sources. For example, new emission sources associated with the proposed Project are required to comply with the SCAQMD's Regulation XIII - New Source Review, including Best Available Control Technology (BACT), offsets, and modeling requirements, as applicable. The proposed Project must also comply with prohibitory rules, as applicable, such as Rule 403, for the control of fugitive dust. By meeting these requirements, the proposed Project will be consistent with the goals and objectives of the 2012 AQMP to improve air quality in the Basin. The use of low NO_x burners, such as the state-of-the-art CEBs being installed to burn excess produced gas not used in the microturbines for electricity generation, will meet SCAQMD requirements such as BACT while reducing emissions of NO_x, CO and VOC, due to lower manufacturer emissions guarantees. Breitburn is required to comply with state and federal sulfur limits on diesel fuel, including the use of ultra-low sulfur diesel fuel as a control measure under the 2012 AQMP. For these reasons, the proposed Project is expected to be consistent with applicable AQMPs and is expected to comply with all existing air quality rules and future compliance requirements.

The Growth Management Chapter (GMC) of the Regional Comprehensive Plan and Guide (RCPG) forms the basis of the land use and transportation control measure portions of the AQMP. Projects that are consistent with the projections of the employment and population forecasts identified in the GMC are considered consistent with the 2012 AQMP growth projections. Approximately 20 full-time employees currently work in two shifts at the facility for the applicant, and approximately one dozen vendors travel to or from the facility on a daily basis. An average of approximately 20-25 workers would be necessary during construction, and a maximum of 30-40 would be needed during the peak construction period. These are only temporary workers who will be supplied by the existing local labor pool. The number of employees and vendors that travel to and work at the facility is not expected to change upon completion of construction of the proposed Project. Therefore, the proposed Project will also be consistent with the 2012 AQMP population and employment forecasts.

The proposed Project would serve existing and intended land uses and would be consistent with the goals and policies of the 2012 AQMP. It would not affect regional employment or job growth. Existing uses on and surrounding the Project site would not be changed by the proposed Project. The proposed Project would not conflict with the AQMP or the other applicable plans described above. Therefore, impacts would be less than significant.

3.b). Short-term construction emissions (e.g., offroad equipment, worker vehicle trips, grading, excavating, and/or trenching, if needed) and long-term operational emission as well as the

increase in truck emissions (i.e. delivery truck, oil export trucks, worker vehicles) associated with the proposed Project could result in the generation of criteria pollutant emissions that exceed thresholds established by SCAQMD. Initial analysis of criteria emissions from equipment operations indicates that incremental emissions may be below SCAQMD significance thresholds; however, a more detailed analysis, including potential mitigations as necessary, will be conducted in the EIR. Based on the spatial location of the sources throughout the facility and the low level of emissions, it does not appear that ambient air quality impacts from criteria pollutants would exceed the SCAQMD's criteria thresholds. Additional emissions would result from the drilling of new wells that may occur in or around the Project site. Well drilling is a temporary action, and only one well would be drilled on any given day. As such, well drilling emissions for a single well on a given day will be calculated and reported in the EIR. These emissions may be potentially significant. The EIR will thoroughly analyze criteria pollutant emissions (related to regional significance thresholds) and concentration impacts related to violation of air quality standards or substantial contribution to an existing or projected air quality violation.

3.c). Significant adverse cumulative air quality impacts could occur if the proposed Project resulted in a cumulatively considerable net increase of a criteria pollutant for which the South Coast Air Basin exceeds federal and state ambient air quality standards and has been designated as an area of non-attainment by the USEPA and/or CARB. The Basin is a non-attainment area for ozone and particulate matter (PM_{10} and $PM_{2.5}$).

With regard to determining whether or not air quality impacts from a proposed project are significant, the project's potential contribution to cumulative impacts would be assessed utilizing the same significance criteria as for project-specific impacts. Therefore, if an individual project generates construction or operational emissions that exceed the SCAQMD's recommended daily thresholds for project-specific impacts, that project would also cause a cumulatively considerable increase in emissions for those pollutants for which the Basin is in nonattainment and therefore, would be considered to have significant adverse cumulative air quality impacts. The Project's contribution to potential cumulative impacts will be analyzed in the EIR.

3.d). The closest receptors to the Project site are the residential receptors at the Heritage Villages housing development located in the northern portions of the 300 and 500 Blocks and bordering the 400 Block to the south. The housing is separated from the 400 Block by Telegraph Road, and the Project would be located towards the middle of the 400 Block, approximately one quarter mile from the Heritage Villages. In addition, neighboring commercial areas surround the Project site within a one quarter mile radius. As such, residential and sensitive receptors could be exposed to toxic air contaminants (TACs) from Project equipment, including the new CEB burners, oil/water/gas separation system, tank farm, consolidated truck loading system, and construction equipment. An initial analysis of the types of TACs, their spatial distribution, and relationship to applicable receptors indicates that the Project's TAC emissions will be less than SCAQMD's significance criteria. However, the EIR will include estimates of project-related toxic emissions changes. In addition, the potential impact on human health of air toxics and criteria pollutants (including $PM_{2.5}$) will be analyzed to determine whether the pollutants result in a significant adverse effect on residential or sensitive receptors.

3.e). Currently, fugitive odors may occur, for example, from oil production, leaks in valves or tanks, venting from the flares, during the current oil/water processing operations, etc. The proposed Project includes potentially odor emitting equipment (i.e. new oil tanks and other tanks, fueling connections, new oil/water/gas separation equipment, well drilling analyzed as part of the project, etc.). During construction diesel emissions from construction equipment may be sources of odor. The potential for the proposed Project to cause objectionable odors will likely be incrementally small, but will be fully analyzed in the EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES. Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☑
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☑
c) Have a substantial adverse effect on federally protected wetlands, as defined by §404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.), through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☑
d) Interfere substantially with the movement of any native resident, migratory fish, or wildlife species or with established native resident	☐	☐	☐	☑

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
	or migratory wildlife corridors, or impede the use of native wildlife nursery sites?				
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☑
f)	Conflict with the provisions of an adopted Habitat Conservation plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☑

4.1 Significance Criteria

The impacts on biological resources will be considered significant if any of the following criteria apply:

The proposed project results in a loss of plant communities or animal habitat considered to be rare, threatened or endangered by federal, state or local agencies.

The proposed project interferes substantially with the movement of any resident or migratory wildlife species.

The proposed project adversely affects aquatic communities through construction or operation of the project.

4.2 Environmental Analysis

4.a). The proposed Project would take place entirely within the confines of the current boundaries of the existing project site, which has already been developed for industrial uses. All new drilling will only be conducted on previously cleared land that is within the current operational boundaries, accounting for the required distance offsets from any major street (i.e. 60 feet of the centerline of any other public street). No new land, including any vegetated land, will be drilled upon. Note also that like well reworking, new well drilling has been an ongoing feature of the oil field operations so it is not, by itself, a new activity.

Reworking of existing wells (see Figure 1-10), occurs continually regardless of the Project. Existing wells are located within the Project boundaries, as well as in areas outside of the Project boundaries, including both existing commercial and residential development. The Project may cause a negligible increase in the level of reworking of existing wells.

The 700 Block is already developed and the proposed modifications for the Consolidated Truck Loading System exist entirely within the existing facility boundaries. The 400 Block Reinjection Facility is a proposed new facility that is located on already-developed Breitburn property that is currently used for oil wells and the small gas processing plant that currently includes one flare. All excavation and construction would occur within the existing site boundaries. All vegetation and plant life has already been removed at the site for fire and safety concerns.

No candidate, sensitive, or special status species identified in local plans, policies, or regulations, or by the California Department of Fish and Wildlife (CDFW) or by the U.S. Fish and Wildlife Service (USFWS) are expected to be found within the facility boundaries as there is no habitat present to support such species. The project site is located in the Whittier Quadrangle. A search[1] of the California Natural Diversity Database (CNDDB) shows that any species considered threatened or sensitive in the subject quadrangle inhabit vernal pools, tidal marshes, coastal scrub, coastal dune, grassland, woodland, or riparian communities. No suitable habitat for any such threatened or sensitive species is present on-site nor adjacent to such habitats. The site is within the range of one identified occurrence of bank swallow (Riparia riparia); however, the species is known to require vertical banks with cliffs near rivers and oceans, features which do not exist on the project site. No bank swallows have been found to be present at or adjacent to these properties or in adjacent areas of Santa Fe Springs (CDFW 2014). No further analysis of this issue is required.

4.b, c, d). No riparian habitat or wetlands are located within, or adjacent to, the Project site, as evidenced in the USFWS National Wetland Inventory Search (USFWS 2014). Therefore, the proposed Project would not interfere with such habitat. As the proposed Project would not impact wetlands, riparian habitats, or any other surface water features, the proposed Project would not cause any adverse effects to aquatic communities.

4.e, f). The Project site is located in an area that has already been developed into a highly industrial area. The proposed Project will not conflict with any local policies or ordinances protecting biological resources. No oak trees are located on or adjacent to the project site. The proposed Project will not conflict with the provisions of any local, regional, or state habitat conservation plans. No further analysis of this issue is required.

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☑

[1] The query was conducted in November 24, 2014.

		Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
b)	Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5?	☐	☐	☑	☐
c)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☑	☐
d)	Disturb any human remains, including those interred outside formal cemeteries?	☐	☐	☑	☐

5.1 Significance Criteria

Impacts to cultural resources will be considered significant if:

The proposed project results in the disturbance of a significant prehistoric or historic archaeological site, a property of historic or cultural significance to a community or an ethnic or social group.

Unique paleontological resources are present that could be disturbed by construction of the proposed project.

The proposed project would disturb human remains.

5.2 Environmental Analysis

5.a). CEQA Guidelines state that generally, a resource shall be considered "historically significant" if the resource meets the criteria for listing in the California Register of Historical Resources, which include the following:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- Is associated with the lives of persons important in our past;
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- Has yielded or may be likely to yield information important in prehistory or history (CEQA Guidelines §15064.5).

A search of the National Register of Historic Places for Los Angeles County indicates that there are two historically listed sites in Santa Fe Springs, CA: the Hawkins--Nimocks Estate-Patricio Ontiveros Adobe, located at 12100 Telegraph Road, to the west of the Project site, and the Clarke Estate, located at 10211 Pioneer Blvd, located to the northwest of the Project site (NPS

2014). Both listed sites are outside of the Project area and would not be impacted by the proposed Project.

Buildings, structures, and other potential culturally significant resources that are less than 50 years old are generally excluded from listing in the National Register of Historic Places, unless they are shown to be exceptionally important. The first wells were drilled on the site approximately 95 years ago; however, structures and equipment for extracting oil at the Santa Fe Springs Oil Field were built in starting in 1937, with recent structures installed in the 1970s. The proposed Project will not result in the destruction of any existing structures, with the exception of the replacement of an existing flare that was installed in 1994 which is less than 50 years old and not of historic significance. Therefore the Project would not result in impacts to any historic cultural resources as defined in CEQA §15064.5 (*Determining the Significance of Impacts to Archeological and Historical Resources*).

5.b, c). There has been extensive human activity on the site for decades related to oil operations. The 700 Block has been graded and paved, and the 400 Block has also been partially graded and has been previously disturbed by on-going facility operations. The Project site has been disturbed by over 95 years of industrial activity, including the drilling of hundreds of wells, and no archaeological resources have been encountered. In addition, new drilling will only be conducted on previously cleared land that is within the current operational boundaries, accounting for the city-required distance offsets from any major street. No new land will be drilled upon. Reworking of existing wells (see Figure 1-10), as well as drilling of new wells has occurred continually regardless of the Project. Existing wells can be in residential and/or individual locations outside the Project site. The Project may cause a negligible increase in the level of reworking of existing wells. Thus, it is highly unlikely that archaeological materials are present within the project site. Moreover, the proposed Project involves only approximately 2 acres of surface grading for the Reinjection plant (an approximately 400' by 200' area for the plant as well as a 20% margin), as well as less than one acre for a new, paved access road (approximately 1,200' by 24', which is less than one acre). All four CEBs, if installed, would require approximately 0.1 acres of grading. Therefore, it is highly unlikely that previously unknown paleontological resources would be encountered. The potential impact is less than significant and does not require additional analysis.

5.d). As already noted, the site has been previously disturbed. No human remains are known to have been found on the project site during previous site disturbances or construction activities spanning over 95 years of oil field operations. Therefore, potential impacts would be less than significant.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
VI. ENERGY.				
Would the project:				

a)	Conflict with adopted energy conservation plans?	☐	☐	☐	☑
b)	Result in the need for new or substantially altered power or natural gas utility systems?	☐	☐	☑	☐
c)	Create any significant effects on local or regional energy supplies and on requirements for additional energy?	☐	☐	☑	☐
d)	Create any significant effects on peak and base period demands for electricity and other forms of energy?	☐	☐	☑	☐
e)	Comply with existing energy standards?	☐	☐	☐	☑

6.1 Significance Criteria

The impacts to energy will be considered significant if any of the following criteria are met:

The proposed project conflicts with adopted energy conservation plans or standards.

The proposed project results in substantial depletion of existing energy resource supplies.

An increase in demand for utilities impacts the current capacities of the electric and natural gas utilities.

The proposed project uses non-renewable resources in a wasteful and/or inefficient manner.

6.2 Environmental Analysis

6.a). The proposed Project is not expected to conflict with any adopted energy conservation plan.

6.b, c, d). The Breitburn Santa Fe Springs Facilities are currently served by Southern California Edison (SCE) for electricity supply. The facility is energy confined, meaning that the transmission lines that serve the field can only supply a small amount of energy that is negligible in comparison to the greater service area. The average electrical supply from SCE at the Breitburn Santa Fe Springs Facilities is 17 to 18 MW, distributed around the site on Breitburn's own 12 kV distribution system. The facility purchases electricity supplied by 20 small on-site, third-party microturbines to supply additional electricity needs (~1.3 MW). These existing third-party microturbines combust produced gas from the Breitburn Santa Fe Springs Facilities, and sell the produced electricity to Breitburn. In addition, as of November, 2014, Breitburn had installed 14 microturbines to beneficially use more produced gas generated from Breitburn's operations to satisfy additional electricity needs.

The proposed Project will increase the power load used by Breitburn, but only after the construction and commenced operation of the new Block 400 Reinjection Facility, which will require approximately 10 to 20 MW per day, depending on the throughput of produced fluids. The majority of the additional power load increase is due to increased use of electrical pumps for reinjection of the additional produced water, from either optimization or rework of existing idle wells, or possible newly drilled wells. SCE has recently up-rated a dedicated substation for Breitburn; SCE can now supply a minimum of 26 MW to the Breitburn Santa Fe Springs Facilities. All pumps on-site and proposed are electrically operated.

SCE supplies more than 99 gigawatt hours (GW-h) of electricity each year to customers throughout Southern California. The California Energy Commission's (CEC) 2014-2024 Preliminary Forecast Report indicates that electricity consumption is expected to increase by 0.64% to 1.37% each year in the SCE Planning area, resulting in a projected electricity consumption of 107,929 to 118,193 GW-h by 2024 (peak demand is projected to be 23,499 to 26,602 MW by 2024) (CEC 2013). The Project site is on an interruptible supply such that when peak demand gets too high, the site experiences a blackout. The relatively small increases in electricity of about 20 MW per day (or only 0.095% of the current peak SCE Planning area supply of ~21,000 MW) during operation of the proposed Project will not create any significant negative impacts on local or regional energy supplies and would not create a significant effect on either peak or base-load energy demand. Therefore, no additional analysis is required.

As discussed above, the electrical supply at the facility includes the existing third-party oil field gas-fired microturbines as well as 14 new oil field gas-fired, CARB-certified, microturbines, discussed in Chapter 1, that were installed to supply additional electrical needs. The gas used to power the microturbines is produced from the field during oil extraction, is not pipeline quality gas, and, thus, will not affect regional pipeline gas supplies. Additional microturbines that are CARB-certified to run on produced oil field gas are no longer available; any additional microturbines would require permitting. The remaining produced gas not used to provide electricity will be sent to the proposed four CEBs because there are no existing connections to any gas purchaser for the sale of the produced gas. In addition, the produced gas is not pipeline quality and would not meet gas company specifications. In order to sell the produced gas, a gas processing/conditioning plant would need to be constructed. Currently, the produced gas volume is not sufficient to make a connection project, the necessary clean up equipment, or a contract with SoCal Gas economically feasible. Thus, the associated impacts will not result in a change in the existing pipeline natural gas infrastructure or an increase in the demand for natural gas. There will be no impacts on supplies of pipeline quality natural gas from the Southern California Gas Company.

Demand for electricity during the construction period is not expected to increase appreciably because most of the construction equipment is powered by diesel fuel. The amount of diesel fuel used to run construction equipment is not considered significant relative to the pool of diesel fuel available for purchase.

As noted in Chapter 1, other activities, such as drilling of new wells or reworking existing wells, will continue in and around the Project site. Any drilling that occurs would require small amounts of electricity to operate portable lighting near the construction staging areas. In

addition, the drill rigs themselves require energy to operate. However, both the lights and the rigs themselves are powered by diesel-fired electrical generators and thus would result in no impacts on the electricity demand from the power grid. The amount of diesel fuel required is not expected to be significant in that it is only the amount of diesel to fuel one drilling rig, and associated pumps, generators, etc., to drill one well at any time.

Because some of the Project alternatives my result in potentially significant energy impacts, a full analysis of potential energy impacts will be conducted the EIR.

6.e.). All equipment currently used on-site complies with existing standards, and any new equipment would also comply with all applicable standards. Therefore, no further analysis is required.

	Potentially Significant Impact	**Less Than Significant With Mitigation**	**Less Than Significant Impact**	**No Impact**
VII. GEOLOGY AND SOILS.				
Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving:	☐	☐	☑	☐
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☑
ii) Strong seismic ground shaking?	☐	☐	☑	☐
iii) Seismic–related ground failure, including liquefaction?	☐	☐	☐	☑
iv) Landslides?	☐	☐	☐	☑

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
b)	Result in substantial soil erosion or the loss of topsoil?	☐	☐	☑	☐
c)	Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in on- or off-site landslides, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☑	☐
d)	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☑
e)	Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☑

7.1 Significance Criteria

The impacts on the geological environment will be considered significant if any of the following criteria apply:

Topographic alterations would result in significant changes, disruptions, displacement, excavation, compaction or over covering of large amounts of soil.

Unique geological resources (paleontological resources or unique outcrops) are present that could be disturbed by the construction of the proposed project.

Exposure of people or structures to major geologic hazards such as earthquake surface rupture, ground shaking, liquefaction, or landslides.

Secondary seismic effects could occur which could damage facility structures, e.g., liquefaction.

Other geological hazards exist which could adversely affect the facility, e.g., landslides, mudslides.

7.2 Environmental Analysis

7.a.). Although well drilling itself is not expected to have potentially significant impacts on any of the criteria listed as affecting the geological environment, it will be further analyzed in the EIR.

7.a.i). The Project site is not located within the Alquist-Priolo Earthquake Fault Zone as illustrated on USGS maps for the area, and no mapped active or potentially active fault traces cross the property. No active faults which might expose structures to fault rupture or abnormally high ground accelerations during an earthquake are known to underlie the site. The closest Type A fault to the Project site is the Cucamonga Fault, located approximately 23 miles from the site, and the closest Type B fault is the Elsinore-Whittier Fault located approximately 4 miles from the site (USGS 2014; CGS 2014).

7.a.ii). The Project is located in a seismically active region of Southern California. Therefore, it is conceivable that a strong event could occur during construction or operation at the facilities. As with all properties in the seismically active southern California region, the area is susceptible to ground shaking, and ground failure during seismic events. Seismic ground shaking could damage the proposed structures and oil field operations. Breitburn would be required to design and construct the Project in conformance to the most recently adopted building codes. The proposed Project will result in construction of equipment similar to that already in place at the facility. Therefore, the increased risk to people and structures due to ground shaking is expected to be less than significant.

As discussed in Chapter 1, Breitburn Santa Fe Springs Facilities will continue to drill new wells and rework existing wells. Although well drilling itself, using a stable rig, is not expected to cause strong seismic ground shaking, it will be further analyzed in the EIR.

7.a.iii). The Project site is not located within the liquefaction hazard zone designated by the California Geologic Survey (CGS). As stated in the Santa Fe Springs General Plan, Safety Element, the potential for liquefaction to occur at the Project site is considered remote (City of Santa Fe Springs 1994c). Additional analysis is therefore not required.

7.a.iv). The Project site and surrounding area are relatively flat and are not located within an area that is prone to landslides. As stated in the Santa Fe Springs General Plan, Safety Element, there is minimal probability of mudslide or land slide. Therefore, the Project would not expose people or structures to potential substantial adverse effects involving landslides (City of Santa Fe Springs 1994c). Thus, no further analysis of this issue is required.

7.b). During construction of the proposed Project, a possibility exists for temporary erosion resulting from grading activities. These activities are expected to be temporary and minor because only about two acres will require excavation and/or grading during construction. Any potential minor impacts would be minimized with best management practices (BMPs). Wind erosion is not expected to occur because the proposed Project would be required to comply with SCAQMD Rule 403 - Fugitive Dust, which requires the application of best available control measures to minimize fugitive dust emissions, including fugitive dust emissions caused by wind erosion of disturbed surfaces. Earth movement would occur as a result of the drilling (use of

heavy equipment), but any erosion would be less than significant and Breitburn would follow best management practices.

All new well drilling can only be conducted on previously cleared land that is within the current operational boundaries, accounting for the required distance offsets from any major street. Well drilling is not expected to contribute to an increase in soil erosion or loss of topsoil. Well reworking, particularly any minimal increase due to the Project, does not involve disturbance to topsoil or its loss.

7.c.). No impact due to landslides would occur as a result of the proposed Project as described in 7.a.iv above. Similarly, the project site is not located within the liquefaction hazard zone designated by the California Geologic Survey. The Santa Fe Springs General Plan Safety Element corroborates that there is little risk of liquefaction in the city because the water table is deeper than 50 feet. The Plan notes that areas next to the San Gabriel River are at greater risk of liquefaction, but the proposed project site is approximately 4 miles east of the river. Therefore, potential for liquefaction to occur at the project site is considered remote. According to the Santa Fe Springs General Plan, Safety Element, there are no known fault systems beneath the city, so the likelihood of surface faulting or lateral spreading is minimal to none. (City of Santa Fe Springs 1994c).

Subsidence may occur as a result of continued oil extraction. Poorly consolidated sediment may be compacted after fluids (oil, water and gas) are removed from producing reservoirs, potentially resulting in the sinking of the ground surface. However, reinjection of water into the depleted reservoir is a widely practiced and accepted method of countering subsidence. Water reinjection is also used to enhance secondary oil recovery. As such, produced water is currently almost entirely reinjected into oil bearing zones, in an essentially "closed loop system" (except up to approximately 12,500 barrels/day that is discharged to the public sewer system). Any increase in produced water volumes resulting from the proposed Project (up to a maximum of an additional 196,000 barrels/day) would also be reinjected into depleted reservoirs to counter subsidence and help increase production. As such, no impacts associated with subsidence are expected.

The reinjection of produced water into a depleted oil reservoir is a widely practiced and effective method of reducing subsidence so impacts are expected to be less than significant. However, the impact of these other activities occurring in and around the Project site will be further analyzed in the EIR.

7.d). According to USGS classification of subsurface soils observed in the vicinity of the site, soils are anticipated to possess a very low to low expansion potential (Christopher A Joseph and Associates 2005). Therefore, no impact is anticipated. National Resource Conservation Services Web Soil Survey has not published site-specific data on the project site.

7.e). The proposed Project would not involve the construction of any septic tank or other alternative wastewater disposal systems. The proposed Project will continue to discharge to the public sewer system in accordance with the Industrial General Permit. Therefore, there would be no impact associated with septic tanks.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
VIII. GREENHOUSE GAS EMISSIONS.				
Would the project:				
a) Diminish an existing air quality rule or future compliance requirement resulting in a significant increase in air pollutant(s)?	☐	☐	☑	☐
b) Generate greenhouse gases, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☑	☐
c) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☑	☐

8.1 Significance Criteria

The analysis of GHG impacts is different from the analysis of criteria pollutants. For criteria pollutants, significance thresholds are based on daily emissions because the attainment or non-attainment status for many pollutants is based on daily exceedances of applicable ambient air quality standards. Furthermore, several ambient air quality standards are based on the relatively short-term exposure effects on human health (e.g., one-hour and eight-hour). On the contrary, because the half-life of CO_2 is approximately 100 years, the effects of GHGs are longer-term and affect global climate over a relatively long time frame. Thus, the SCAQMD's current position is to evaluate GHG effects over a longer time frame than a single day.

On December 5, 2008 the SCAQMD adopted the "Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Thresholds." This draft guidance proposes a tiered approach to determining GHG significance of projects (AQMD 2008). The first two tiers involve (1) exempting the Project because of potential reductions of GHG emissions allowed under CEQA and (2) demonstrating that the Project's GHG emissions are consistent with a local general plan. Because neither of these tiers is applicable for the proposed Project, the analysis shifts to Tier 3. Tier 3 establishes a numerical threshold of 10,000 metric tons of carbon dioxide equivalents per year (MT CO_2eq/year) as the incremental increase representing significance. Projects with incremental increases below this threshold are not considered to be cumulatively considerable. The next tier of the significance threshold methodology considered for this analysis is Tier 4. The significance threshold approaches in Tier 4 were not adopted by the Governing Board and possible options continue to be under investigation by staff. Tier 4 will not be

considered further. Tier 5 may be applicable if GHG emissions exceed the numerical significance threshold of 10,000 MT CO_2 eq/year. In this situation, offsite mitigation could be used to reduce GHG emission impacts to less than significant. Mitigation would be required for the life of the Project, defined as 30 years.

To determine whether or not incremental GHG emissions from the proposed Project may be significant, impacts will be evaluated in the EIR and compared to the 10,000 MT CO_2e/year guidance threshold for industrial sources.[2]

8.2 Environmental Analysis

8.a, b, c.). California has enacted several pieces of legislation that relate to GHG emissions and climate change, much of which sets aggressive goals for GHG reductions within the state. Per Senate Bill 97, the California Natural Resources Agency adopted amendments to the CEQA Guidelines, which address the specific obligations of public agencies when analyzing GHG emissions under CEQA to determine a Project's effects on the environment. However, neither a threshold of significance nor any specific mitigation measures are included or provided in these CEQA Guideline amendments.

- **Assembly Bill 32 (Statewide GHG Regulation):** The California Global Warming Solutions Act of 2006, widely known as AB 32, requires the California Air Resources Board (CARB) to develop and enforce regulations for the reporting and verification of statewide GHG emissions. The heart of the bill is the requirement that statewide GHG emissions be reduced to 1990 levels by 2020.

- **California Senate Bills 1078, 107, and 2; Renewables Portfolio Standard:** Established in 2002 under California Senate Bill 1078 and accelerated in 2006 under California Senate Bill 107, California's RPS requires retail suppliers of electric services to increase procurement from eligible renewable energy resources by at least 1 percent of their retail sales annually, until they reach 20 percent by 2010. On April 2, 2011, Governor Jerry Brown signed California Senate Bill 2 to increase California's RPS to 33 percent by 2020. This new standard also requires regulated sellers of electricity to procure 25 percent of their energy supply from certified renewable resources by 2016.

- **Low Carbon Fuel Standard:** California Executive Order S-01-07 (January 18, 2007) requires a 10 percent or greater reduction in the average carbon intensity for transportation fuels in California regulated by CARB. CARB identified the LCFS as a Discrete Early Action item under AB 32, and the final resolution (09-31) was issued on April 23, 2009.[3]

The proposed Project will require construction equipment and increased vehicle traffic during construction, as well as increased equipment use and truck traffic (up to a maximum of 20 trucks/day) during crude oil loading operations, as enabled by the construction of the

[2] SCAQMD, Greenhouse Gases (GHG) CEQA Significance Thresholds.
http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/ghg-significance-thresholds
[3] Available at: www.arb.ca.gov/fuels/lcfs/lcfs.htm. Accessed: June 2012.

Consolidated Truck Loading System. GHG emissions related to Project-related drilling and the Project-related oil production increment will be calculated and reported in the EIR. A detailed analysis will be conducted to assess the proposed Project's contribution of GHG emissions during construction and operation. In addition, Project emissions will require AB 32 allowances and/or offsets and, thus, the emissions increase is expected to be less than significant. (CARB has designed a California cap-and-trade program that is enforceable and meets the requirements of AB 32. The program began on January 1, 2012, with an enforceable compliance obligation beginning with the 2013 GHG emissions inventory. The Breitburn Santa Fe Springs Facilities is subject to the requirements of the AB 32 Cap and Trade Program and will have a GHG allocation based on current GHG emissions levels.) Further details and analysis will be provided in the EIR.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
IX. HAZARDS AND HAZARDOUS MATERIALS.				
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, and disposal of hazardous materials?	☐	☐	☑	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☑	☐
c) Emit hazardous emissions, or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☑
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5, and, as a result, would create a significant hazard to the public or the environment?	☐	☐	☑	☐

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public use airport or private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☑
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☑
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☑
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☑
i) Significantly increased fire hazard in areas with flammable materials?	☐	☐	☑	☐

9.1 Significance Criteria

The impacts associated with hazards will be considered significant if any of the following occur:

Non-compliance with any applicable design code or regulation.

Non-conformance to National Fire Protection Association standards.

Non-conformance to regulations or generally accepted industry practices related to operating policy and procedures concerning the design, construction, security, leak detection, spill containment or fire protection.

Exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Response Planning Guideline (ERPG) 2 levels.

9.2 Environmental Analysis

9.a, b). The construction equipment will use a variety of hazardous materials, including lube oils, gasoline and/or diesel fuels, sealants, welding gases, and paints. Additional hazardous materials on site include oil produced and processed on site, lubrication oils used for the compressors, diesel and other fuels to operate equipment, and natural gas produced from the field. All of the hazardous materials being used at the site for this proposed Project have been used on the site in the past. The total amount of materials may increase as a result of the proposed Project; no new hazardous materials are being introduced.

Potential hazards include accidental releases during vehicle and equipment maintenance, spills from new proposed oil tanks or oil/gas separators, a pipeline breach, or spills during the loading of oil for transport off-site. The proposed Project may also increase potential off-site hazards in the event of a traffic accident involving the proposed increase in the number of tanker truck trips taking oil from the site. Also, additional oil field gas will be combusted in either the 14 new microturbines or four new CEBs.

The storage requirements and spill prevention measures for applicable materials stored in quantities greater than the specified thresholds would be addressed by a Spill Prevention, Control and Countermeasure Plan (SPCCP) that has been prepared for the facilities and includes action measures to minimize the potential for accidental releases of hazardous materials into the environment. The SPCCP provides measures including steps to minimize the potential for a hazardous material release and requires cleanup and containment supplies, such as straw waddles, silt fencing, and absorbent pads, to be kept at the Santa Fe Springs Facilities. All hazardous materials will be stored in proper containers and handled in accordance with applicable regulations and safety requirements, including California Fire Code National Fire Protection Association 704 "Standard System for the Identification of the Hazards of Materials for Emergency Response as adopted by the California Fire Code"; California Health and Safety Code (HSC); Title 22 California Code of Regulations (CCR); 49 CFR Parts 100-185, and Certified Unified Program Agency (CUPA).

Some of the new equipment included in the proposed Project will use produced field gas, consisting primarily of methane, for electricity or for disposal of the produced field gas through combustion. Methane is defined as a hazardous material by the USEPA (USEPA; 40 CFR 68.130). The produced gas may also contain trace amounts of other hazardous gases (e.g., propane, butane, or pentane). However, none of these compounds, including methane, are stored on the site.

The proposed Project's addition of new gas handling and oil/water separation equipment will be required to meet Uniform Building Code (UBC) requirements and the latest safety standards. Therefore, any potential hazards or hazardous materials impacts to the new equipment related to an earthquake would be reduced compared to the impacts to the older existing equipment. Additionally, the new equipment will be more reliable and less susceptible to breakdowns or upsets, thereby reducing the potential for emergencies, upsets, and breakdowns as compared to the older existing equipment. Additional information will be provided in the Draft EIR.

The Breitburn Santa Fe Facilities are not subject to OSHA's Process Safety Management regulations in 29 CFR, Part 1910 because oil and gas drilling or servicing operations are exempt from Part 1910.

The Breitburn Santa Fe Facilities are not subject to the California Accidental Release Program (CalARP) regulations in Title 19 CCR, Division 2, Chapter 4.5. CalARP requires stationary sources with quantities of a regulated substance above a threshold specified in the regulation to develop and submit a Risk Management Plan (RMP). Methane is a regulated substance, with a specified threshold of 10,000 pounds. However, per §2770.2(b)(2)(B), "naturally occurring hydrocarbon mixtures need not be considered when determining whether more than a threshold quantity is present at a stationary source. Naturally occurring hydrocarbon mixtures include any combination of the following: condensate, crude oil, field gas, and produced water, each as defined in Section 2735.3." Per §2735.3, field gas is defined as "gas extracted from a production well before the gas enters a natural gas processing plant." The quantification of methane that is on the site as oil field gas is not counted toward the threshold quantity. Therefore, a RMP for the facility is not required. Operation of the proposed Project will not add any systems or processes that would cause the facility to become subject to either the Process Safety Management regulations or to CalARP. Each system has a number of engineered safety controls and systems such as temperature alarms and automatic shutdown devices to ensure the oil field gas is handled safely on a continuous operating basis.

The only other hazardous materials that are currently used during typical operations and are related to the proposed Project are standard oil-based and synthetic lubrication oils used in the compressors and microturbines, and water or oil treatment (non-hazardous) chemicals due to installation of the new oil and water tanks. As a result, aside from methane, hazardous materials are not generated regularly. All of these materials are currently used and are expected to continue to be used, are stored in proper containers or vessels, are properly labeled, and are handled in accordance with all applicable regulations and safety requirements.

The construction equipment used by contractors in the construction of the new equipment will use a variety of typical hazardous materials including lube oils, gasoline and/or diesel fuels, sealants, welding gases, and paints. The construction equipment expected to be used on site are the same types of construction equipment regularly used at other construction sites except that, because of space limitations on-site, smaller equipment is expected to be used. In addition, the drill rig will use diesel fuel.

Based on the chemical disclosure lists provided by oil field contractors, reworking and drilling typically involves primarily (99%) sand and water with minimal amounts of generally non-hazardous additives to improve viscosity and provide a pH buffer. Any chemical container is maintained within appropriate secondary containment or in a location where fluids cannot spill offsite.

As discussed above, all of the hazardous materials being used at the site for this proposed Project have been used on the site in the past and, although the material usage may increase, there will be no new hazardous materials introduced to the site. Although the continued operations and

construction activities are not expected to result in significant impacts, more detailed information and analysis of potential impacts of the proposed Project will be included in the EIR

9.c). There are no existing or proposed schools within one-quarter mile of the project site. Therefore, the proposed Project would have no impact.

9.d). The project site is not a listed hazardous materials site pursuant to Government Code Section 65962.5. There is one location, approximately half a mile from the project site on the list of hazardous materials compiled pursuant to Government Code Section 65962.5 – Beauman Trust Properties, located at 12525 Park Avenue, Santa Fe Springs, CA 90670. The Beauman Trust Properties site is listed as a state response site. From 1971 to 1986, the site operated as a drum recycling business (DTSC 2014). The site is located in the middle of the 500 Block. The proposed Project will not alter the operations occurring on the 500 Block and, thus, is expected to have less than significant effects relative to the Beauman Trust Properties site. No further analysis is necessary.

9.e, f). The project site is not within two miles of a public airport or public use airport. Therefore, the Project would not expose persons to a safety hazard related to airports. No further analysis of this issue is required.

9.h). The project site is located in an urbanized, industrial portion of the City of Santa Fe Springs that does not include wildlands or high fire hazard terrain or vegetation, as stated in the Santa Fe Springs General Plan, Safety Element (City of Santa Fe Springs 1994c). The site is industrial and no substantial vegetation exists. Therefore, no further analysis is required.

9.i). Oil and gas lines and related equipment already exist where new Project equipment is being installed. The proposed Project operations are a continuation of the work already being conducted at the Breitburn Santa Fe Springs Facilities, and are not expected to increase the risk of fire beyond that which is already possible at the site.

	Potentially Significant Impact	**Less Than Significant With Mitigation**	**Less Than Significant Impact**	**No Impact**
X. HYDROLOGY AND WATER QUALITY.				
Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☑	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the	☐	☐	☑	☐

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
	local groundwater table level (e.g. the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				
c)	Substantially alter the existing drainage pattern of the site or area, including alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☑	☐
d)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☑	☐
e)	Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☑	☐
f)	Otherwise substantially degrade water quality?	☐	☐	☑	☐
g)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☑

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
h)	Place within 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☑
i)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or deem?	☐	☐	☐	☑
j)	Inundation of seiche, tsunami, or mudflow?	☐	☐	☐	☑

10.1 Significance Criteria

Potential impacts on water resources will be considered significant if any of the following criteria apply:

Water Demand:

The existing water supply does not have the capacity to meet the increased demands of the Project, or the project would use more than 262,820 gallons per day of potable water.

The Project increases demand for water by more than five million gallons per day.

Water Quality:

The Project will cause degradation or depletion of ground water resources substantially affecting current or future uses.

The Project will cause the degradation of surface water substantially affecting current or future uses.

The Project will result in a violation of National Pollutant Discharge Elimination System (NPDES) permit requirements.

The capacities of existing or proposed wastewater treatment facilities and the sanitary sewer system are not sufficient to meet the needs of the project.

The project results in substantial increases in the area of impervious surfaces, such that interference with groundwater recharge efforts occurs.

The project results in alterations to the course or flow of floodwaters.

10.2 Environmental Analysis

10.a, f). No additional water is needed for the proposed Project, which includes the secondary recovery process. The produced water associated with oil production is sufficient to meet the needs of the secondary waterflood operations.

Stormwater runoff at the Santa Fe Springs Oil Field will be regulated under an Industrial General Permit. A Notice of Intent and Stormwater Pollution Prevention Plan (SWPPP) will be prepared and implemented in accordance with the general industrial statewide permit that will be effective as of July 1, 2015. The Proposed Project will operate in accordance with the SWPPP.

The proposed 400 Block Reinjection Facility will be constructed to treat up to an additional 196,000 bpd of produced water during the crude oil separation process, which will produce a maximum of 4,000 bpd of oil. This is the design maximum for the facility. It will function in a manner similar to the process that currently is employed at the 700 Block. The 700 Block currently processes produced water in its wastewater treatment storage tanks and WEMCOs. The majority of the water from the 700 Block is treated and reinjected for secondary oil recovery. Additional treatment is provided for water that is discharged to the public sanitary sewer system to remove benzene that is entrained in the fluid. The Industrial Wastewater Discharge Permit allows for up to 12,500 bbls of treated water to be discharged via the public sewer system daily; the facility currently discharges up to this maximum permitted volume. The proposed Project will not alter the volume of water discharged to the public sewage system, as any increased volume at the 400 Block will be reinjected. The proposed 400 Block Reinjection Facility includes construction of the additional water treatment system to ensure that the site has enough capacity to treat all produced water prior to discharge or reinjection, accounting for potential future increases in produced water volumes, as well as optimization of the current operations; the increase in water will be accommodated by re-injection above the permit sewer discharge limit of 12,500 bpd. There will be no change in the amount currently discharged (i.e., 12,500 bpd, the maximum permitted volume) nor a change in the sewer connections due to the proposed Project.

The proposed Project would add a minimal amount of impermeable surface (± 15,000 sf) at the location of the 400 Block Reinjection Facility. The 400 Block area of the Project would require some new paving, and any potential impacts to stormwater runoff and drainage would be addressed using stormwater pollution control measures and BMPs. Water may be used during construction for dust suppression, and minor erosion may occur during construction. These potential water quality issues would all be addressed via continued implementation of the SWPPP and BMPs, in accordance with a Construction NPDES permit, if required. As such, the proposed Project would comply with Federal and State water quality standards and applicable water quality permits/standard conditions. Thus, it is expected to be in compliance with water quality standards and waste discharge requirements, and have a less than significant impact on water quality.

10.b). Groundwater is generally reported to occur in Santa Fe Springs at a depth of approximately 50 feet below ground surface (City of Santa Fe Springs 1994c). The topography of the site is relatively flat across the site. Construction of the 400 Block Reinjection Facility will result in an additional impermeable surface. The area of additional impermeable surfaces will be less than ± 15,000 sf at the 400 Block and it will be surrounded by unpaved, permeable soil.

Therefore the additional paving will result in less than significant impacts. Drilling activities would be conducted in accordance with all federal and state regulations including DOGGR requirements for well drilling and standard protections. These protections include placement of cement casing around the well for protection, placement of the well itself within the cement casing, and perforations well below the groundwater aquifer. Therefore, no impacts to groundwater are anticipated to occur from drilling activity.

Although continued well drilling is not expected to result in significant impacts to groundwater, the potential impacts will be analyzed in the EIR.

10.c, d). The nearest waterway is the San Gabriel River and is located approximately 2.5 miles to the east of the site; the site has a low gradient. The Project does not include the fill or dredging of any watercourse or stream. All discharge from the site would comply with the new Stormwater General Industrial NPDES permit for the site and therefore would not increase erosion or siltation conditions in receiving waters offsite. Therefore, there would be no impact on the existing erosion, siltation or flooding conditions.

10.e). The Project requires the addition of approximately 15,000 sf of impermeable surface at the locations of the 400 Block Reinjection Facility. This addition is not likely to result in any alteration that would increase the rate or amount of surface runoff because the area is very small (approximately ⅓ acre compared to approximately 37 acres). Any marginal increase in water contaminants or run off volume would be addressed in a new SWPPP associated with the new General Industrial NPDES permit. The proposed Project would not create any additional runoff over present conditions.

10.g, h). According to the Safety Element of the General Plan, the project site is located in Flood Zone "C", an area defined as subject to "minimal flooding" and is not located within a 100-year flood hazard as mapped on a federal flood Hazard Boundary of Flood Insurance Map or other flood hazard delineation map (City of Santa Fe Springs 1994c). The Project would not result in the construction of housing. Therefore, there would be no impact.

10.i). The proposed Project would not result in the construction of housing and is not subject to flooding from a failure of a levee or dam. The nearest dam, the Whittier Narrows Dam, is more than 5 miles northwest of the site. Flood zone mapping prepared by the city to analyze potential inundation from dam failure shows that the project site would not be inundated. Therefore, there would be no impact.

10.j). There are no lakes, oceans or volcanoes on or near the proposed project site and, therefore, there would be no impact resulting from seiche, tsunami, or mudflow.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XI. LAND USE AND PLANNING.				
Would the project:				
a) Physically divide an established community?	☐	☐	☐	☑
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☑
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☑

11.1 Significance Criteria

Land use and planning impacts will be considered significant if the proposed project conflicts with the land use and zoning designations established by the City of Santa Fe Springs.

11.2 Environmental Analysis

11.a). The proposed Project will be located entirely within the existing Breitburn Santa Fe Springs Facilities site, and will not physically divide any community. No further analysis of this issue is required.

11.b). The proposed Project is consistent with the land use designations and zoning in the City of Santa Fe Springs for the project site, which is zoned M-2 Industrial. Breitburn operates in accordance with the oil and gas provisions as put forth in the Municipal Code, as described below.

The purpose of the M-2 zoning designation, according to the City of Santa Fe Springs Municipal Code Zoning regulations, is to preserve lands for heavy industrial activities, including oil and gas operations. Section 155.240 states:

> *"The purpose of the M-2 Zone is to preserve the lands of the city appropriate for heavy industrial uses, to protect these lands from intrusion by dwellings and inharmonious commercial uses, to promote uniform and orderly industrial development,…"*

Section 155.240 further states that "Oil and gas drilling, production or storage when located 300 feet or more from any residential zone, school or park" is a permitted principal use on an M-2 Industrial zone. Municipal Code section 155.636 "Oil And Gas Production" sets forth the following operating requirements:

A. All operations shall comply with the provisions of the City Oil Code, the Fire Prevention Ordinance, air pollution regulations and all other applicable ordinances and regulations.

B. No oil or gas well drilled after the effective date of this chapter shall be located within 80 feet of the centerline of any major highway, or 70 feet of the centerline of any secondary highway, or 60 feet of the centerline of any other public street.

C. All structures and storage facilities other than oil and gas wells shall comply with the front yard setback in the zone in which they are located. (City of Santa Fe Springs Planning Department 2013).

The proposed modifications to existing facilities and construction of new 400 Block Reinjection Facility are consistent with the M-2 industrial operations that have been occurring on site for the past nearly 100 years. All of the proposed activities are compatible and allowable with the existing land use designation. No further analysis of this issue is required.

11.c). There is no applicable habitat conservation plan or natural community conservation plan for the project site. Therefore, the proposed Project would result in no impacts related to conflicts with habitat conservation or natural community conservation plans. No further analysis of this issue is required.

	Potentially Significant Impact	**Less Than Significant With Mitigation**	**Less Than Significant Impact**	**No Impact**
XII. MINERAL RESOURCES.				
Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☑

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☑

12.1 Significance Criteria

Potential impacts on mineral resources will be considered significant if any of the following conditions are met:

> The proposed project would result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.
>
> The proposed project would result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

12.2 Environmental Analysis

12.a, b). The proposed Project will take place entirely at the existing Breitburn Santa Fe Springs Facilities. The mineral resources of the Santa Fe Springs Oil Field, as designated by DOGGR, are known mineral resources that are of value to the Santa Fe Springs region and the residents of the State of California. Operations of the field have included oil and gas exploration, drilling, production, processing and associated activities, and have occurred without interruption for over 95 years. The land is zoned for M-2 industrial development, which promotes the preservation of lands appropriate for industrial uses and the activities that occur there, which includes oil and gas development Continued field development to achieve the maximum recovery factor in the Breitburn Santa Fe Springs Facilities must be consistent with the California Laws for Conservation of Petroleum and Gas as administered by the DOGGR as well as the City of Santa Fe Springs Municipal Code of Ordinances.

Continued extraction of oil from the Santa Fe Oil Field is not considered a loss in the availability of important mineral resources in the same way that building a land use project over a mineral resource such as gravel, asphalt, bauxite, or gypsum, which are commonly used for construction activities or industrial processes, would make these unavailable for other uses. Instead, the proposed Project would provide for the continuation of the availability of these known and valuable mineral resources to the Los Angeles region and residents of the state in compliance with goals and policies of the DOGGR as well as the City of Santa Fe Springs as promulgated in the Municipal Code. Thus, the proposed Project would allow for a beneficial effect and actually provides for increased City tax money from continued oil production. No further analysis is necessary.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XIII. NOISE.				
Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☑	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☑	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☑	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☑	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public use airport or private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☑
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the area to excessive noise levels?	☐	☐	☐	☑

13.1 Significance Criteria

Impacts on noise will be considered significant if:

> Construction noise levels exceed the local noise ordinance or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three decibels (dBA) at the site boundary. Construction noise levels will be considered significant if they exceed federal Occupational Safety and Health Administration (OSHA) noise standards for workers.
>
> The proposed project operational noise levels exceed any of the local noise ordinances at the site boundary or, if the noise threshold is currently exceeded, project noise sources increase ambient noise levels by more than three dBA at the site boundary.

13.2 Environmental Analysis

13.a, b, c, d). The Breitburn Santa Fe Springs Facilities are bordered primarily by commercial, light industrial, and residential development. The new Heritage Villages Housing Development is located in the northern portion of the 300 block, immediately south of the proposed 400 Block Reinjection Facility across Telegraph Road and to the west of the Main Facility; the 500 block is situated between the housing development and the Main Facility. The ambient noise levels around the Project site are approximately 60-65 decibels, according to the Santa Fe Springs General Plan Noise Element. The Noise Element indicates that the ambient noise levels are generally compatible with the surrounding land uses; 70 decibels is the threshold for noise levels given the residential and commercial surroundings without requiring mitigation (City of Santa Fe Springs 1994b).

Noise and vibrations would be generated by construction of the new facilities and would continue during operation. The proposed Project will replace the existing flare with newer, quieter CEB burners. The construction equipment associated with the proposed Project includes excavation and grading equipment. Increased truck traffic resulting from the Consolidated Bulk Loading System could also increase noise and vibrations. The operation of up to four new burners could also result in increased noise. Additional temporary noise impacts would occur if a new well is drilled on or near the Project site in the future. But oil pumping from any new wells would not generate substantial noise; some of any new pumping units would be submersibles, while the remainder would be horse-head type pumping units that produce minimal noise when properly lubricated. All are powered with quiet, non-emitting electric pumps. Noise levels are not expected to change appreciably with the Project. Therefore, potential impacts are expected to be less than significant. However, a full analysis of noise and vibration impacts will be done in the EIR.

13.e, f). The Project is not located with an airport land use plan nor is it within two miles of a public airport or public use airport. As such no impact would occur to people residing or working in the project area with regard to excessive noise levels.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XIV. POPULATION AND HOUSING.				
Would the project:				
a) Induce substantial growth in an area either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☑
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑
c) Displace substantial numbers of people, necessitating the construction of replacement housing everywhere?	☐	☐	☐	☑

14.1 Significance Criteria

The impacts of the proposed project on population and housing will be considered significant if the following criteria are exceeded:

The demand for temporary or permanent housing exceeds the existing supply.

The proposed project produces additional population, housing, or employment inconsistent with adopted plans either in terms of overall amount or location.

14.2 Environmental Analysis

14.a). The proposed Project would not require an increase in employees, other than a marginal, short term increase in contractor employees during construction. All construction workers are expected to come from the local area. Operational drilling and production would require a crew of 20 people per day that could also be satisfied with the existing local labor pool. Therefore, the proposed Project would have no impact on population growth.

14.b, c). The proposed Project would not result in the displacement of any residences or people. The proposed Project would take place entirely within the confines of the existing project site; there would be no housing impact.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XV. PUBLIC SERVICES.				
Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services.				
a) Fire protection?	☐	☐	☐	☑
b) Police protection?	☐	☐	☐	☑
c) Schools?	☐	☐	☐	☑
d) Parks?	☐	☐	☐	☑
e) Other public facilities?	☐	☐	☐	☑

15.1 Significance Criteria

Impacts on public services will be considered significant if the proposed project results in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered government facilities (the construction of which could cause significant environmental impacts) in order to maintain acceptable service ratios, response time or other performance objectives.

15.2 Environmental Analysis

15.a, b, c, d, e). The proposed Project would occur at an existing oil field, only incrementally increasing the amount of equipment and facilities, and the number of vehicles at the site. No new permanent employees would be necessary for project implementation. A 2,000 bbl crude storage tank will be installed but that tank will not significantly increase on-site oil storage capacity such that new or expanded fire protection or other safety efforts are required. The Project would not put an increased burden on off-site public services. The Project would not induce population growth in the area. Therefore, the Project would not increase the need for services from existing fire, police, school and other governmental services during expanded operations or construction; no impact would occur.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XVI. RECREATION.				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☑
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☑

16.1 Significance Criteria

The impacts to recreation will be considered significant if:

The proposed Project results in an increased demand for neighborhood or regional parks or other recreational facilities.

The proposed Project adversely affects existing recreational opportunities.

16.2 Environmental Analysis

16.a, b). The Project would not result in any new, permanent employees, and hence use of existing neighborhood and regional parks or recreational facilities would not increase as a result of project implementation. Further, the proposed Project will be located at an established industrial facility and will have no effect on existing nearby parks or other recreational facilities. Therefore, there would be no impact to recreational facilities.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XVII. SOLID AND HAZARDOUS WASTE.				
Would the project:				
a) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☑	☐
b) Comply with federal, state, and local statutes and regulations related to solid and hazardous waste?	☐	☐	☑	☐

17.1 Significance Criteria

The impacts on solid and hazardous waste will be considered significant if the following occur:

> The generation and disposal of hazardous and non-hazardous waste exceeds the capacity of designated landfills.

17.2 Environmental Analysis

17.a). Non-Hazardous Waste and Hazardous Waste

There will be no demolition of any structures during the implementation of the proposed Project; however, the existing flare will be removed from the site. The disposal of construction-related waste could contribute to the diminishing available landfill capacity. However, sufficient landfill capacity currently exists to handle the one-time disposal of the minimal amount of this material. Clean soil excavated to provide new foundations will be reused on-site as backfill where possible. Any excess soils will be diverted to the existing market as clean reusable soil. All soil excavation work, especially contaminated soil related to either the proposed Project or related to other onsite maintenance work would be managed in accordance with SCAQMD Rule 1166. Soils determined to be non-hazardous under Rule 1166 can be reused onsite or diverted to the market. The Project will only require minor soil handling during construction.

During operation, the proposed Project is expected to generate only small volumes of solid waste, primarily from administrative or office activities, e.g., waste paper, and maintenance activities (e.g. filters). Additional waste would be generated as a result of well drilling. Mud and cuttings removed from a well during drilling are dewatered and solidified. The resulting solid is hauled off-site, tested for chemical composition, and sent to a landfill that is authorized to accept non-hazardous drilling waste. Typically, the landfill recycles the solid material as landfill cover.

Although the net amount of solid waste is expected to result in a less than significant impact, the EIR will provide additional information on amounts/types of materials and related impacts.

The operation of the new equipment of the proposed Project will not use or generate hazardous materials onsite. During construction, any excavated soils determined to be oil-contaminated would be handled under Breitburn's Soil Mitigation Plan. Additional amounts of spent lubrication oils and oily rags and debris may increase with the increase in production. Spent lube oils would be collected and recycled by routing to the production system. Therefore, this is a recycled material and not a waste. The oily rags and debris are solids and, as such, are not added to the production systems; they would be disposed of per applicable regulations. The level and type of hazardous waste is expected to result in less than significant impacts, but the EIR will provide additional information on amounts/types of materials and related impacts.

17.b). Regulations

The Project would comply with the federal, state and local statutes related to solids and hazardous waste.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XVIII. TRANSPORTATION/ TRAFFIC.				
Would the project:				
a) Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☑
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☑	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☑

		Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
d)	Substantially increase hazards due to a design feature (e.g. sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?	☐	☐	☐	☑
e)	Result in inadequate emergency access or access?	☐	☐	☐	☑
f)	Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such features?	☐	☐	☐	☑

18.1 Significance Criteria

The impacts on transportation and traffic will be considered significant if any of the following criteria apply:

Peak period levels on major arterials are disrupted to a point where the level of service (LOS) is reduced to D, E, or F for more than one month.

An intersection's volume to capacity ratio increases by 0.02 (two percent) or more when the LOS is already at D, E or F.

A major roadway is closed to all through traffic, and no alternate route is available.

The project conflicts with applicable policies, plans, or programs establishing measures of effectiveness, thereby decreasing the performance or safety of any mode of transportation.

There is an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system.

The demand for parking facilities is substantially increased.

Water borne, rail car or air traffic is substantially altered.

Traffic hazards to motor vehicles, bicyclists, or pedestrians are substantially increased.

The need for more than 350 employees.

An increase in heavy-duty transport truck traffic to and/or from the facility by more than 350 truck round trips per day.

Increase customer traffic by more than 700 visits per day.

18.2 Environmental Analysis

Environmental Assessment

18.a, b). The proposed Project would not conflict with any applicable plan, ordinance, policy, or congestion management program related to traffic. The proposed project would not require any additional permanent employees, and therefore would not result in an increase in commuter trips compared to the existing conditions. Project-related vendor/maintenance trips would be less than 2 to 5 trips a day. Thus, there would be no impact to LOS at nearby intersections.

The construction of the Project would require up to a maximum of 40 temporary construction workers on any one day, with most days requiring far fewer workers. Sufficient parking for these workers is readily available on-site. The Project would also require a maximum of 6 hauling trips per day during construction. This results in a potential maximum of 46 vehicle round-trips, although not all would happen in a single day.

Well drilling requires a small crew of about 20 people on-site for the drilling operations. Moreover, the drilling operations are temporary (no longer than 20 days), so any increases in commuter traffic would be eliminated when drilling is completed. The drilling rig would be brought on-site by truck and put into place by either truck or crane. It would be similarly removed from the site when drilling is complete. At the commencement of drilling, it is possible that up to 12 18-wheel tractor trailers and/or flatbed trucks would come and go from the site on one day to transport required drilling materials. These 12 truck round-trips may occur at locations near the Project site during construction or operations, depending on the time and location of well drilling. As such, well drilling traffic impacts are, individually and cumulatively, less than significant when considered with the Project.

The Consolidated Bulk Truck Loading System would allow for up to a maximum of 20 trucks to be loaded every day, though it is not anticipated that operations will reach maximum trucking capacity because the preferred method for oil transport is via pipeline; currently only approximately three trucks are loaded each day if needed. The proposed traffic route for the trucks will include traveling on Telegraph Road, Shoemaker, and Florence Avenue. This increase in 17 trucks per day is far below the 350 round-trip trucks SCAQMD significance threshold.

The peak traffic day would occur if a new well operation begins on the same day that heavy-duty trucks transport oil. In this scenario, a maximum of 49 round-trips would be expected (20 commuter trips for well drilling, 12 heavy-duty truck trips for commencement of drilling, and 17 trucks transporting oil). This increase in 49 round-trip trucks per day is far below the 350 round-trip trucks SCAQMD significance threshold.

18.c). The proposed Project would not cause any change in air traffic patterns; therefore, no impact would occur.

18.d). The proposed Project would not result in any changes to any roads, intersections, streets, highways, nor would it provide any incompatible uses to the street and highway system. All vehicles that would be used for travel to and from the Project would be licensed and comply with

all appropriate transportation laws and regulations. The loading system would be entirely contained on the site and constructed such that two trucks can safely load at the same time. Traffic patterns associated with the proposed bulk truck loading system would be designed to ensure safe entrance, loading and exit from the facility. As such, less than significant transportation design hazards would occur.

18.e). No new parking would need to be constructed. Therefore, there would be no impact.

18.f). The proposed Project would not involve any transportation improvements or programs that would conflict with adopted policies, plans, or programs supporting alternative transportation. As such, no impact would occur.

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
XIX. MANDATORY FINDINGS OF SIGNIFICANCE.				
Would the project:				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☑	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, other current projects, and probable future projects)?	☑	☐	☐	☐
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☑	☐	☐	☐

19. MANDATORY FINDINGS OF SIGNIFICANCE

19.a). As discussed in the sections above, the proposed Project's potential to degrade key resource areas, Aesthetics, Agricultural and Forestry Resources, Biological Resources, Cultural Resources, Energy or Mineral Resources, is negligible or less than significant and must be considered less than significant overall.

19.b). The proposed Project may cause cumulative impacts depending on other projects in the area that are likely to occur concurrently with or subsequent to the proposed Project. No impacts have been determined to be significant at this time, but the Draft EIR will evaluate the potential for cumulative impacts and, if any are significant, what mitigations should be considered.

19.c). Based on initial analyses and review of similar previous projects, it is not anticipated that the proposed Project would cause adverse effects on human beings. Although no potentially significant impacts have been identified, additional analyses in the following areas will be conducted in the EIR and final significance determinations will be made for the following environmental areas: Air Quality, Geology and Soils, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, Solids and Hazardous Waste, and Mandatory Findings of Significance.

REFERENCES

Biddle, K.T. 1991. Active Margin Basins. American Association of Petroleum Geologists Memoir 52.

Breitburn Energy Partners, LP (Breitburn). 2014. California Properties. Accessed June 2014 at: http://www.breitburn.com/california-properties.

California Department of Conservation (DOC). 2014. Farmland Mapping and Monitoring Program: California Important Farmland Finder. Accessed July 2014 at: http://maps.conservation.ca.gov/ciff/ciff.html.

DOC. 2013. The Land Conservation (Williamson) Act. Accessed July 2014 at: http://www.conservation.ca.gov/dlrp/lca/Pages/Index.aspx.

California Department of Conservation Division of Oil, Gas, and Geothermal Resources (DOGGR). 2014. Oil & Gas- Online Data. Accessed July 2014 at: http://opi.consrv.ca.gov/opi/opi.dll.

California Department of Fish and Wildlife (CDFW) 2014. California Natural Diversity Database, CNDDB. Queried by Megan Schwartz, ENVIRON, July 2014.

California Department of Toxic Substances Control (DTSC). Hazardous Waste and Substances Sites, Cortese List. Accessed online at: http://www.dtsc.ca.gov/SiteCleanup/Cortese_List.cfm.

California DTSC. 2014. Envirostor Database; Beaumon Trust Properties. Accessed July 2014 at http://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=60000159.

California Energy Commission (CEC). 2013. California Energy Demand 2014-2024 Preliminary Forecast, Volume 2: Electricity Demand by Utility Planning Area. Accessed November 2014 at: http://www.energy.ca.gov/2013publications/CEC-200-2013-004/CEC-200-2013-004-SD-V2.pdf.

California Geological Society (CGS). 2014. Regional Geologic Hazards and Mapping Program, Alquist-Priolo Earthquake Fault Zoning.

Caltrans. 2011. California Scenic Highway Mapping System. Accessed July 2013 at: http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm.

Christopher A. Joseph and Associates. 2005 The Villages at Heritage Springs. State Clearinghouse #: 2005011096. Draft Environmental Impact Report.

City of Santa Fe Springs Planning Department. 2013. Santa Fe Springs Code of Ordinances. Chapter 155: Zoning.

City of Santa Fe Springs. 1993. Land Use Element of Santa Fe Springs General Plan. Adopted June 24, 1993.

City of Santa Fe Springs. 1994a. Circulation Element of Santa Fe Springs General Plan. Adopted January 11, 1994.

City of Santa Fe Springs. 1994b. Noise Element of Santa Fe Springs General Plan. Adopted February 24, 1994.

City of Santa Fe Springs. 1994c. Safety Element of Santa Fe Springs General Plan. Adopted April 14, 1994.

National Park Service. 2014. National Register of Historic Places. Accessed July 2014 at: http://www.nps.gov/nr/.

SCAQMD, 2003a. Guidelines for fugitive emissions calculations. SCAQMD June 2003.

SCAQMD, 2003b. Final localized significance threshold methodology. Adopted by SCAQMD October 6, 2006.

SCAQMD, 2005. Risk Assessment Procedures for Rules 1401 and 212, Attachment L.

SCAQMD, 2007a. Air Quality Management Plan (AQMP), 2007. Final 2007 Air Quality Management Plan. Adopted by the AQMD Governing Board June 1, 2007.

SCAQMD, 2007b. Final Program Environmental Assessment for Proposed Amended Rule 1309.1 - Priority Reserve and Re-Adoption of Rule 1315 – Federal New Source Review Tracking System. July.

SCAQMD, 2008. Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans. Adopted by SCAQMD December 5, 2008.

SCAQMD. 2011. SCAQMD Air Quality Significance Thresholds. Revised March 2011. Available at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2. Accessed 23 March 2011.

SCAQMD 2012. Air Quality Management Plan (AQMP), 2012. Final 2012 Air Quality Management Plan. Adopted by the AQMD Governing Board 2012.

U.S. Energy Information Administration. 2012. Petroleum & Other Liquids. Crude Oil Production. http://www.eia.gov/dnav/pet/pet_crd_crpdn_adc_mbbl_m.htm. June.

U.S. Fish and Wildlife Service (USFWS). 2014. National Wetlands Inventory: Wetlands Mapper. Accessed July 2014 at: http://www.fws.gov/wetlands/Data/Mapper.html.

ACRONYMS

ABBREVIATION	DESCRIPTION
AB	Assembly bill
AB 32	Assembly bill 32: California's Global Warming Solutions Act of 2006
AHM	acutely hazardous material
AQMP	Air Quality Management Plan
Basin	South Coast Air Basin
BACT	Best Available Control Technology
BTU	British Thermal Units
BTU/hr	British Thermal Units per hour
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEPA	California State Environmental Protection Agency
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CAT	Climate Action Team
CDFG	California Department of Fish and Game
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFC	chlorofluorocarbon
CH_4	methane
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2eq	CO_2 equivalent
CPUC	California Public Utilities Commission
dBA	A-weighted noise level measurement in decibels
DOGGR	Division of Oil, Gas, and Geothermal Resources
EIR	Environmental Impact Report
EPS	Emissions Performance Standard
ERPG	Emergency Response Planning Guideline
FWKO	Free Water Knock-Out
GHG	greenhouse gas
GMC	Growth Management Chapter
H_2SO_4	hydrogen sulfate
HCFC	hydrochlorofluorocarbon
HFC	hydrofluorocarbon
HI	Hazard Index
HIA	Acute Hazard Index
HIC	Chronic Hazard Index
HRA	Health Risk Assessment
IRP	Integrated Resource Plan
IS	Initial study
ISC	Industrial Source Complex
ISCST3	Industrial Source Complex Model Short Term Version 3
lbs	pounds

lbs/hr	pounds per hour
LOS	Level of Service
LST	Localized Significance Threshold
MEIR	Maximum exposed individual resident
MEIW	Maximum exposed individual worker
MICR	Maximum individual cancer risk
MMscf	Million Standard Cubic Feet
MND	Mitigated negative declaration
MT	metric ton
MW-hr	megawatt-hour
N_2	nitrogen
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NIOSH	National Institute of Occupational Safety and Health
NOP	Notice of Preparation
NO_x	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
O_3	ozone
OEHHA	Office of Environmental Health Hazard Assessment
OPR	Office of Planning and Research
OSHA	Occupational Safety and Health Administration
PAHs	Polynuclear Aromatic Hydrocarbons
PFC	perfluorocarbon
PM	particulate matter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PM_{10}	particulate matter less than 10 microns in diameter
ppbv	parts per billion by volume
ppm	parts per million
ppmv	parts per million by volume
RCPG	Regional Comprehensive Plan and Guide
RECLAIM	Regional Clean Air Incentives Market
SB	Senate bill
SCAQMD	South Coast Air Quality Management District
SF_6	sulfur hexafluoride
SO_x	sulfur oxide
TACs	toxic air contaminants
ug/l	micrograms per liter
ug/m^3	micrograms per cubic meter
US DOT	United States Department of Transportation
USEPA	United States Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compounds

FIGURES

CHAPTER 2

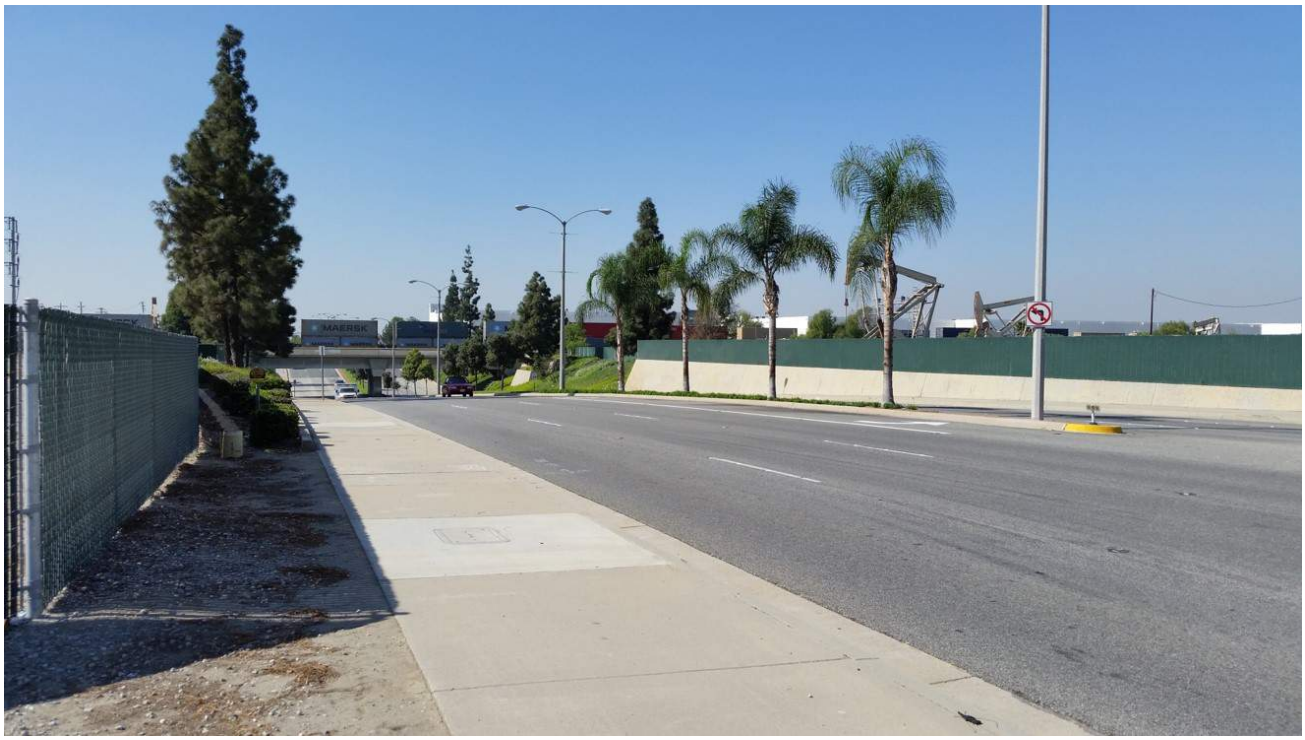


Figure 2-1: View of Telegraph Road from the entrance of the 700 Block. Surrounding land uses include a railroad, seen in the background.

Figure 2-2: Entrance to the 700 Block on Telegraph Road.

Figure 2-3: 700 Block maintenance area.

Figure 2-4: A typical view of the 400 Block.

Figure 2-5: Wells at the 400 Block with surrounding land uses in the background.

Figure 2-6: Land uses adjacent to the 400 Block.

Figure 2-7: Land uses adjacent to the 400 Block.

Figure 2-8: Railroad adjacent to the 700 Block.

APPENDIX A-1

INITIAL STUDY PUBLIC COMMENTS AND RESPONSES

BREITBURN SANTA FE SPRINGS BLOCKS 400/700 UPGRADE PROJECT
COMMENT LETTERS RECEIVED ON THE INITIAL STUDY/NOTICE OF PREPARATION
AND RESPONSES TO COMMENTS

INTRODUCTION

The Initial Study and Notice of Preparation (IS/NOP) was circulated for a 30-day public review and comment period, which started on December 4, 2014, and ended January 2, 2015. The IS/NOP contains a detailed project description and an assessment of whether the proposed Project would result in no impact, a less than significant impact, or a potentially significant impact related to each identified environmental resource area discussed as required by CEQA. The SCAQMD received two comment letters on the IS/NOP during the public comment period. Responses to the comment letters are presented herein. The comment letters are numbered and individual comments within each letter are bracketed and numbered. The related responses are identified with the corresponding number and are included in the following pages.

Comment Letter	Commenter
#1	Native American Heritage Commission
#2	Division of Oil, Gas & Geothermal Resources

STATE OF CALIFORNIA
NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., ROOM 100
West SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471

Edmond G. Brown, Jr., *Governor*

December 8, 2014

Mike Kreuse
South Coast Air Quality Managament District
21865 E. Copley Driva
Diamond Bar, CA 91765

RE: SCH# 2014121014 Braltburn Santa Fe Springs Blocks 400/700 Upgrade Project, Los Angeles County.

Dear Mr. Krause,

Tha Nativa Amarican Haritaga Commission (NAHC) has raviawed the Notice of Praparation (NOP) referancad abova. The California Environmantal Quality Act (CEQA) statas that any project that causes a substantial adverse change in the significance of an historical resource, which includes archaological resources, is a significant affect requiring tha preparetion of an EIR (CEQA Guidelines 15064(b)). To comply with this provision the lead agency is raquired to assess whathar the project will hava an adversa impact on historical resources within tha area of projact affect (APE), and if so to mitigate that effect. To adaquately assess and mitigata projact-ralated impacts to archaaological rasources, the NAHC racommends tha following actions: 1-1

- ✓ Contact tha appropriate regional archaaological Information Centar for a record search. The record search will determine:
  - If a part or all of the area of project effect (APE) has baan previously surveyad for culturel rasources.
  - If any known cultural resources have alraady been racordad on or adjacent to tha APE.
  - If tha probability is low, moderata, or high that cultural resources ara located in the APE.
  - If a survey is required to datarmine whather previously unrecordad cultural resources are prasent.
- ✓ If an archaeological inventory survey is required, the final stage is the preparation of a professional report datailing tha findings and recommandations of the records search and field survey.
  - The final report containing sita forms, sita significanca, and mitigation measurars should ba submittad immediately to tha planning departmant. All information regarding site locations, Native American human remains, and associated funerary objects should ba in a separata confidential addendum, and not be made available for pubic disclosure. 1-2
  - The final writtan raport should be submitted within 3 months after work has baen completed to tha appropriata ragional archaeological Information Canter.
- ✓ Contact the Native American Heritage Commission for:
  - A Sacred Lands File Check. **USGS 7.5-minute quadrangle nama, townahip, ranga, and aaction required**
  - A list of appropriate Native Amarican contacts for consultation concerning tha project sita and to assist in the mitigation measures. **Nativa Amarican Contacts Liat attached** 1-3
- ✓ Lack of surface avidence of archeological resources does not precluda thair subsurface axistence.
  - Laad agancias should includa in thair mitigation plan provisions for tha idantification and avaluation of accidentally discovered archaological resources, per California Environmantal Quality Act (CEQA) Guidelines §15064.5(f). In areas of identifiad archaeological sansitivity, a certified archaaologist and a culturally affiliatad Nativa American, with knowladga in cultural resources, should monitor all ground-disturbing activities. 1-4
  - Laad agencies should includa in their mitigation plan provisions for the disposition of recovared cultural items that ara not burial associated, which ara addressed in Public Resources Code (PRC) §5097.98, in consultation with culturelly affiliatad Nativa Amaricans.
  - Lead agancias should includa provisions for discovary of Nativa American human ramains in their mitigation plan. *Health* and Safety Code §7050.5, PRC §5097.98, and CEQA Guidelines §15064.5(e), addrass tha process to ba followad in the evant of an accidantal discovary of any human remains and associated grave goods in a location other than a dadicated cematery.

Sinceraly,

Gayle Totton
Associate Govemment Program Analyst

CC: State Clearinghouse

Native American Contacts
Los Angeles
December 8, 2014

Tongva Ancestral Territorial Tribal Nation
John Tommy Rosas, Tribal Admin.
Gabrielino Tongva
tattnlaw@gmail.com
(310) 570-6567

Gabrielino-Tongva Tribe
Bernie Acuna, Co-Chairperson
1999 Avenue of the Stars, Suite 1100 Gabrielino
Los Angeles , CA 90067

(310) 428-5690 Cell

Gabrieleno/Tongva San Gabriel Band of Mission Indian
Anthony Morales, Chairperson
P.O. Box 693 Gabrielino Tongva
San Gabriel , CA 91778
GTTribalcouncil@aol.com
(626) 483-3564 Cell
(626) 286-1262 Fax

Gabrielino-Tongva Tribe
Linda Candelaria, Co-Chairperson
1999 Avenue of the Stars, Suite 1100 Gabrielino
Los Angeles , CA 90027
(626) 676-1184 Cell

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St. Gabrielino Tongva
Los Angeles , CA 90012
sgoad@gabrielino-tongva.com
(951) 807-0479

Gabrieleno Band of Mission Indians
Andrew Salas, Chairperson
P.O. Box 393 Gabrielino
Covina , CA 91723
gabrielenoindians@yahoo.
(626) 926-4131

Gabrielino Tongva Indians of California Tribal Council
Robert F. Dorame, Tribal Chair/Cultural Resources
P.O. Box 490 Gabrielino Tongva
Bellflower , CA 90707
gtongva@verizon.net
(562) 761-6417 Voice/Fax

Gabrielino-Tongva Tribe
Conrad Acuna
1999 Avenue of the Stars, Suite Gabrielino
Los Angeles , CA 90027

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting locative Americane with regard to cultural resources for the proposed SCH # 2014121014 Brietburn Santa Fe Springe Blocke 400/700 Upgrade Project, Los Angeles County.

Native American Contacts
Los Angeles
December 8, 2014

Gabrielino /Tongva Nation
Sam Dunlap, Cultural Resources Director
P.O. Box 86908 Gabrielino Tongva
Los Angeles , CA 90086
samdunlap@earthlink.net
(909) 262-9351

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting locative Americans with regard to cultural resources for the proposed SCH # 2014121014 Brietburn Santa Fe Springs Blocks 400/700 Upgrade Project, Los Angeles County.

COMMENT LETTER NO. 1
NATIVE AMERICAN HERITAGE COMMISSION
December 8, 2014

Response 1-1

This comment indicates the Native American Heritage Commission (NAHC) has reviewed the Initial Study for the proposed Project. This comment refers to the CEQA Guidelines requirement to address archaeological and historical resources in CEQA documents. SCAQMD staff is aware of these requirements and the CEQA document for the Breitburn Santa Fe Springs Facilities project complies with these requirements and with all other relevant CEQA requirements.

NAHC's suggestion to contact an appropriate Information Center for a record search is noted. As stated on page 2-19 of the Initial Study, there has been extensive human activity on the site for decades related to oil operations. The 700 Block has been graded and paved, and the 400 Block has also been partially graded and has been previously distribuend by on-going facility operations. The Project site has been disturbed by over 95 years of industrial activity, including the drilling of hundreds of wells. No archaeological resources have been encountered with the past 95-years of on-site activity. In addition, no new land will be drilled upon. Based on the roughly 100-year history of industrial activity on the site and because the proposed Project will not involve drilling or construction on new land, an additional record search was not found to be warranted.

An EIR was prepared for the proposed Project because of potentially significant impacts identified for the topic of air quality; in addition, the EIR includes a detailed analysis of potential impacts associated with energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, noise, and solid and hazardous waste. However, as indicated in the NOP/IS, no significant adverse cultural resources impacts, including archeologically resources, were identified for the proposed Project, including any Native American culturally significant resources.

Response 1-2

This comment describes the requirements for assessment in the EIR if an archaeological inventory survey is required. As discussed in Response 1-1, no archeologically significant resources have been identified in the area of Breitburn Santa Fe Springs Facilities, and thus no additional archaeological inventory survey is required.

Response 1-3

NAHC's suggestion to regarding the consultation with NAHC is noted. No archaeological resources, paleontological resources, or human remains were previously identified in the roughly 100-year operations at the proposed Project site. However, it is the SCAQMD's practice to respect all cultures and communities and as such, all effort will be made to make contact with those on the provided NAHC and those on the Native American Contacts List should any archaeological resources be discovered. The SCAQMD maintains a comprehensive list of Native American contacts in the southern California region. The Native American

contacts on this list receive notices for all projects where the SCAQMD is the lead agency, including the proposed Project. At the time of release of the NOP/IS for public review and comment, all of the Native American contacts included in the attachment to the NAHC letter were provided a copy of the Notice of Preparation for the Draft EIR. They will also be provided a copy of the Notice of Completion of the Draft EIR at the time of release of the Draft EIR for public review and comment.

Response 1-4

This comment describes recommended information to be included in a mitigation plan if archaeological resources, cultural items, or human remains are accidentally discovered. SCAQMD will consult with NAHC when the project warrants consultation. As discussed in Reponses 1-1 through 1-3, the proposed Project is not expected to result in identification of archeological or Native American cultural resources or human remains and thus, further consultation is not needed at this time.

While the likelihood of encountering previously unknown cultural or paleontological resources during the construction of the proposed Project is very low, any such impact would be reduced to less than significant if uncovered by using the following construction practices that would avoid adverse impacts on cultural resources if they are discovered and by complying with all laws and regulations:

- Breitburn will require cultural resources training for construction workers involved in excavation activities. This training will help workers identify the kinds of resources that could be uncovered, and the appropriate steps to take should such resources be discovered.

- Breitburn will require that construction cease if potential Native American cultural resources are exposed during excavation and will required that a representative of the Gabrielino/Tongva tribe be available prior to restarting construction to monitor further excavation activities, assess findings, and help develop a mitigation plan.

- Breitburn will require that construction cease and will contact the Los Angeles County Coroner's office if human remains are unearthed. The remains will be evaluated with respect to origin and disposition. Breitburn will notify the Native American Heritage Commission if the remains are determined to be of Native American decent.

Based upon these considerations, significant cultural resource impacts are not expected from construction and operation of the proposed Project, even if accidentally discovered.

DEPARTMENT OF CONSERVATION

Managing California's Working Lands

Division of Oil, Gas, & Geothermal Resources

5816 CORPORATE AVENUE • SUITE 200 • CYPRESS, CALIFORNIA 90630-4731

PHONE 714 / 816-6847 • **FAX** 714 / 816-6853 • **WEB SITE** conservation.ca.gov

December 31, 2014

Mike Krause
South Coast Air Quality Management District
21865 E. Copley Drive
Diamond Bar, CA 91765

Subject:
Breitburn Santa Fe Springs Blocks 400/700 Upgrade Project
SCH # 2014121014

Dear Mr. Krause:

The Department of Conservation's (Department) Division of Oil, Gas, and Geothermal Resources (Division) has reviewed the above referenced project. The Division supervises the drilling, maintenance, and plugging and abandonment of oil, gas, and geothermal wells in California. The Department offers the following comments for your consideration.

Based on information provided in the Initial Study, the project area is within the Santa Fe Springs oil field. Existing well records indicate that dozens of active, idle, and plugged and abandoned wells are within the project area. Division information can be found at: www.conservation.ca.gov. Individual well records are available by making an appointment with our Records Clerk. 2-1

If any structure is to be located over or in close proximity of a previously plugged and abandoned well, the well may need to be plugged to current Division specifications. Section 3208.1 of the Public Resources Code authorizes the State Oil and Gas Supervisor to order the reabandonment of any previously plugged and abandoned well when construction of any structure over or in close proximity of the well could result in a hazard. The cost of reabandonment operations is the responsibility of the owner of the property upon which the structure will be located.

Furthermore, if any plugged, abandoned or unrecorded wells are damaged or uncovered during excavation or grading, remedial plugging operations may be required. If such damage or discovery occurs, the Division's district office must be contacted to obtain information on the requirements and approval to perform remedial operations. 2-2

The possibility for future problems from oil and gas wells that have been plugged and abandoned, or reabandoned, to the Division's current specifications are remote. However, the Division suggests that a diligent effort be made to avoid building over any plugged and abandoned well. 2-3

To ensure proper review of this project, please contact Weiru Chen at (714) 816-6847 prior to construction. The Division has available an informational packet entitled, "Construction-Site Plan Review Program". This document is available on the Division's website at http://www.conservation.ca.gov/dog/for_operators/Pages/construction_site_review.aspx. 2-4

Thank you for the opportunity to comment. If you have any questions, please contact me at (714) 816-6847 or via email at Kathleen.Andrews@conservation.ca.gov.

Sincerely,

Kathleen M. Andrews

Kathleen Andrews
Associate Oil and Gas Engineer - Facilities

cc: DOGGR- HQ, Adele Lagomarsino
Kenneth Carlson, Environmental and Facilities Supervisor - Cypress

COMMENT LETTER NO. 2
DIVISION OF OIL, GAS & GEOTHERMAL RESOURCES
December 31, 2014

Response 2-1

This comment indicates the Division of Oil, Gas, and Geothermal Resources (DOGGR) has reviewed the Initial Study for the proposed Project and confirms that the proposed Project site is within the Santa Fe Springs oil field. DOGGR states that should any proposed structures be located over or in close proximity to a previously plugged and abandoned well, the well my need to be plugged to current DOGGR specifications. Any previously plugged or abandoned well may need to be reabandoned if construction of any structure over or in close proximity of the well could result in a hazard. Breitburn will follow all DOGGR specifications as it relates to construction over or in close proximity of a previously plugged and abandoned well.

Response 2-2

DOGGR indicates that remedial plugging operations may be required if any plugged, abandoned, or unrecorded wells are damaged or uncovered during excavation or grading. Breitburn will contact DOGGR if such damage occurs and seek approval to perform remedial operations.

Response 2-3

DOGGR suggests that a diligent effort be made to avoid building over any plugged and abandoned wells. Breitburn will follow all DOGGR specifications as it relates to building near plugged and abandoned wells and will be diligent in its effort to not build over any plugged and abandoned wells, consistent with on-going Breitburn well drilling operations.

Response 2-4

DOGGR has suggested contacting the Division to obtain information on its informational packet. Breitburn is aware that DOGGR has established a Construction Site Plan Review Program. DOGGR considers 10 feet to be the minimum distance needed to maintain access to a well for potential future remedial work. Before any construction to begin, wells within 10 feet of the proposed construction must be plugged and abandoned to current standards and tested for gas or fluid leakage. Wells 10 feet or more from a proposed structure do not need to be plugged and abandoned to current standards unless future well access will be limited by topography, loss of entry or workspace, or grading alteration. Wells in this category must also be tested for gas or fluid leakage. Wells beneath a proposed structure must be plugged and abandoned to current standards and tested for gas or fluid leakage. For wells never found even after intensive surveying and excavation efforts by DOGGR and developers, DOGGR typically recommends surface control for gas that may leak into proposed structures near a well's historic location. Such controls may include the installation of gas leak detection sensors located in basements or low-lying areas where gas may accumulate. These measures help to ensure the continued

protection of health and safety for urban development in proximity to oil fields. All such provisions will be enacted, if necessary, during the development of the proposed Project.

APPENDIX B

AIR QUALITY AND GREENHOUSE GAS TECHNICAL REPORT

APPENDIX B
Air Quality and Greenhouse Gas Technical Report

Contents

List of Tables

List of Figures

Acronyms and Abbreviations

AAQS:	ambient air quality standards
AB 2588:	Air Toxics “Hot Spots” Information and Assessment Act
AB 32:	California Global Warming Solutions Act of 2006
AER:	Allowable Emission Rate
AERMIC	American Meteorological Society/Environmental Protection Agency Regulatory Model Improvement Committee
AERMOD:	AMS/EPA Regulatory Model
AMS/EPA	American Meteorological Society/Environmental Protection Agency
AP-42:	Compilation of Air Pollutant Emission Factors
AQMP:	Air Quality Management Plan
ARB:	Air Resources Board
BAAQMD:	Bay Area Air Quality Management District
BACT:	Best Available Control Technology
CalEEMod®:	California Emission Estimator Model
CAAQS:	California Ambient Air Quality Standards
CARB:	California Air Resources Board
the “CARB Handbook”:	CARB published the Air Quality and Land Use Handbook on April 28, 2005
CCR:	California Code of Regulations
CEB(s):	Clean Enclosed Burner(s)
CEQA:	California Environmental Quality Act
CH4:	methane
CO:	carbon monoxide
CO_2:	carbon dioxide
CO_2e:	carbon dioxide equivalent
CO_2e/yr:	carbon dioxide equivalent per year
DOGGR:	California Department of Oil, Gas, and Geothermal Resources
DPM:	diesel particulate matter
EIR:	Environmental Impact Report
EMFAC:	EMission FACtor model
ENVIRON:	ENVIRON International Corporation
EPA:	Environmental Protection Agency

GHG(g):	Greenhouse gas(es)
H_2S:	Hydrogen sulfide
I-5:	California Interstate 5
I-605:	California Interstate 605
IPCC:	Intergovernmental Panel on Climate Change
LDT1:	Light Duty Trucks
LOS:	Level of Service
LP:	Limited Partnership
LST:	Localized significance thresholds
M-2:	Heavy Manufacturing
MMscfd:	million standard cubic feet per day
MRR:	Mandatory Reporting Rule
MT:	Metric Tons
$MTCO_2e/yr$:	metric tons of carbon dioxide equivalents per year
N2O:	nitrous oxide
NAAQS:	National Ambient Air Quality Standards
NED:	National Elevation Dataset
NMHCs:	non-methane hydrocarbons
NO:	nitric oxide
NO_2:	nitrogen dioxide
NO_x:	oxides of nitrogen
OEHHA:	Office of Environmental Health Hazard Assessment
OFFROAD:	Offroad Emissions Inventory Program model (OFFROAD)
O/W/G:	oil/water/gas
OEHHA:	Office of Environmental Health Hazard Assessment
OFFROAD:	Offroad Emissions Inventory Program model (OFFROAD)
PAH:	polyaromatic hydrocarbons
PM:	particulate matter
$PM_{2.5}$:	fine particulate matter
PM_{10}:	coarse particulate matter
ppm:	parts per million
PTE:	Potential to Emit

ROG(s):	Reactive Organic Gas(es)
SCAB:	South Coast Air Basin
SCAQMD:	South Coast Air Quality Management District
SO_2:	sulfur dioxide
CAIRP:	California International Registration Plan
TAC(s):	Toxic Air Contaminant(s)
TOG:	total organic gas
USEPA:	United States Environmental Protection Agency
USGS:	United States Geological Survey
VMT:	vehicle miles traveled
VOC(s):	volatile organic compound(s)
χ/Q:	dispersion factors

1 Introduction

This air quality and greenhouse gas (GHG) technical report evaluates the criteria air pollutants and GHGs associated with upgrading and augmenting the fluid (e.g. oil, gas, and water) handling systems at the Breitburn Operating LP (Breitburn) Santa Fe Springs facilities. The proposed Project is to upgrade and augment its fluid (e.g. oil, gas, and water) handling systems at its Santa Fe Springs facilities (Breitburn Santa Fe Springs Facilities) to facilitate an increase in the amount of produced fluids that can be treated at the site. The systems used to handle produced fluids, particularly produced water, are currently operating near or at maximum capacity. As such, Breitburn has been limited in its ability to efficiently operate at current production rates, or to potentially increase production at the site in the future. To account for this, Breitburn proposes to modify existing on-site equipment, add a new oil/gas/water separation system, and a new wastewater treatment/injection system. Breitburn also proposes to expand an existing crude oil truck loading system at the site. In addition, Breitburn proposes to replace the existing low efficiency flare with a Best Available Control Technology (BACT) burner, as well as to add up to three additional BACT burners for redundancy. South Coast Air Quality Management District (SCAQMD) permits to construct are required for this multi-component upgrade project.

Breitburn submitted three separate permit application packages to the SCAQMD for the Breitburn Santa Fe Springs Facilities, located in the City of Santa Fe Springs in Los Angeles County. The first group of three permit applications, submitted March 26, 2013, and modified July 1, 2014, is for a new produced fluid processing facility that would include a new crude oil/water/gas separation system, a new produced water treatment and injection system, and a new vapor recovery system at the 400 Block. The second group of three permit applications, dated March 20, 2014 is for a Consolidated Bulk Truck Loading System, which includes addition of a new crude oil truck loading connection adjacent to the existing connection, and minor modification to the existing thermal oxidizer and the existing crude oil/gas/water separation system to allow venting of loading vapors to the thermal oxidizer. These actions would occur at the Main Facility and the Baker Humble Lease Facility, which is located entirely within the Main Facility in the 700 Block. A third group of permit applications, submitted April 11, 2014, is for the replacement of the existing flare with one new low-emissions Flare Industries CEB-800 Burner ("burner"), plus up to three more identical CEB-800 burners at the 400 Block.[1] Obtaining permit approvals and implementing the proposed Project is necessary to allow Breitburn to efficiently operate at current production rates or to accommodate any potential increases in production that may occur in the future, up to the maximum allowed capacity of the equipment.

This analysis includes the development of criteria air pollutant and GHG emission inventories that were used to evaluate air quality and GHG impacts relative to the California Environmental Quality Act (CEQA) thresholds provided by the SCAQMD. This report documents the methodologies used by ENVIRON International Corporation (ENVIRON) in developing the criteria pollutant, toxic air contaminant (TAC) and GHG emission inventories, in calculating the

[1] SCAQMD consolidated its three separate Breitburn facilities to one (ID # 150201) for air quality permitting purposes in August 2014.

construction and operational related emissions for the proposed Project and the potential incremental drilling increase, and in comparing them to the SCAQMD CEQA thresholds.

Criteria pollutants are those chemicals that have ambient air quality standards (AAQS), and their precursors, which include carbon monoxide (CO), nitrogen oxides (NO_x), volatile organic compounds (VOCs), sulfur dioxide (SO_2), coarse particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$). This report documents the methodologies used by ENVIRON in comparing the ambient air quality impacts to the SCAQMD CEQA thresholds. There are additional state and federal criteria pollutants such as lead (state and federal) and hydrogen sulfide (state, only) that are not relevant to this analysis.

1.1 Project Description

The Breitburn Santa Fe Springs Facilities, under the newly consolidated SCAQMD Facility ID 150201, are located in the City of Santa Fe Springs in Los Angeles County. They are located near the intersection of I-5 and I-605, between the cities of Whittier and Downey and approximately 12 miles southeast of downtown Los Angeles. The Main Facility is located at 12720 Telegraph Road in the 700 Block, and Baker Humble Lease Facility is located entirely within the Main Facility. The new facility, called the "400 Block Reinjection Facility," will be located at 10065 Bloomfield Avenue in the 400 Block.

The Breitburn Santa Fe Springs Facilities are currently operating near maximum capacity for the fluids processing systems. In addition, although produced gas levels are declining to the lower historical levels, any future excursion to the type of high levels seen in late 2013/early 2014 could exceed current flaring capacity resulting in the need for an additional on-site burner. Breitburn has determined that it is likely that sufficient reserves remain at the Santa Fe Springs Oil Field to economically justify construction of additional facilities. The proposed Project aims to provide additional capacity to accommodate existing well production capacity, including any future gassy pockets. But it would also accommodate potential future increases in production currently authorized by the California Department of Oil, Gas, and Geothermal Resources (DOGGR) for future well drilling. Therefore, while there are no current plans to expand production, the Project will analyze increases in daily production up to the maximum design capacity of the proposed equipment.

The scope of the Project is divided into three components that are covered by three distinct SCAQMD permit application submittals. Each component is independent, i.e., not contingent on the permitting and/or implementation of the others.

Component 1: A new oil/water/gas processing plant in the 400 Block, referred to as the "400 Block Reinjection Facility," would serve the following purposes:

1. Separate the oil, gas, and water that is produced from wells within a proposed new crude oil/water/gas separation system, able to process up to the equipment design maximum of an additional 4,000 barrels per day (bpd) of oil, 196,000 bpd of produced water, and 2 million standard cubic feet per day (MMscfd) of produced gas for the Breitburn Santa Fe Springs Facilities;

2. Export the oil via the existing Crimson Pipeline system or via the truck loading system discussed in Component 2;

3. Recover gas, up to approximately 2 MMscfd, from the new storage tanks and process vessels in the new proposed vapor recovery system; and

4. Treat water, up to a total of 196,000 bpd, using a proposed new wastewater treatment system so that it can be reinjected (without chemicals).

Any produced gas not used for electricity production in the existing microturbines would be sent to the flares discussed in Component 3 below. The proposed Project site covers approximately 2 acres of the Field for the 400 Block Reinjection Facility (an approximately 480' by 220' area for the plant), as well as less than one acre for a new, paved access road (approximately 1,200' by 24').

Component 2: An upgrade to the existing truck loading system, located at the Main Facility (700 Block) would increase the volume of oil that could be transported from the site via trucks. The proposed upgrade is referred to as the "Consolidated Bulk Truck Loading System" and includes:

1. Addition of one new crude oil truck loading connection;

2. Modification to the existing thermal oxidizer to control emissions from the new loading connection; and

3. Modification of the existing truck loading connection on the crude oil/gas/water separation system to accommodate the new connection.

These additions and modifications would accommodate the additional oil that is processed at the new 400 Block Reinjection Facility discussed in Component 1. Oil would continue to be exported via the Crimson Pipeline pursuant to Crimson's conditions and requirements at the time. This expanded truck loading system will serve as a back-up to the Crimson Pipeline if the Pipeline is undergoing maintenance, testing, is under repairs or is otherwise unable to transport the Santa Fe Springs crude oil to market. The truck loading may occasionally be used to transport crude oil to other refineries/markets not served by Crimson due to favorable market conditions on a short term basis. The Crimson Pipeline remains the main method of crude oil shipment.

Component 3: Replacement of the existing flare system, located within the 400 Block, with CEB low-emission burners to dispose of volumes of produced gas anticipated during oil field operations and any unanticipated high produced gas/oil levels as in early 2014. Note that the high gas levels seen in early 2014 are atypical and that high levels of gas production are not necessarily related to oil production levels. Two CEBs would be sufficient for such high gas levels, which had rarely been experienced before in this field. Two additional CEBs (for a total of four) were added to the proposed Project to provide redundancy and a large margin of safety in the event high gas levels are experienced again.

1. Replace the SCAQMD permitted John Zink flare with one new, low-emission enclosed burner, Flare Industries CEB-800-CA (CEB); and

2. Add up to three additional identical CEBs to accommodate the additional produced gas from the wells or a reoccurrence of an atypical high gas pocket in the wells.

The four CEB units will be capable of running at full capacity to accommodate disposal of any produced gas not burned in the existing microturbines. The proposed CEBs would cover approximately 0.1 acres total (the footprint dimensions for each CEB are approximately 28 ft x 10 ft, with 10 ft. between each CEB).

Other Related Activities

In the future, Breitburn may drill additional wells to maintain production at the Field (i.e. to replace wells that are no longer economically viable or to improve waterflood efficiency). The rate of drilling new wells varies substantially each year. Consequently, at this time there are no established plans or applications for new well permits to be filed by Breitburn for the Breitburn Santa Fe Springs Facilities, and any estimates about future drilling would be speculative. However, it is reasonably foreseeable that new wells will be drilled in the future, in connection with Breitburn's ongoing operations in an active oil field. In addition, the new facilities proposed as part of this Project would increase the capacity to process an increased volume of produced water and gas which would accompany any increases in oil production (achieved through new wells, reestablishing shut-in wells, or other common means as described below). If Breitburn were to drill new wells at the Field in the future, Breitburn would not drill more than one new well at any given time at the Project site. For this purpose, Breitburn has included an analysis in this technical report of the potential impacts of drilling one new well at any given time. Drilling one new well would be completed in no more than 20 days and involve a number of pieces of equipment.[2] Potential environmental impacts from any increased oil production resulting from one new well on a given day or any other oil field enhancements described above are considered as part of the analysis of the operations of the proposed 400 Block Reinjection Facility and other Project oil-related equipment modifications.

1.2 Report Organization

ENVIRON has prepared criteria pollutant, TAC, and GHG emission inventories for the proposed Project for both construction and operation. The purpose of this evaluation is to calculate emissions and to compare them to the SCAQMD CEQA significance thresholds, including Localized Significance Thresholds (LSTs).

The remaining sections of this report describe the methods used to conduct this analysis. Following this introduction, Section 2 describes the significance thresholds as set forth by SCAQMD. Section 3 describes the emission estimation methods for determining emissions from the construction and operational phases of each of the components of the proposed Project. Section 4 describes the emission inventories of the proposed Project and compares them to the relevant significance thresholds. Section 5 talks about air dispersion modeling and results. Section 6 discusses the applicability of the CO hotspot analysis. Section 7 summarizes the

[2] No unconventional resources exist beneath the Santa Fe Springs Oil Field; therefore, no wells would be completed using hydraulic fracturing techniques.

comparison of the mass emissions for construction and operations with the applicable SCAQMD CEQA thresholds.

2 Significance Thresholds

2.1 Criteria Pollutants

The SCAQMD has established significance thresholds[3] to assess the impacts of project-related construction and operational emissions on regional ambient air quality. Table B-1 shows the mass daily thresholds for construction as well as operations as adopted by SCAQMD for criteria pollutant emissions. The analysis summarized in this report estimates project-related construction and operational mass emissions and compares the emissions to these mass daily significance thresholds.

2.2 Toxic Air Contaminants and Health Risk

In addition, the SCAQMD established health risk significance criteria related to the emissions of TACs. Table B-1 includes these thresholds for health risks related to cancer, chronic and acute hazards. The analysis summarized in this report estimates health risk impacts for the proposed Project operational emissions for comparison to these significant thresholds.

2.3 Greenhouse Gases

In December 2008, SCAQMD adopted interim CEQA GHG significance thresholds for projects on which it is the lead agency. The threshold adopted by the agency for industrial projects was 10,000 metric tons of carbon dioxide equivalents per year ($MTCO_2e/yr$). This threshold was based largely on natural gas consumption GHG emissions at industrial facilities.

[3] SCAQMD, 2011. Air Quality Significance Thresholds. March. Available at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2, Accessed: January 2015.

3 Emission Estimation Methods

This section describes the methodologies that were used to develop the criteria pollutant, TAC, and GHG emission inventories associated with the proposed Project, which include construction emissions and operational emissions.

3.1 Construction Emission Estimation Methodology

ENVIRON utilized the California Emission Estimator Model Version 2013.2.2 (CalEEMod®)[4] to assist in quantifying the construction phase criteria pollutant emissions in the inventories presented in this report for the proposed Project. CalEEMod® is a statewide program designed to calculate both criteria and GHG emissions for development projects in California. This model was developed under the auspices of the SCAQMD and received input from other California air districts and is currently supported by several lead agencies for use in quantifying the emissions associated with development projects undergoing environmental review. CalEEMod® utilizes widely accepted models for emission estimates combined with appropriate default data that can be used if site specific information is not available. These models and default estimates use sources such as the United States Environmental Protection Agency (USEPA) AP-42 emission factors , California Air Resources Board's (CARB) on-road and off-road equipment emission models such as the EMission FACtor model (EMFAC) and the Offroad Emissions Inventory Program model (OFFROAD), and studies commissioned by California agencies such as the California Energy Commission (CEC) and CalRecycle.

CalEEMod® is based upon CARB-approved Off-Road and On-Road Mobile-Source Emission Factor models (OFFROAD and EMFAC, respectively), and is designed to estimate construction and operational emissions for land use development projects and allows for the input of project specific information. OFFROAD is an emissions factor model used to calculate emission rates from off-road mobile sources (e.g., construction equipment, agricultural equipment). EMFAC is an emissions factor model used to calculate emissions rates from on-road vehicles (e.g. passenger vehicles, haul trucks). The off-road diesel emission factors used by CalEEMod® are based on the CARB OFFROAD2011 program.

ENVIRON used CalEEMod® defaults for a site located in the portion of LA County within the South Coast Air Basin (SCAB), referred to in CalEEMod® as LA South Coast County, in the model runs unless otherwise noted in the methodology descriptions below. Details regarding the specific methodologies used by CalEEMod® can be found in the CalEEMod® User's Guide and associated appendices.

3.1.1 Criteria Air Pollutant Construction Emission Estimation

Construction-related emissions of reactive organic gases (ROGs)[5], NO_x, CO, and particulate matter (PM) of aerodynamic radius less than 10 micrometers (PM_{10}) or less than 2.5 micrometers ($PM_{2.5}$) for the construction phases were modeled and assessed using CalEEMod® or EMFAC, as described in further detail below. Project specific onsite equipment lists, including horsepower rating and load factor, estimated construction schedule, and material hauling estimates provided by Breitburn were used for the various construction phases (Tables

[4] California Emissions Estimator Model. Available at: http://caleemod.com/ Accessed: January 2015.
[5] ROG as defined by CalEEMod® is assumed to be equal to VOC as defined by SCAQMD.

B-2 through B-4). CalEEMod® default equipment operating hours per day were assumed for most equipment, except if the default value was greater than 7 hours per day, in which case the operating hours were assumed to be 7 hours per day based on construction scheduling for Breitburn. The approximate construction phase duration, the area of the site that would be graded or disturbed, and the amount of material imported and exported were based on information provided by Breitburn.[6]

3.1.1.1 Off-Road Sources

Sources for off-road construction emissions include off-road equipment and fugitive dust. Because the majority of the off-road construction equipment used for construction projects are diesel fueled, CalEEMod® assumes all of the equipment operates on diesel fuel. The off-road diesel emission factors used by CalEEMod® are based on the ARB OFFROAD2011 program.

3.1.1.2 On-Road Sources (Offsite)

The number of worker, vendor and hauling trips and associated vehicle miles traveled (VMT) were used to determine the criteria pollutant emissions associated with offsite on-road vehicle use (i.e. travel to and from the Project site). Project-specific trip numbers provided by Breitburn and default trip lengths from CalEEMod® were used. For the construction phases related to the grading and installation of up to four CEBs, only one delivery truck per week is expected; however, as CalEEMod® requires inputting vendor trips on a per day basis, the CalEEMod® runs conservatively assume one vendor trip per day for each phase.

3.1.1.3 On-Road Sources (Onsite)

Several of the construction phases (installation of up to four CEBs, and 400 Block Reinjection Facility site preparation, grading, and construction) include onsite travel of on-road vehicles such as pickup trucks, water trucks, and/or boom trucks. Because CalEEMod® does not currently calculate onsite travel of on-road vehicles for construction phases, the combustion emissions from these vehicles were calculated separately from CalEEMod® (see Table B-5) using the vehicle emission factors from CARB's EMFAC2011[7] (Table B-6) and the onsite VMT. The emission factors summarized in Table B-6 were obtained from EMFAC2011 based on the following assumptions:

- The emission factors for the ¾-ton pickup trucks were based on emission factors for gasoline light duty trucks (LDT1) in the SCAB for 2015 (installation of up to four CEBs) and 2016 calendar year operation (all 400 Block Reinjection Facility phases), assuming an onsite vehicle speed of 15 miles per hour;
- The emission factors for the water trucks and boom truck were based on emission factors for medium-heavy duty construction diesel trucks (T6 instate construction heavy trucks) in the SCAB for 2016 calendar year operation, assuming an onsite vehicle speed of 15 miles per hour.

[6] Note that the exact dates of construction are currently unknown; the dates used in the CalEEMod® runs are conservative estimates based on the earliest time frames each construction phase is expected to occur.
[7] EMFAC2011 web based data access is available at http://www.arb.ca.gov/emfac/. Accessed January 2015.

Information on the actual onsite VMT is unknown; therefore, onsite VMT was estimated assuming each of the vehicles traverses the length of the 400 Block three times each day. The one-way distance from one end of the 400 Block to the other is approximately 0.3 miles measured using Google Earth®.

In addition to the vehicles' combustion emissions, fugitive dust emissions due to resuspension of unpaved road particulates from onsite vehicle travel were also calculated separately from CalEEMod®, using the equation for vehicles traveling on unpaved roads at industrial sites as listed in Section 13.2.2 of AP-42[8]. The default surface material silt content for dirt roads from the Section 13.2.2 background document[9] was used as a conservative assumption, as the roads in the 400 Block are covered by gravel. The mean vehicle weight was based on the weighted average of vehicle weights for that construction phase, assuming that the pickup trucks weigh 0.75 tons and the water trucks and boom truck each weigh 26 tons. The onsite VMT was the same as that assumed in the combustion emission calculation described above. Table B-7 summarizes the fugitive dust emissions due to resuspension of the unpaved road particulates.

3.1.2 Greenhouse Gas Construction Emission Estimation

CalEEMod® and EMFAC were also used to calculate GHG emissions from each of the construction phases. The assumptions used for calculating GHG emissions are the same as those used to calculate criteria pollutant emissions, except as noted below.

The GHG emissions from the onsite travel of on-road vehicles was calculated outside CalEEMod® using emission factors from EMFAC2011 and onsite VMT. The emission factor for carbon dioxide (CO_2) for each of the vehicles was based on the same assumptions used to obtain the criteria pollutant emission factors described above. The methane (CH_4) and nitrous oxide (N_2O) emission factors were obtained or calculated according to guidance outlined on the EMFAC2011 Frequently Asked Questions webpage[10], and as described hereafter. The CH_4 emission factor for the gasoline-fueled ¾-ton pickup trucks was obtained using the EMFAC2011-LDV module for 2015 and 2016 operation years, assuming a temperature of 60 °F and 0% humidity. The CH_4 emission factor for the diesel vehicles was calculated according to the following equation:

$CH_4 = 0.0408 * TOG$

Where TOG is the total organic gases emission factor for calendar year 2016 obtained from EMFAC2011.

The N_2O emission factors were calculated as follows:

- For gasoline vehicles, N_2O is 4.16% of the NO_x emission factor obtained from EMFAC2011.
- For diesel vehicles,

[8] USEPA. 2006. "Unpaved Roads". AP-42, Chapter 13, Section 13.2.2. November. Available at: http://www.epa.gov/ttn/chief/ap42/ch13/final/c13s0202.pdf. Accessed January 2015.
[9] USEPA. 1998. "Emission Factor Documentation for AP-42 Section 13.2.2: Unpaved Roads". September. Available at: http://www.epa.gov/ttn/chief/ap42/ch13/bgdocs/b13s02-2.pdf. Accessed January 2015.
[10] Available at: http://www.arb.ca.gov/msei/emfac2011-faq.htm. Accessed January 2015.

$$\frac{g\ N_2O}{mile} = \frac{0.3316\ g\ N_2O}{gal\ diesel} \times \frac{gal\ diesel}{ton\ CO_2} \times \frac{ton}{g} \times \frac{g\ CO_2}{mile}$$

– Where the gallons diesel/ton CO_2 conversion factor was derived from the SCAB 2016 calendar year EMFAC2011 emissions output for the T6 instate construction heavy trucks vehicle category.

The GHG emission factors for on-road vehicles are summarized in Table B-6.

3.2 Criteria Air Pollutant Operational Mass Emission Estimation

To evaluate the potential air quality impacts due to the proposed Project compared to the baseline, ENVIRON calculated the potential to emit (PTE) for the proposed Project and the actual emissions for the 2014 operating year for the baseline. The proposed Project assumes that one well is drilled at any one time beginning in 2016 after construction of the 400 Block Reinjection Facility is completed. In addition, the new existing 14 microturbine operational emissions were calculated for assessment of cumulative impacts associated with the proposed Project. No additional workers are required for operation of the Project components discussed in Section 1.1 above. Methods referenced below in the applicable sections were used to estimate the emissions for this analysis.

3.2.1 Main Facility Consolidated Truck Loading System

The maximum number of trucks per day serviced at the consolidated bulk truck loading station is 3 trucks per day in the baseline and 20 trucks per day in the proposed Project. Truck idling emissions (Table B-8) were estimated assuming 5 minutes of idling per truck and using the CARB EMFAC2011 Idling Emission Rates for heavy-heavy duty diesel trucks in the SCAB.[11] To be conservative, the higher value of the summer and winter emission factors was used to calculate the maximum daily emissions. The 2014 calendar year emission rates were used for the baseline and the 2015 calendar year emission rates were used for the proposed Project. In addition, on-road truck emissions for the transport of the crude oil (Table B-9) were calculated using CARB EMFAC2011 Emission Rates for heavy-heavy duty diesel California International Registration Plan (T7 CAIRP) trucks in the SCAB, assuming each truck travels 30 miles each way. This part of the analysis assumes that PM_{10} is equal to total PM for emission estimation.

In the proposed Project, the maximum loading rate is 3,100 bpd. VOC emissions from truck loading (Table B-10) were estimated using the SCAQMD Rule 462 limit for a Class A Bulk Loading System, which is the methodology used in the 2014 SCAQMD permit application. The baseline truck loading emissions were taken from the 2013 Annual Emissions Report (AER), which is the most recent year available of actual emissions data.

[11] CARB. EMFAC2011 Idling Emission Rates. http://www.arb.ca.gov/msei/modeling.htm. Accessed January 2015.

Fugitive emissions from additional components required for the Proposed Project (Table B-11) were calculated using the emission factors from the SCAQMD Guidelines for Fugitive Emissions Calculations.[12]

3.2.2 Flares

The proposed Project will result in operation of up to four CEBs. Emissions for these units (Table B-12) were calculated following the methodology used in the 2014 SCAQMD permit application. The VOC, NO_x, and CO emission factors were obtained from manufacturer specifications. The PM emission factor was from AP-42 Chapter 13.5 and assumes a lightly smoking flare. This is the same PM emission factor that was used for the CEB by a similar project recently analyzed by the SCAQMD. The SO_x emission factor was based on a maximum concentration of 40 H_2S from SCAQMD Rule 431.1.

Emissions from the existing flare in the baseline were from the 2013 AER (Table B-12).

3.2.3 400 Block Reinjection Facility

Fugitive emissions from the oil/water/gas (O/W/G) separation system (Table B-13) were calculated using the SCAQMD Guidelines for Fugitive Emissions Calculations.[12]

VOC emissions from the WEMCO separators (Table B-14) were calculated according to the 2014 SCAQMD permit application, where it was assumed that the concentration of oil through each WEMCO is no more than 10 ppm and the volume of liquid processed by each WEMCO will be approximately 4,116,000 gpd. There are no other criteria pollutant emissions from the WEMCOs.

The Proposed Project also includes a tank farm with one oil tank, two surge tanks, one clarifier tank, and one slop tank. Emissions from the tanks (Table B-15) were taken from the 2014 permit application, which used the EPA TANKS 4.0.9d program to calculate working and breathing losses. At peak capacity, 11 to 13 trucks per month would be required to transport accumulated wet sand slurry from the 400 Block tank farm offsite. There would be no more than one truck transporting wet solids from either the 400 Block or 700 Block on any given day. Current operations at the 700 Block also has a maximum of one truck trip per day. Therefore, incremental peak day emissions are zero.

3.2.4 Drilling

The proposed Project assumes that one well is drilled on any given day. CalEEMod® was used for estimating criteria pollutant emissions from drilling. No additional drilling associated with the Project will occur in 2015 because the 400 Block Reinjection Facility will not yet be constructed and thus, the 2016 calendar year was used in CalEEMod®. Emissions (Table B-16) were estimated based on the schedule and equipment list, shown Table B-17, provided by Kenai Drilling for a Kenai Drill Rig #15, used as a typical drill rig. Twenty (20) workers trips per day and

[12] SCAQMD, 2003. Guidelines for Fugitive Emissions Calculations. June. http://www.aqmd.gov/docs/default-source/planning/annual-emission-reporting/guidelines-for-fugitive-emissions-calculations.pdf. Accessed December 2014.

a total of 12 tractor trailer truck trips were assumed for each phase of drilling. Trip lengths were assumed to be CalEEMod® defaults.

3.2.5 Microturbines

The new, existing 14 microturbines are not part of the proposed Project but are analyzed as part of the cumulative impact assessment. Emissions are presented in Table B-18. VOC, NO_x, and CO emissions from the microturbines were estimated based on the CARB certification for Capstone C65 microturbines (Executive Order DG-030-A). The PM emission factor is the SCAQMD default emission factor. The SO_x emission factor was based on a maximum concentration of 40 H_2S from SCAQMD Rule 431.1.

3.3 Greenhouse Gas Operational Emission Estimation

ENVIRON estimated the total GHG (carbon dioxide equivalent, CO_2e), including carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) for each of the following sources discussed in the sections below. The global warming potentials used were 21 for CH_4 and 310 for N_2O, which are not the most recent values released by the Intergovernmental Panel on Climate Change (IPCC), but are consistent with SCAQMD Rule 2700 and the CARB Mandatory GHG Emissions Reporting Program.

3.3.1 Main Facility Consolidated Truck Loading System

Truck idling GHG emissions (Table B-8) were estimated assuming 5 minutes of idling per truck and using the ARB EMFAC2011 Idling Emission Rates for heavy-heavy duty diesel trucks in the SCAB.[13] Annual GHG emissions were calculated using the annual emission rates. The 2014 calendar year emission rates were used for the baseline and the 2015 calendar year emission rates were used for the Proposed Project.

GHG emissions associated with truck travel (Table B-9) were calculated using CARB EMFAC2011 Emission Rates for heavy-heavy duty diesel California International Registration Plan (T7 CAIRP) trucks in the SCAB, assuming 30 miles of travel to and from loading of crude oil.

GHG emissions from truck loading operations (Table B-10) and fugitive emissions (Table B-11) were calculated based on a recent gas analysis at Breitburn that showed that 49.03% of total hydrocarbons is non-methane hydrocarbons (NMHCs). Assuming that all NMHCs are VOCs, CH_4 emissions from truck loading operations and fugitive emissions were calculated using a CH_4:VOC ratio of 1.04, equal to (100%-49.03%)/49.03%.

Baseline GHG emissions (Table B-10) from truck loading operations were estimated based on the annual VOC emissions reported on the 2013 AER and using the CH_4:VOC ratio of 1.04, and the truck travel combustion emissions methodology discussed above.

3.3.2 Flares

CEB flares: CH_4 and N_2O emissions (Table B-12) were estimated using emission factors from AP-42 Chapter 1.4. The N_2O emission factor is for a controlled low NO_x burner. The CO_2

[13] CARB. EMFAC2011 Idling Emission Rates. http://www.arb.ca.gov/msei/modeling.htm. Accessed January 2015.

emission factor is from Table 4-3 the American Petroleum Institute Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Gas Industry.[14] These are the same emission factor sources used for the CEB in a similar project recently analyzed by the SCAQMD.

Existing Zink flare: Baseline GHG emissions (Table B-12) were 2013 emissions reported by Breitburn to CARB, per AB 32 requirements.

3.3.3 400 Block Reinjection Facility

Methane emissions from the O/W/G fugitives, WEMCO separators, and tank farm (Tables B-13 to B-15) were estimated using the annual VOC emission and the CH_4:VOC ratio of 1.04 described in Section 3.2.3.

As described in section 3.2.3, at peak capacity, 11 to 13 trucks per month would be required to transport accumulated wet sand slurry from the 400 Block tank farm offsite. GHG emissions associated with truck travel (Table B-15) were calculated using CARB EMFAC2011 Emission Rates for heavy-heavy duty diesel California International Registration Plan (T7 CAIRP) trucks in the SCAB. The one-way distance between the 400 Block and the destination, Anterra Oilfield Waste Support Services, is 75.3 miles.

3.3.4 Drilling

CalEEMod® was used for estimating GHG emissions from drilling (Table B-16). Drilling emissions were estimated assuming one well is drilled at a time. Over the course of a year, multiple wells could be drilled; however, all GHG emissions would be offset by AB 32 requirements. See Section 3.2.4 for details on the methodology.

3.3.5 Microturbines

GHG emissions from the 14 existing microturbines (Table B-18) for the cumulative impact analysis were estimated using the emission factors from AP-42 Chapter 1.4. The N_2O emission factor is the uncontrolled emission factor.

3.4 Toxic Air Contaminant Emissions

ENVIRON estimated the proposed Project TAC emissions using TAC emission factors multiplied by the throughput. Baseline TAC emissions were taken from the 2013 AER for pollutants reported on the AER. Non-reported baseline TAC emissions were estimated by multiplying emission factors by the throughput reported on the 2013 AER.

3.4.1 Main Facility Consolidated Truck Loading System

Truck idling and truck trip TAC emissions (Tables B-8 and B-9) for the proposed Project and the baseline were estimated assuming that all PM_{10} emissions are diesel particulate matter (DPM) to be conservative.

TAC emissions from truck loading operations and fugitive emissions (Tables B-10 and B-11) were calculated based on vapor weight percentages of TACs in VOCs. The vapor weight

[14] American Petroleum Institute, 2009. Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry. August. http://www.api.org/~/media/Files/EHS/climate-change/2009_GHG_COMPENDIUM.pdf. Accessed December 2014.

percentages were assumed to be equal to the liquid weight percentages from the default crude oil speciation profile in the USEPA TANKS 4.0.9d program.

3.4.2 Flares

TAC emissions (Table B-12) for the proposed Project were estimated using the default emission factors for non-refinery natural gas flares from the SCAQMD Supplemental Instructions for AB2588 Facilities.[15]

Baseline emissions (Table B-12) were taken from the 2013 AER for benzene, formaldehyde, polycyclic aromatic hydrocarbons (PAH), and naphthalene. All other baseline TAC emissions were estimated by multiplying the default emission factors with the throughput reported on the 2013 AER.

3.4.3 400 Block Reinjection Facility

TAC emissions from the O/W/G separation system (Table B-13) and the WEMCO separators (Table B-14) were calculated based on vapor weight percentages of TACs in VOCs. The vapor weight percentages were assumed to be equal to the liquid weight percentages from the default crude oil speciation profile in the USEPA TANKS 4.0.9d program.

Tank farm TAC emissions (Table B-15) were taken from the EPA TANKS 4.0.9d program output submitted in the 2014 SCAQMD permit application. As described in Section 3.2.3, the incremental peak day emissions from wet solids transportation truck trips are zero.

3.4.4 Drilling

Worst-day TAC emissions from drilling equipment (Table B-16) were estimated for the second 10 days of the drilling period (when the most emissions are generated) using the default emission factors for diesel internal combustion engines from the SCAQMD AER Help and Support.[16]

3.4.5 Microturbines

TAC emissions for the 14 microturbines (Table B-18) were estimated using the default emission factors for natural gas turbines from the SCAQMD Supplemental Instructions for AB2588 Facilities.[17]

[15] SCAQMD, 2014. Supplemental Instructions; Reporting Procedures for AB2588 Facilities for Reporting their Quadrennial Air Toxics Emissions Inventory. December. Available at: SCAQMD Reporting Procedures for AB2588 Facilities Reporting their Quadrennial Air Toxic Emission Inventory. Accessed January 2015.

[16] SCAQMD. 2014 AER Help and Support. Available at: http://www3.aqmd.gov/webappl/help/newaer/index.html. Accessed January 2015.

[17] SCAQMD, 2014. Supplemental Instructions; Reporting Procedures for AB2588 Facilities for Reporting their Quadrennial Air Toxics Emissions Inventory. December. Available at: SCAQMD Reporting Procedures for AB2588 Facilities Reporting their Quadrennial Air Toxic Emission Inventory. Accessed January 2015.

4 Mass Emissions Results

4.1 Construction

The regional and localized daily emissions estimated due to construction of the proposed Project are summarized in Tables B-19 and B-20, respectively. These emissions were estimated using the methodology as described in Section 3 above. The emissions reported are for onsite and offsite emissions, including on-road and off-road mobile sources. The maximum peak day emissions for the different potential construction phases were compared to the SCAQMD thresholds. The estimated emissions are below the SCAQMD's mass daily significance thresholds in Table B-1 for peak day construction activities for all pollutants. In addition, the peak day construction emissions were compared to the SCAQMD's LSTs and found to be below the applicable thresholds for each pollutant. Less than significant impacts are expected due to construction activities. Therefore, additional analyses (e.g. dispersion modeling) is not required.

In addition, GHG emissions are summarized in Table B-21. GHG emissions during construction alone are well below the SCAQMD's significance threshold of 10,000 MT CO_2e/yr.

4.2 Operations

The regional daily emissions estimated due to operation of the proposed Project are summarized in Table B-22. These emissions were estimated using the methodology as described in Section 3 above. The estimated emissions include onsite emissions from stationary sources, and offsite emissions from on-road sources. The estimated emissions show that the regional daily emissions for operations are less than the SCAQMD mass daily significance thresholds for all pollutants except VOC and NO_x. The exceedances of the significance thresholds are driven by drilling emissions; total emissions from operational equipment excluding drilling are below the SCAQMD mass daily significance thresholds for all pollutants.

GHG emissions are driven by emissions from the CEBs and are greater than the SCAQMD significance threshold of 10,000 MT CO_2e/yr. However, Breitburn is required by AB32 to offset the some operational and all drilling emissions[18], as noted in the Cap and Trade regulation Section 95852(h)[19]. Section 95852(h) references Sections 95152(c) – (f) of the GHG Mandatory Reporting Rule (MRR) for petroleum and natural gas system source types for which a compliance obligation is required, and Section 95852.2 notes those source types for which a compliance obligation is not required. Even when combined with construction emissions, the proposed Project after offset will not be significant for GHGs.

[18] Mandatory Reporting of Greenhouse Gas Emissions (MRR). 2014. Title 17 California Code of Regulations (CCR), Section 95152(c). Available at: http://www.arb.ca.gov/cc/reporting/ghg-rep/regulation/mrr-2014-unofficial-02042015.pdf. Accessed February 2015.

[19] California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms to Allow for the Use of Compliance Instruments Issued by Linked Jurisdictions (Cap and Trade). 2014. Title 17 CCR, Sections 95852 and 95852.2. Available at: http://www.arb.ca.gov/cc/capandtrade/capandtrade/unofficial_c&t_012015.pdf. Accessed February 2015.

4.3 Alternatives and Cumulatives

A comparison of the different Alternatives scenarios and Cumulative Impacts are discussed in the EIR in sections 4.4 and 5.2, respectively. Included here are detailed emissions tables presented in Tables B-23 through B-26.

5 Ambient Air Quality Evaluation

5.1 Operations Air Dispersion Analysis

The AMS/EPA Regulatory Model Improvement Committee (AERMIC) Model (AERMOD) (Version 14134) was used to predict the concentrations of emitted pollutants at individual receptor locations from onsite operational emissions. This model, which has been approved for use by USEPA, CARB, and SCAQMD, incorporates multiple variables in its algorithms including:

- Meteorological data representative of surface and upper air conditions;
- Local terrain data to account for elevation changes;
- Physical specification of emission sources including information such as:
  - Location;
  - Release height; and
  - Source dimensions.

Dispersion model averaging times are specified based on the averaging times of ambient standards and the air quality significance thresholds established by the appropriate regulatory agencies. Averaging times include 1-hour, 8-hour, 24-hour, and annual for the various pollutants. Dispersion modeling was performed using the maximum daily emissions and the complete 5-year meteorological data set (2008 to 2012) to evaluate short-term impacts, thereby ensuring that all meteorological conditions are considered. This approach is conservative, because it assumes that maximum daily emissions could occur on any day, even though there is a low probability that worst-case meteorological conditions would occur at exactly the same time as maximum emissions.

To reduce the individual model runs necessary for each pollutant, we implement a “chi over Q” approach (i.e., χ/Q, $\mu g/m^3$ per g/sec) using BREEZE AERMOD. Using this approach each source is assigned an equivalent 1 g/s emissions rate in the model, which then generates χ/Q (or dispersion factors) for each source-receptor combination. Those factors are combined with emission rates in the post-processing step to evaluate the incremental criteria pollutant concentrations and health impacts.

5.1.1 Source Characterization

Two different types of emission sources were used in air dispersion modeling: point sources and volume sources. Sources that can be reasonably represented as emitting from a single stack (e.g. flares) are modeled as point sources. Sources that can be reasonably represented as emitting at a uniform rate from a three-dimensional space (e.g. truck loading system) are modeled as volume sources. The specific sources used to characterize the operational and

drilling equipment are described below. Source parameters were assigned based on SCAQMD's localized significance threshold methodology[20] and the AERMOD user guide.

- Point source for existing flare
  - Stack height and stack diameter were from the 2014 SCAQMD permit application.
  - Stack velocity was calculated based on the stack diameter and the flow rate from the 2014 SCAQMD permit application.
  - Stack temperature was assumed to be the same as the value used in a similar project recently analyzed by the SCAQMD.
- Point sources for each of the four CEBs
  - Stack height and stack diameter were from the 2014 SCAQMD permit application.
  - Stack temperature and stack velocity were assumed to be the same as the values used in a similar project recently analyzed by the SCAQMD.
  - Locations were chosen to be in the same area as the existing flare.
- Point sources for each of the engines used in drilling
  - Stack height, stack diameter, stack velocity, and stack temperature for all engines were assumed to be the default modeling parameters for stationary diesel engines prepared by Sonoma Technology, Inc. for the Bay Area Air Quality Management District (BAAQMD).
  - Locations were chosen to conservatively represent drilling in an area of the facility that would results in worst-case impacts. The engines were placed east of Bloomfield Ave to be as close to the residential receptors at The Village at Heritage Springs as possible after accounting for the required 300 ft setback distance, and just south of Telegraph Rd, the northern boundary of the 500 Block and 700 Block, to be near the large number of off-site worker receptors after accounting for the required 60 ft setback distance.
- Volume source for the 400 Block
  - 100 m x 100 m dimension of the volume source;
  - Assumed the height of the tallest tank (9.75 m) to be the release height;
  - Initial lateral dimension is the length of the side / 4.3; and
  - Initial vertical dimension is the release height / 4.3.
- Volume source for the consolidated truck loading system
  - 18 m x 18 m dimension of the volume source;
  - Assumed a release height of 1 m for truck loading operations;
  - Initial lateral dimension is the length of the side / 4.3; and

[20] SCAQMD, 2008. Final Localized Significance Threshold Methodology. July. Available at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/final-lst-methodology-document.pdf?sfvrsn=2. Accessed December 2014.

- Initial vertical dimension is the release height / 4.3.

- Volume source for the 14 microturbines
  - 13 m x 13 m dimension of the volume source;
  - Assumed a release height of 3 m, which is the height of the microturbines from a similar project recently analyzed by the SCAQMD; and
  - Initial lateral dimension is the length of the side / 4.3.

5.1.2 Meteorology

Hourly wind speeds and directions are used in dispersion modeling to predict plume direction and concentration for each hour in a year. Upper air sounding data are used to characterize atmospheric turbulence and mixing. SCAQMD provides AERMOD model-ready meteorological data sets for use in air quality and risk impact analyses in the SCAB. SCAQMD's Pico Rivera meteorological data set was selected based on that station's close geographic proximity to the proposed Project site. The SCAQMD meteorological data set is for January 1, 2008 to December 31, 2012, which is the most current data provided by SCAQMD.

5.1.3 Land Use

Commercial and industrial land uses surround the proposed Project site. The closest residential land uses are located to the southwest of the Project site. AERMOD offers the option of using either rural or urban dispersion characteristics. Consistent with the SCAQMD recommendation, the urban land use option was chosen for this area.

Data specifying terrain elevations of sources and receptors were imported into the model. Elevations were based on National Elevation Dataset (NED) and consisted of an array of regularly spaced points on a horizontal plane for which an elevation was specified. NED used in this analysis were obtained from the United States Geologic Survey (USGS) and have a resolution 1/3rd arc second or ~10 meters.

5.1.3.1 Receptors

The following receptors are included in the AERMOD mode per SCAQMD guidance[21]:

- Fence line Receptors 20 m apart (SCAQMD Guidance);
- Fine Grid 50 m x 50 m up to 300 m from the fence line in areas with residential development; and
- Coarse Grid 100 m x 100 m from 300 m to 1 mile from the fence line.

The locations of all receptors are illustrated on Figure B-1. Criteria pollutant impacts were evaluated at receptors where a person can be situated for an hour or longer at a time,

[21] SCAQMD. Modeling Guidance for AERMOD. Available at http://www.aqmd.gov/home/library/air-quality-data-studies/meteorological-data/modeling-guidance. Accessed December 2014.

consistent with SCAQMD guidance.[22] The Village at Heritage Springs located south of the Telegraph Rd and west of Bloomfield Ave was assumed to contain residential receptors. All other receptors were assumed to be off-site worker receptors. Receptor heights were assumed to be ground level based on currently available documentation from SCAQMD and Office of Environmental Health Hazard Assessment (OEHHA).[23]

5.1.4 Background Concentrations

Although the baseline year is 2014, the latest background concentration data available is for the year 2013. NO_2 and CO background concentrations were obtained from data from the nearest SCAQMD monitoring station, La Habra (North Orange County). SO_2 background concentrations were from the Los Angeles Main St. (Central LA) SCAQMD monitoring station, which is the nearest monitoring station that measures SO_2. These concentrations are added to the incremental impact from the proposed Project for comparison to the CAAQS and NAAQS.

5.1.5 Post Processing

The dispersion factors obtained from the AERMOD modeling runs were used to estimate the proposed Project impacts. As described earlier, the AERMOD models were performed using a χ/Q approach. With this approach, a separate model output file was generated for each source type, averaging time (1-hr, 8-hr, 24-hr, annual) and meteorological data set (2008, 2009, 2010, 2011, and 2012). The model output provides a dispersion factor and the maximum of five dispersion factors from the five years of meteorological data was used for the estimate of the ambient air quality impacts. This is a conservative approach to the analysis.

The pollutant concentration at each source and receptor combination was calculated as the product of the emission rate from that source and dispersion factor at that receptor from that source. The total proposed Project impact at each receptor was calculated as the sum of the impacts at the receptor from all the source-receptor combinations.

5.1.5.1 NO_2 Emissions

NO_2 emissions were evaluated using the χ/Q approach for NO_x and applying a NO_2/NO_x conversion ratio. To account for the conversion of NO to NO_2, the USEPA default factor[24] of 0.8 NO_2/NO_x was applied to NO_x emissions at all receptors except those within 500 m of the drilling equipment. At receptors within 200 m of the drilling equipment, a factor of 0.114 was applied to NO_x emissions. The value of 0.114 represents a NO_2/NO_x ratio to account for conversion of NO to NO_2 at distances of 200 m per the LST methodology[25]. At receptors

[22] SCAQMD, 2008. Final Localized Significance Threshold Methodology. July. Available at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/final-lst-methodology-document.pdf?sfvrsn=2. Accessed December 2014.

[23] Cal/EPA. 2003. The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments. Office of Environmental Health Hazard Assessment. August.

[24] USEPA, 2014. Clarification on the Use of AERMOD Dispersion Modeling for Demonstrating Compliance with the NO_2 National Ambient Air Quality Standard. September. Available at: http://www.epa.gov/scram001/guidance/clarification/NO2_Clarification_Memo-20140930.pdf. Accessed January 2015.

[25] SCAQMD, 2008. Final Localized Significance Threshold Methodology. July. Available at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/final-lst-methodology-document.pdf?sfvrsn=2. Accessed December 2014.

between 200 m and 500 m, a factor of 0.258 was applied to the NO_x emissions. These factors were applied because the receptors within 500 m of the drilling equipment were dominated by drilling sources.

5.1.5.2 Sulfate and SO_2 Emissions

Emissions of sulfate and SO_2 were also evaluated using the χ/Q approach. Per the LST methodology[26], the analysis and results shown assume 2 percent conversion of SO_x to sulfate and 100 percent conversion of SO_x to SO_2 to be conservative.

5.1.5.3 Toxics Impacts

Cancer risks, chronic hazard indices, and acute hazard indices were calculated at each receptor following the risk assessment procedures for SCAQMD's Rule 1401[27] that were available where the analysis was made, χ/Q values were from the modeling outputs and the rest of the parameters were from Attachment L of the risk assessment procedures.

> On March 6, 2015, the California Office of Environment Health Hazard Assessment (OEHHA) approved the updated *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* (OEHHA Guidance Manual, 2015). At the March 6, 2015 SCAQMD Governing Board meeting, the Governing Board approved a work plan for implementing the OEHHA Guidance Manual. According to the SCAQMD, the updated OEHHA Guidance Manual is anticipated to result in HRAs estimating a 2.7-fold increase in residential cancer risk. Although the updated OEHHA Guidance Manual came out after the EIR NOP date and this analysis, even a 3-fold increase to the Project's estimated cancer risk would still be well below the health risk significance threshold (see Section 3.2.4.4, Table 3-12).

5.2 Operations Air Dispersion Modeling Results

The maximum residential and worker cancer risks, chronic hazard indices, and acute hazard indices resulting from the operations and drilling are all below the significance thresholds of 10 in a million, 1.0, and 1.0, respectively. The risk and hazard index results are presented in Table B-27.

The ambient air quality results from the proposed Project operations and drilling are summarized in Table B-28. Air quality impacts from operations and drilling exceed the 24-hour PM_{10} and 24-hour $PM_{2.5}$ thresholds but would not exceed SCAQMD air quality significance thresholds for the 1-hour and annual NO_2 thresholds, annual PM_{10} thresholds, 1-hour and 24-hour SO_2 thresholds, 1-hour and 8-hour CO thresholds, and 24-hour sulfates threshold. As shown in Table B-29, air quality impacts from operations without drilling are below all SCAQMD air quality significance thresholds. Thus, the driver for PM_{10} and $PM_{2.5}$ exceedances are due to drilling that is already authorized to occur at the Breitburn Santa Fe Springs Facilities, and not due to the proposed Project components.

[26] Ibid.

[27] SCAQMD. Risk Assessment Procedures for Rules 1401 and 212. Available at: http://www.aqmd.gov/home/permits/risk-assessment/risk-assessment-procedures-for-rules-1401-and-212. Accessed December 2014.

Cumulative Impacts are discussed in the EIR in Section 5.2. Air dispersion modeling results for Cumulative Impacts related to the 14 microturbines are presented in Tables B-30 and B-31.

6 Localized CO Impacts

The SCAQMD suggests that localized CO hotspots be evaluated at intersections due to increases in project-related off-site mobile source trips. The SCAQMD recommends performing a CO hotspots analysis for intersections that change from Level of Service (LOS) C to D as a result of the proposed project, and for all intersections rated D or worse where the project increases the volume-to-capacity ratio by two percent or more. The proposed Project will not result in significant increases in traffic. No additional workers will be required for operation of the proposed Project. The additional workers required during construction is a small subset of the area and will occur over a relatively short time period. Therefore, there will be no intersections that meet these criteria. No further analysis was conducted.

7 Summary of Results

The analysis described in this report show that the proposed Project will result in significant air quality impacts. As discussed in Section 4, the operational mass emissions including the related well drilling will be above the SCAQMD mass significance thresholds for VOC and NO_x, and less than the mass significance thresholds for all other pollutants; the construction mass emissions will be below all significance thresholds. Air quality impacts from operations plus drilling exceed the 24-hour PM_{10} and 24-hour $PM_{2.5}$ thresholds but would not exceed SCAQMD air quality significance thresholds for the 1-hour and annual NO_2 thresholds, annual PM_{10} thresholds, 1-hour and 24-hour SO_2 thresholds, 1-hour and 8-hour CO thresholds, and 24-hour sulfates threshold. All operational impacts are driven by drilling of one additional well at any one time which would occur with or without the proposed Project. Oil well drilling is permitted by the City of Santa Fe Springs Municipal Code Zoning regulations for the M-2 zone and applicable DOGGR regulations for oil well-related activities.

Tables

Table B-1. SCAQMD Air Quality Significance Thresholds[1]

Mass Daily Thresholds (lbs/day)		
Pollutant	**Construction**	**Operation**
NO_x	100	55
VOC	75	55
PM_{10}	150	150
$PM_{2.5}$	55	55
SO_x	150	150
CO	550	550
Lead	3	3
Toxic Air Contaminant (TAC) Thresholds		
TACs	Maximum Incremental Cancer Risk ≥ 10 in 1 million	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Ambient Air Quality Standards for Criteria Pollutants		
NO_2 1-hour Average Annual Arithmentic Mean	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)	
PM_{10} 24-hour Average Annual Average	10.4 µg/m^3 (construction); 2.5 µg/m^3 (operation) 1.0 µg/m^3	
$PM_{2.5}$ 24-hour Average	10.4 µg/m^3 (construction); 2.5 µg/m^3 (operation)	
SO_2 1-hour Average 24-hour Average	0.25 ppm (state); 0.075 ppm (federal – 99th percentile) 0.04 ppm (state)	
Sulfate 24-hour Average	25 µg/m^3 (state)	
CO 1-hour Average 8-hour Average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)	
Lead 30-day Average Rolling 3-month Average	1.5 µg/m^3 (state) 0.15 µg/m^3 (federal)	

Abbreviations:

µg/m^3 - micrograms per cubic meter
CO - carbon monoxide
lbs - pounds
MT - metric tonnes
NO_x - nitrogen oxides
PM_{10} - particulate matter of 10 microns in diameter or smaller
$PM_{2.5}$ - particulate matter of 2.5 microns in diameter or smaller
ppm - parts per million
SCAQMD - South Coast Air Quality Management District
SO_2 - sulfur dioxide
VOC - volatile organic compound

Reference:

[1] SCAQMD Significance Thresholds Revision March 2011. Available at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2. Accessed: February 2015.

Table B-2. 700 Block Construction Assumptions[1,2]

Construction Phase	Duration	Operating Schedule (days/week)	# Worker Trips/Day	# Vendor Trips/Day	Total # Haul Trucks
Construction	2 weeks	5	0	0	0

Equipment

Construction Phase	Equipment Type	CalEEMod Equipment Type	# of each Equipment Type	Rating (hp)	Load Factor (%)	Operating hours/day[3]	Fuel Type
Construction	Welder	Welder	1	49	50%	7	diesel

Mitigation Measures

Mitigation measures as required by Rule 403 will be implemented. Because specific mitigation measures were not provided, to be conservative no mitigation was included in CalEEMod.

Notes:

[1] Construction of the 700 Block includes adding bulk truck loading and modifications to the thermal oxidizer and oil/gas/water system. No additional workers or vehicles are needed.

[2] Information provided by Breitburn based on reasonable construction needs, except where noted when reasonable assumptions had to be made.

[3] The welder is assumed to operate a maximum of 7 hours/day.

Table B-3. Construction of 4 Flares (400 Block) - Assumptions[1]

Construction Phase	Duration	Operating Schedule (days/week)	# Worker Trips/Day	# Vendor Trips/Day	Total # Haul Trucks	Grading Area (acres)	Amount of Material Imported/Exported (tons)
Grading (including removal of old flare)	2 weeks	5	6	1 delivery truck/week[2]	1	0.1	0 tons[3]
Installation of 4 CEBs	6 weeks	5	6	1 delivery truck/week[2]	0	NA	0 tons

Equipment

Construction Phase	Equipment Type	CalEEMod Equipment Type	# of each Equipment Type	Rating (hp)	Load Factor (%)	Operating hours/day[4]	Fuel Type
Grading (including removal of old flare)	A-frame Truck Crane	Crane	1	125	25%	7	diesel
	Backhoe	Tractors/Loaders/Backhoes	1	90	75%	6	diesel
Installation of 4 CEBs	Welder	Welder	1	49	50%	7	diesel
	A-frame Truck Crane	Crane	1	125	60%	4	diesel
	20-ton Crane	Crane	1	85	15%	4	diesel
	3/4-ton Pickup Trucks	NA[5]	3	485	15%	NA[5]	gasoline

Mitigation Measures

Mitigation measures as required by Rule 403 will be implemented. Because specific mitigation measures were not provided, to be conservative no mitigation was included in CalEEMod.

Notes:

[1] Information provided by Breitburn based on reasonable construction needs, except where noted when reasonable assumptions had to be made.

[2] CalEEMod requires vendor trips to be on a per day basis. Although only 1 delivery truck is expected per week, to be conservative the 1 vendor trip was assumed in CalEEMod to occur on peak day.

[3] The old flare and associated piping (3.5 tons) will be removed and exported during the grading phase; however, emissions from loading this material into trucks are expected to be negligible, and therefore, this information is not included in CalEEMod.

[4] The operating hours per day for the grading backhoe, installation A-frame truck crane, and installation 20-ton crane are based on CalEEMod defaults. The grading A-frame truck crane and welder are assumed to operate a maximum of 7 hours/day.

[5] Because CalEEMod does not provide an option for onsite travel of on-road vehicles during construction, emissions from the 3/4-ton pickup trucks are not included in the CalEEMod run and are calculated separately using EMFAC2011 emission factors.

Table B-4. 400 Block Water Reinjection Facility Construction Assumptions

Construction Phase	Duration	Operating Schedule (days/week)	# Worker Trips/Day	# Vendor Trips/Day	Total # Haul Trucks	Grading Area[2] (acres)	Amount of Material Imported/Exported
Site Preparation	2 weeks	5	15	0	125	NA	2000 cu. yd.[3]
Grading	2 weeks	5	15	0	4	3.085	50 cu. yds
Construction	20 weeks	5	30	5	90 total deliveries[4]	NA	NA[5]

Equipment

Construction Phase	Equipment Type	CalEEMod Equipment Type	# of each Equipment Type	Operating hours/day[6]	Rating (hp)	Load Factor (%)	Fuel Type
Site Preparation	3/4-ton Pickup Trucks	NA[7]	4	NA[7]	485	25%	gasoline
	Water Truck	NA[7]	1	NA[7]	375	20%	diesel
Grading Phase 1	Bulldozer	Rubber Tired Dozer	1	1	400	75%	diesel
	Grader	Grader	1	7	200	75%	diesel
	Roller	Roller	1	7	92	75%	diesel
	Front End Loader	Tractors/Loaders/ Backhoes	1	6	154	50%	diesel
	Compactor	Plate Compactor	1	7	5	60%	diesel
	Water Truck	NA[7]	1	NA[7]	375	20%	diesel
Grading Phase 2	3/4-ton Pickup Trucks	NA[7]	4	NA[7]	485	25%	gasoline
Construction Phase 1	3/4-ton Pickup Trucks	NA[7]	4	NA[7]	485	25%	gasoline
	Welder	Welder	3	7	49	30%	diesel
	Compactor[8]	Plate Compactor	1	7	5	60%	diesel
	Backhoe	Tractors/Loaders/ Backhoes	2	7	90	60%	diesel
	Water Truck	NA[7]	1	NA[7]	375	20%	diesel
	Air Compressor	Air Compressor	3	7	25	75%	diesel
	Forklift	Forklift	1	6	148	30%	diesel
	Generator[10]	Generator Set	1	7	670	80%	diesel
Construction Phase 2	60-ton Crane	Crane	2	4	125	40%	diesel
	Boom Truck[9]	NA[7]	1	NA[7]	245	80%	diesel

Mitigation Measures

Exposed areas will be watered per Rule 403 dust abatement (ongoing). Expected water usage will be 5000 gal/day. For the purposes of adding mitigatior measures in CalEEMod, exposed areas are expected to be watered twice each day.

Notes:

[1] Information provided by Breitburn based on reasonable construction needs, except where noted when reasonable assumptions had to be made.

[2] Grading will occur in an area measuring 480' X 220' at the plant and an area measuring 1200' X 24' at the site entrance.

[3] <2000 cu yds of existing concrete rubble, rock and dirt in the area where the tank farm will be constructed must be removed prior to commencement of grading and construction (i.e. during the site preparation phase).

[4] 2 concrete trucks are expected to make 40 total deliveries; 50 total deliveries will be made by other large delivery trucks.

[5] The material that is exported during this phase is expected to be large material (packing material, scrap wood, etc.). The emissions from loading this material into trucks is expected to be negligible.

[6] The operating hours per day are based on CalEEMod defaults, except for those equipment whose default is greater than 7 hours/day. Equipment with default operating hours greater than 7 hours/day are assumed to operate a maximum of 7 hours/day.

[7] Because CalEEMod does not provide an option for onsite travel of on-road vehicles during construction, emissions from the 3/4-ton pickup trucks, water trucks, and boom trucks are not included in the CalEEMod run and are calculated separately using EMFAC2011 emission factors.

[8] The compactor is only expected to be used for 8 weeks (on top of the 2 weeks during grading); to be conservative, the compactor is assumed to operate for all 20 weeks of construction.

[9] The boom truck is only expected to be used for 8 weeks; to be conservative, the boom truck is assumed to operate for all 20 weeks of construction.

[10] The generator is only expected to be used for 5 weeks; to be conservative, the generator is assumed to operate for all 20 weeks of construction.

Table B-5. Construction Emissions from Onsite Trucks

Construction Phase		4 CEBs, Installation	400 Block, Site Prep		400 Block, Grading		400 Block, Construction		
Parameter	**Units**	**3/4-ton Pickup Trucks**	**3/4-ton Pickup Trucks**	**Water Truck**	**3/4-ton Pickup Trucks**	**Water Truck**	**3/4-ton Pickup Trucks**	**Boom Truck**	**Water Truck**
Vehicle Miles Travelled									
Number of Trucks[1]	trucks/day	3	4	1	4	1	4	1	1
On-site VMT[2]	miles/day	3.0	4.0	1.0	4.0	1.0	4.0	1.0	1.0
Criteria Air Pollutant Emissions[3]									
NO_x	lbs/day	0.003	0.003	0.02	0.003	0.02	0.003	0.02	0.02
CO	lbs/day	0.04	0.04	0.002	0.04	0.002	0.04	0.002	0.002
PM_{10}	lbs/day	0.0004	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005
$PM_{2.5}$	lbs/day	0.0002	0.0002	0.0003	0.0002	0.0003	0.0002	0.0003	0.0003
SO_x	lbs/day	0.00003	0.00004	0.00002	0.00004	0.00002	0.00004	0.00002	0.00002
VOC[3]	lbs/day	0.002	0.002	0.001	0.002	0.001	0.002	0.001	0.001
Greenhouse Gas Emissions[3]									
CO_2	MT/year	0.1	0.03	0.02	0.03	0.02	0.3	0.2	0.2
CH_4	MT/year	0.000004	0.000002	0.0000002	0.000002	0.0000002	0.000017	0.000002	0.000002
N_2O	MT/year	0.000002	0.000001	0.000001	0.000001	0.000001	0.000006	0.000006	0.000006
Total GHG[4]	MT of CO_2e/year	0.1	0.03	0.02	0.03	0.02	0.3	0.2	0.2
Toxic Air Contaminant Emissions[3]									
DPM	lbs/day	NA	NA	0.0002	NA	0.0002	NA	0.0002	0.0002

Notes:

[1] Number of trucks were estimated by Breitburn based on reasonable construction needs. Not all trucks are in use at the same time.

[2] Onsite VMT assumes that the maximum distance each truck would travel onsite is 1 mile per day.

[3] Criteria pollutant and greenhouse gas emissions were estimated using on-site VMT.

[4] Calculated using the global warming potentials used by CalEEMod per July 2013 version of CalEEMod User's Guide, Appendix A, p. 43. Available online at: http://caleemod.com/ [accessed January 2015].

Abbreviations:

CH_4 - methane
CO - carbon monoxide
CO_2 - carbon dioxide
CO_2e - carbon dioxide equivalents
DPM - diesel particulate matter
GHG - greenhouse gases
GWP - Global Warming Potential
lbs - pounds
MT - metric tonne
N_2O - nitrous oxide
NO_x - nitrogen oxides
PM_{10} - particulate matter with diameter less than 10 microns
$PM_{2.5}$ - particulate matter with diameter less than 2.5 microns
SO_x - sulfur oxides
VMT - vehicle miles traveled
VOC - volatile organic compounds

Conversion Factors:

453.59237	g/lb
1,000,000	g/MT

Constants:

1	mile onsite travel
GWP for CH_4	21
GWP for N_2O	310

Construction Schedules:

31 days	4 CEBs, Installation
11 days	400 Block, Site Prep
11 days	400 Block, Grading
101 days	400 Block, Construction

Table B-6. EMFAC2011 Emission Factors

Pollutants	2015 Calendar Year Emission Factors[1] (g/mile)	2016 Calendar Year Emission Factors[1] (g/mile)	
	3/4 ton Pickup Truck[2]	3/4 ton Pickup Truck[2]	Water Truck & Boom Truck[3]
Criteria Pollutants			
NO_x	0.4	0.4	8.6
CO	5.4	4.9	0.9
PM_{10}	0.06	0.06	0.24
$PM_{2.5}$	0.03	0.03	0.15
SO_x	0.004	0.004	0.011
VOC[4]	0.24	0.21	0.39
Greenhouse Gases			
CO_2	642.4	622.6	1,707.3
CH_4[5]	0.045	0.042	0.018
N_2O[6]	0.017	0.016	0.057
Toxic Air Contaminants			
DPM[7]	NA	NA	0.09

Notes:

[1] Emission factors for trucks in SCAB were obtained from EMFAC2011. PM_{10} and $PM_{2.5}$ emission factors represent the sum of running exhaust, tire wear and brake wear emissions. Emission factors for other pollutants represent only running exhaust emissions.

[2] The 3/4-ton pickup truck was assumed to correspond to the LDT1 EMFAC2011 vehicle category.

[3] The water truck and boom truck were assumed to correspond to the T6 instate construction heavy EMFAC2011 vehicle category.

[4] For the purposes of this analysis, VOC is assumed to be equal to ROG. See page 3 of the CARB EMFAC2011 User's Guide, updated January 2013: http://www.arb.ca.gov/msei/emfac2011-ldv-users-guide-final.pdf

[5] CH_4 emission factor is calculated according to the CARB EMFAC2011 Frequently Asked Questions as follows: for gasoline vehicles, EMFAC2011-LDV was run, assuming 60F, 0% humidity; for diesel vehicles CH_4 = 0.0408 * TOG
http://www.arb.ca.gov/msei/emfac2011-faq.htm#emfac2011_web_db_qstn07

[6] N_2O emission factor is calculated as follows:
for gasoline vehicles, N_2O = 4.16% of NO_x;
for diesel vehicles, g N_2O/mile = 0.3316 g N_2O/gal diesel × 91.1 gal diesel/ton CO_2 × ton/g × g CO_2/mile
The 0.3316 g/gal factor comes from the CARB EMFAC2011 Frequently Asked Questions http://www.arb.ca.gov/msei/emfac2011-faq.htm#emfac2011_web_db_qstn07.
The 91.1 gal/ton factor is derived from the SCAB 2016 calendar year EMFAC2011 emissions output for T6 instate construction heavy trucks.

[7] DPM emissions are equivalent to PM_{10} running exhaust emissions.

Abbreviations:

CARB - California Air Resources Board
CH_4 - methane
CO - carbon monoxide
CO_2 - carbon dioxide
DPM - diesel particulate matter
EPA - Environmental Protection Agency
g - gram
N_2O - nitrous oxide
NO_x - nitrogen oxides
PM_{10} - particulate matter with diameter less than 10 microns
$PM_{2.5}$ - particulate matter with diameter less than 2.5 microns
ROG - reactive organic gases
SCAB - South Coast Air Basin
SO_x - sulfur oxides
VOC - volatile organic compounds

Conversion Factors:

0.0408	ratio of CH_4:TOG
0.3316	g N_2O/gal diesel
91.10	gal diesel/ton CO_2
2000	lb/ton
453.59237	g/lb
4.16%	N_2O to NO_x ratio for gasoline vehicles

Table B-7. Fugitive Dust Construction Emissions from Onsite Vehicle Travel

PM_{10} and $PM_{2.5}$ Emission Factor Calculations		
Vehicles - Resuspended Particulates [1]		
EF = k (s/12)^{a} (W/3)^{b} (lb/VMT)		
k (for PM_{10}) =	1.5	lb/VMT
k (for $PM_{2.5}$) =	0.15	lb/VMT
a =	0.9	unitless
b =	0.45	unitless
s (surface material silt content) [2] =	11	%
(s/12)^{a} =	0.92	

Construction										
Source	**EMFAC2011 Vehicle Type[3]**	**Number of Vehicles per Day[4]**	**Vehicle Weight (tons)**	**W (mean vehicle weight)[5] (tons)**	**(W/3)^{b}**	**PM_{10} Emission Factor (lb/VMT)**	**$PM_{2.5}$ Emission Factor (lb/VMT)**	**Onsite VMT[6] (mi/day)**	**Resuspended Particulates Emissions PM_{10} (lb/day)**	**Resuspended Particulates Emissions $PM_{2.5}$ (lb/day)**
4 CEBs, Installation										
3/4-ton Pickup Truck	Light-Duty Trucks (0-3750 lbs)	3	0.75	0.75	0.54	**0.743**	**0.074**	3	2.23	0.22
Total - 4 CEBs, Installation									**2.23**	**0.22**
400 Block, Site Prep										
3/4-ton Pickup Truck	Light-Duty Trucks (0-3750 lbs)	4	0.75	5.80	1.35	**1.866**	**0.187**	4	7.46	0.75
Water Truck	Medium-Heavy Duty Diesel instate construction Truck with GVWR>26000 lbs	1	26					1	1.87	0.19
Total - 400 Block, Site Prep									**9.33**	**0.93**
400 Block, Grading										
3/4-ton Pickup Truck	Light-Duty Trucks (0-3750 lbs)	4	0.75	5.80	1.35	**1.866**	**0.187**	4	7.46	0.75
Water Truck	Medium-Heavy Duty Diesel instate construction Truck with GVWR>26000 lbs	1	26					1	1.87	0.19
Total - 400 Block, Grading									**9.33**	**0.93**
400 Block, Construction										
3/4-ton Pickup Truck	Light-Duty Trucks (0-3750 lbs)	4	0.75	9.17	1.65	**2.293**	**0.229**	4	9.17	0.92
Water Truck	Medium-Heavy Duty Diesel instate construction Truck with GVWR>26000 lbs	1	26					1	2.29	0.23
Boom Truck	Medium-Heavy Duty Diesel instate construction Truck with GVWR>26000 lbs	1	26					1	2.29	0.23
Total - 400 Block, Construction									**13.76**	**1.38**

Notes:

[1] The PM_{10} and $PM_{2.5}$ emission factors for resuspended particulates from unpaved roads by driving of maintenance vehicles, may be estimated using the equation for vehicles traveling on unpaved roads at industrial sites listed in 2006 AP-42, Chapter 13, Section 13.2.2 (Unpaved Roads).

[2] The surface material silt content (s) is based on the default value for dirt roads on p. 4-29 from the background document for Section 13.2.2 of AP-42 (September 1998). Available at: http://www.epa.gov/ttn/chief/ap42/ch13/bgdocs/b13s02-2.pdf [accessed January 2015]

[3] The EMFAC2011 vehicle description is based on the category that appears to best describe the vehicle.

[4] Number of trucks were estimated by Breitburn.

[5] The mean vehicle weight (W) is based on the weighted average of maintenance vehicle weights for that construction phase, assuming the pickup trucks are 0.75 tons and the water trucks and boom truck are each 26 tons. Boom truck weight based on Elliot BoomTruck 24I05: http://www.edwardsinc.com/assets/charts/24105.pdf (accessed January 2015). Water truck assumed to be approximately the same weight as the boom truck.

[6] The onsite VMT assumes that the maximum distance each truck would travel onsite is 1 mile each day.

Table B-8. Consolidated Bulk Truck Loading System Truck Idling Operational Emissions (700 Block)

Project: Consolidated Bulk Truck Loading Idling Parameters

Maximum trucks/day	20 trucks/day
Idling time per truck	5 min/truck

Project: Consolidated Bulk Truck Loading Idling Criteria Pollutant Emissions

Pollutant	Emission Factors (g/hr-veh)[1]			Idling Emissions[2]	
	Annual	Summer	Winter	(lbs/day)	(lbs/yr)
VOC	6.34	5.97	6.84	0.03	8.50
NO_x	64.05	66.11	61.20	0.24	85.90
CO	34.46	25.04	47.47	0.17	46.22
PM_{10}	0.27	0.23	0.33	0.001	0.36
$PM_{2.5}$	0.25	0.21	0.30	0.001	0.33
SO_x	0.07	0.07	0.06	0.0003	0.09

[1.] Emission factors are from the CARB EMFAC2011 Idling Emission Rates for the 2015 calendar year, heavy-heavy duty truck category, diesel fuel type, and South Coast Air Basin. Available at: http://www.arb.ca.gov/msei/modeling.htm. ROG is assumed to be equal to VOC.

[2.] Daily emissions are calculated using the maximum of the summer and winter emission factors to be conservative. Annual emissions are calculated using the annual emission factors.

Project: Consolidated Bulk Truck Loading Idling TAC Emissions

TACs	Daily Emissions[1] (lbs/day)	Annual Emissions[1] (lbs/yr)
Diesel Particulate Matter	0.001	0.36

[1.] DPM is assumed to be equivalent to PM_{10} to be conservative.

Project: Consolidated Bulk Truck Loading Idling GHG Emissions

Pollutant	Emission Factor[1,2]		Idling Emissions
	Annual	Units	(MT/yr)
CO_2	6,856	g/hr-veh	4.2

[1.] Emission factors are from the CARB EMFAC2011 Idling Emission Rates for the 2015 calendar year, heavy-heavy duty truck category, diesel fuel type, and South Coast Air Basin Available at: http://www.arb.ca.gov/msei/modeling.htm. ROG is assumed to be equal to VOC.

[2.] The CO_2 emission factor accounts for reductions due to implementation of Pavley and Low Carbon Fuel Standard (LCFS).

Baseline: Consolidated Bulk Truck Loading Idling Parameters

Maximum trucks/day	3 trucks/day
Idling time per truck	5 min/truck

Baseline: Consolidated Bulk Truck Loading Idling Criteria Pollutant Emissions

Pollutant	Emission Factors[1]				Idling Emissions	
	Annual	Summer	Winter	Units	(lbs/day)	(lbs/yr)
VOC	6.27	5.91	6.77	g/hr-veh	0.004	1.26
NO_x	69.56	71.80	66.47	g/hr-veh	0.04	13.99
CO	33.36	24.24	45.95	g/hr-veh	0.03	6.71
PM_{10}	0.33	0.28	0.41	g/hr-veh	0.0002	0.07
$PM_{2.5}$	0.31	0.26	0.37	g/hr-veh	0.0002	0.06
SO_x	0.07	0.07	0.06	g/hr-veh	0.00004	0.01

[1.] Emission factors are from the CARB EMFAC2011 Idling Emission Rates for the 2014 calendar year, heavy-heavy duty truck category, diesel fuel type, and South Coast Air Basin. Available at: http://www.arb.ca.gov/msei/modeling.htm. ROG is assumed to be equal to VOC.

[2.] Daily emissions are calculated using the maximum of the summer and winter emission factors to be conservative. Annual emissions are calculated using the annual emission factors.

Baseline: Consolidated Bulk Truck Loading Idling TAC Emissions

TACs	Daily Emissions[1] (lbs/day)	Annual Emissions[1] (lbs/yr)
Diesel Particulate Matter	0.0002	0.07

[1.] DPM is assumed to be equivalent to PM_{10} to be conservative.

Baseline: Consolidated Bulk Truck Loading Idling GHG Emissions

Pollutant	Emission Factor[1,2]		Idling Emissions
	Annual	Units	(MT/yr)
CO_2	6,920	g/hr-veh	0.6

[1.] Emission factors are from the CARB EMFAC2011 Idling Emission Rates for the 2014 calendar year, heavy-heavy duty truck category, diesel fuel type, and South Coast Air Basin Available at: http://www.arb.ca.gov/msei/modeling.htm. ROG is assumed to be equal to VOC.

[2.] The CO_2 emission factor accounts for reductions due to implementation of Pavley and Low Carbon Fuel Standard (LCFS).

Table B-9. Consolidated Bulk Truck Loading System Truck Trip Operational Emissions (700 Block)

Project: Consolidated Bulk Truck Loading Trip Parameters

Maximum trucks/day	20 trucks/day
One-way distance traveled per truck	30 mi/truck

Project: Consolidated Bulk Truck Loading Trip Criteria Pollutant Emissions

Pollutants	2015 Calendar Year Emission Factors[1,2] (g/mile)			Maximum Daily Off-site Emissions[3] (lbs/day)	Annual Off-site Emissions[4] (lbs/yr)
	Annual	Summer	Winter		
NO_x	5.67	5.37	5.58	14.8	5,479
CO	1.26	1.26	1.26	3.3	1,216
PM_{10}	0.21	0.21	0.21	0.5	201
$PM_{2.5}$	0.14	0.14	0.14	0.4	132
SO_x	0.016	0.016	0.016	0.04	16
VOC	0.25	0.25	0.25	0.7	237

[1.] Emission factors for trucks in SCAB were obtained from EMFAC2011. PM_{10} and $PM_{2.5}$ emission factors represent the sum of running exhaust, tire wear and brake wear emissions. Emission factors for other pollutants represent only running exhaust emissions. For the purposes of this analysis, VOC is assumed to be equal to ROG. See page 3 of the CARB EMFAC2011 User's Guide, updated January 2013: http://www.arb.ca.gov/msei/emfac2011-ldv-users-guide-final.pdf

[2.] The oil tanker trucks were assumed to correspond to the T7 CAIRP EMFAC2011 vehicle category.

[3.] Daily emissions are calculated using the maximum of the summer and winter emission factors to be conservative. Annual emissions are calculated using the annual emission factors.

Project: Consolidated Bulk Truck Loading Trip GHG Emissions

Greenhouse Gases	2015 Calendar Year Emission Factors[1,2] (g/mile)	Annual Off-site Emissions (MT/yr)	Gobal Warming Potentials[3]	Annual Off-site CO_2e Emissions (MT/yr)
	Annual			
CO_2	1,675	733.7	1	733.7
CH_4[4]	0.011	0.01	21	0.1
N_2O[5]	0.058	0.03	310	7.9
Total				741.7

[1.] Emission factors for trucks in SCAB were obtained from EMFAC2011.

[2.] The oil tanker trucks were assumed to correspond to the T7 CAIRP EMFAC2011 vehicle category.

[3.] Global warming potentials are from Table 1 of SCAQMD Rule 2700.

[4.] CH_4 emission factor is calculated according to the CARB EMFAC2011 Frequently Asked Questions as follows:
$CH_4 = 0.0408 * TOG$
http://www.arb.ca.gov/msei/emfac2011-faq.htm#emfac2011_web_db_qstn07

[5.] N_2O emission factor is calculated as follows:
g N_2O/mile = 0.3316 g N_2O/gal diesel × 95.2 gal diesel/ton CO_2 × ton/g × g CO_2/mile
The 0.3316 g/gal factor comes from the CARB EMFAC2011 Frequently Asked Questions
http://www.arb.ca.gov/msei/emfac2011-faq.htm#emfac2011_web_db_qstn07.
The 95.2 gal/ton factor is derived from the SCAB 2015 calendar year EMFAC2011 emissions output for T7 CAIRP trucks.

Project: Consolidated Bulk Truck Loading Trip TAC Emissions

TACs	2015 Calendar Year Emission Factors[1,2] (g/mile)			Maximum Daily Off-site Emissions (lbs/day)	Annual Off-site Emissions (lbs/yr)
	Annual	Summer	Winter		
DPM	0.11	0.11	0.11	0.3	106.3

[1.] Emission factors for trucks in SCAB were obtained from EMFAC2011. DPM is assumed to be equivalent to PM_{10} to be conservative.

[2.] The oil tanker trucks were assumed to correspond to the T7 CAIRP EMFAC2011 vehicle category.

Table B-9. Consolidated Bulk Truck Loading System Truck Trip Operational Emissions (700 Block)

Baseline: Consolidated Bulk Truck Loading Trip Parameters

Maximum trucks/day	3 trucks/day
One-way distance traveled per truck	30 mi/truck

Baseline: Consolidated Bulk Truck Loading Trip Criteria Pollutant Emissions

Pollutants	2014 Calendar Year Emission Factors[1,2] (g/mile)			Maximum Daily Off-site Emissions[3] (lbs/day)	Annual Off-site Emissions[4] (lbs/yr)
	Annual	Summer	Winter		
NO_x	7.03	6.65	6.92	2.7	1,018
CO	1.36	1.36	1.36	0.5	197
PM_{10}	0.24	0.24	0.24	0.1	34
$PM_{2.5}$	0.16	0.16	0.16	0.1	24
SO_x	0.016	0.016	0.016	0.01	2
VOC	0.27	0.27	0.27	0.1	39

[1.] Emission factors for trucks in SCAB were obtained from EMFAC2011. PM_{10} and $PM_{2.5}$ emission factors represent the sum of running exhaust, tire wear and brake wear emissions. Emission factors for other pollutants represent only running exhaust emissions. For the purposes of this analysis, VOC is assumed to be equal to ROG. See page 3 of the CARB EMFAC2011 User's Guide, updated January 2013: http://www.arb.ca.gov/msei/emfac2011-ldv-users-guide-final.pdf

[2.] The oil tanker trucks were assumed to correspond to the T7 CAIRP EMFAC2011 vehicle category.

[3.] Daily emissions are calculated using the maximum of the summer and winter emission factors to be conservative. Annual emissions are calculated using the annual emission factors.

Baseline: Consolidated Bulk Truck Loading Trip GHG Emissions

Greenhouse Gases	2014 Calendar Year Emission Factors[1,2] (g/mile)	Annual Off-site Emissions (MT/yr)	Gobal Warming Potentials[3]	Annual Off-site CO_2e Emissions (MT/yr)
	Annual			
CO_2	1,697	111.5	1	111.5
CH_4[4]	0.012	0.00	21	0.0
N_2O[5]	0.059	0.00	310	1.2
Total				112.7

[1.] Emission factors for trucks in SCAB were obtained from EMFAC2011.

[2.] The oil tanker trucks were assumed to correspond to the T7 CAIRP EMFAC2011 vehicle category.

[3.] Global warming potentials are from Table 1 of SCAQMD Rule 2700.

[4.] CH_4 emission factor is calculated according to the CARB EMFAC2011 Frequently Asked Questions as follows:
$CH_4 = 0.0408 * TOG$
http://www.arb.ca.gov/msei/emfac2011-faq.htm#emfac2011_web_db_qstn07

[5.] N_2O emission factor is calculated as follows:
g N_2O/mile = 0.3316 g N_2O/gal diesel × 94.7 gal diesel/ton CO_2 × ton/g × g CO_2/mile
The 0.3316 g/gal factor comes from the CARB EMFAC2011 Frequently Asked Questions
http://www.arb.ca.gov/msei/emfac2011-faq.htm#emfac2011_web_db_qstn07.
The 94.7 gal/ton factor is derived from the SCAB 2014 calendar year EMFAC2011 emissions output for T7 CAIRP trucks.

Baseline: Consolidated Bulk Truck Loading Trip TAC Emissions

TACs	2014 Calendar Year Emission Factors[1,2] (g/mile)			Maximum Daily Off-site Emissions (lbs/day)	Annual Off-site Emissions (lbs/yr)
	Annual	Summer	Winter		
DPM	0.14	0.14	0.14	0.1	20.0

[1] Emission factors for trucks in SCAB were obtained from EMFAC2011. DPM is assumed to be equivalent to PM_{10} to be conservative.

[2] The oil tanker trucks were assumed to correspond to the T7 CAIRP EMFAC2011 vehicle category.

Table B-10. Consolidated Bulk Truck Loading Operational Emissions (700 Block)

Project: Consolidated Bulk Truck Loading System VOC Emissions

Maximum trucks/day	Truck Capacity (bbl/truck)	Maximum Loading Rate (bbl/day)	Emission Factor[1] (lbs VOC/mgal)	Daily VOC Emissions (lbs/day)	Annual VOC Emissions (lbs/yr)
20	155	3,100	0.08	10.4	3,802

[1.] Emission factor from SCAQMD's Rule 462 - limit for Class A Bulk Loading System

Project: Consolidated Bulk Truck Loading System TAC Emissions

TACs	Vapor Weight (% of VOC)[1]	Daily Emissions (lbs/day)	Annual Emissions (lbs/yr)
Hexane	0.40%	0.04	15.2
Benzene	0.60%	0.06	22.8
Ethylbenzene	0.40%	0.04	15.2
Toluene	1.00%	0.10	38.0
Xylene	1.40%	0.15	53.2

[1.] Vapor weight percentages of VOC emissions are assumed to be equal to the liquid weight percentages from the default crude oil speciation profile in the USEPA TANKS 4.0.9d program.

Project: Consolidated Bulk Truck Loading System GHG Emissions

Source	VOC Emissions (lbs/yr)	Ratio of CH_4 to VOC[1]	Global Warming Potential[2]	CO_2e Emissions (MT/yr)
Truck Loading System	3,802	1.04	21	37.7

[1.] Based on a recent gas analysis result that 49.03% of total hydrocarbons is non-methane hydrocarbons.

[2.] Global warming potentials are from Table 1 of SCAQMD Rule 2700.

Baseline: Consolidated Bulk Truck Loading System VOC Emissions

Maximum trucks/day	Daily VOC Emissions (lbs/day)	Annual VOC Emissions[1] (lbs/yr)
3	1.59	582

[1.] Annual VOC emissions reported on the 2013 AER.

Baseline: Consolidated Bulk Truck Loading System TAC Emissions

TACs	Vapor Weight (% of VOC)[1]	Daily Emissions (lbs/day)	Annual Emissions (lbs/yr)
Hexane	0.40%	0.01	2.3
Benzene	0.60%	0.01	3.5
Ethylbenzene	0.40%	0.01	2.3
Toluene	1.00%	0.02	5.8
Xylene	1.40%	0.02	8.1

[1.] Vapor weight percentages of VOC emissions are assumed to be equal to the liquid weight percentages from the default crude oil speciation profile in the USEPA TANKS 4.0.9d program.

Baseline: Consolidated Bulk Truck Loading System GHG Emissions

Source	VOC Emissions (lbs/yr)	Ratio of CH_4 to VOC[1]	Global Warming Potential[2]	CO_2e Emissions (MT/yr)
Truck Loading System	582	1.04	21	5.8

[1.] Based on a recent gas analysis result that 49.03% of total hydrocarbons is non-methane hydrocarbons.

[2.] Global warming potentials are from Table 1 of SCAQMD Rule 2700.

Table B-11. Consolidated Bulk Truck Loading System Fugitive Operational Emissions (700 Block)

Project: Consolidated Bulk Truck Loading System Fugitive VOC Emissions

Component Type[1]	Material type	Quantity[2]	Non-Leakers[2]		Leakers[2]		Non-Leakers <10,000 ppm[2]		Leakers >10,000 ppm[2]		THC and VOC Emissions			
			Percent of Total	Non-Leakers Components	Percent of Total	Leakers Components	Emission Factors[3] (lb/hr/comp)	Adjusted Emission Factors (lb/hr/comp x 1.2)	Emission Factors[3] (lb/hr/comp)	Adjusted Emission Factors (lb/hr/comp x 1.2)	Non-Leakers Daily Emissions (lbs/day)	Leakers Daily Emissions (lbs/day)	Daily Emissions (lbs/day)	Annual Emissions (lbs/yr)
Valves	Gas/light liquid	3	98.74%	3	1.26%	0.04	7.70E-05	9.24E-05	3.00E-01	3.60E-01	0.01	0.33	0.33	121.7
Valves	Light crude oil	2	100.00%	2	0.00%	0.00	4.20E-05	5.04E-05	1.60E-01	1.92E-01	0.00	0.00	0.00	0.9
Connectors	Gas/light liquid	10	99.96%	10	0.04%	0.00	2.60E-05	3.12E-05	5.70E-02	6.84E-02	0.01	0.01	0.01	5.2
Connectors	Light crude oil	5	100.00%	5	0.00%	0.00	2.20E-05	2.64E-05	5.10E-02	6.12E-02	0.00	0.00	0.00	1.2
Flanges	Gas/light liquid	3	99.81%	3	0.19%	0.01	6.20E-05	7.44E-05	1.30E-01	1.56E-01	0.01	0.02	0.03	9.6
Flanges	Light crude oil	2	99.84%	2	0.16%	0.00	5.30E-05	6.36E-05	5.70E-01	6.84E-01	0.00	0.05	0.06	20.2
Pressure Relief Valves	Gas service	1	100.00%	1	0.00%	0.00	3.20E-04	3.84E-04	3.00E-01	3.60E-01	0.01	0.00	0.01	3.4
Pumps	Light liquid service	0	100.00%	0	0.00%	0.00	2.20E-03	2.64E-03	2.00E-01	2.40E-01	0.00	0.00	0.00	0.0
Pumps	Heavy liquid service	0	100.00%	0	0.00%	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00	0.00	0.00	0.0
Compressors	Gas service	0	100.00%	0	0.00%	0.00	3.20E-04	3.84E-04	3.00E-01	3.60E-01	0.00	0.00	0.00	0.0
Others	Gas/light liquid	2	98.11%	2	1.89%	0.04	3.20E-04	3.84E-04	3.00E-01	3.60E-01	0.02	0.33	0.34	125.6
Others	Light crude oil	2	99.47%	2	0.53%	0.01	2.90E-04	3.48E-04	1.60E-02	1.92E-02	0.02	0.00	0.02	7.8
										Total THC Emissions	**0.07**	**0.74**	**0.81**	**295.6**
										Total VOC Emissions[4]	**0.04**	**0.36**	**0.40**	**144.9**

[1.] The components listed are the additional components required for the bulk loading system / tie-in to the thermal oxidizer system. There are no fugitive emissions the production transport pipes since they are underground.

[2.] Information provided by Breitburn.

[3.] Emission factors are from Table IV-2c of the SCAQMD Guidelines for Fugitive Emissions Calculations, June 2003.

[4.] Based on a recent gas analysis result that 49.03% of total hydrocarbons is non-methane hydrocarbons.

Project: Consolidated Bulk Truck Loading System Fugitive TAC Emissions

TACs	Vapor Weight (% of VOC)[1]	Daily Emissions (lbs/day)	Annual Emissions (lbs/yr)
Hexane	0.40%	0.0016	0.58
Benzene	0.60%	0.0024	0.87
Ethylbenzene	0.40%	0.0016	0.58
Toluene	1.00%	0.0040	1.45
Xylene	1.40%	0.0056	2.03

[1.] Vapor weight percentages of VOC emissions are assumed to be equal to the liquid weight percentages from the default crude oil speciation profile in the USEPA TANKS 4.0.9d program.

Project: Consolidated Bulk Truck Loading System Fugitive GHG Emissions

Source	VOC Emissions (lbs/yr)	Ratio of CH_4 to VOC[1]	Global Warming Potential[2]	CO_2e Emissions (MT/yr)
Fugitives	144.9	1.04	21	1.4

[1.] Based on a recent gas analysis result that 49.03% of total hydrocarbons is non-methane hydrocarbons.

[2.] Global warming potentials are from Table 1 of SCAQMD Rule 2700.

Table B-12. 400 Block Flares Operational Emissions

Project Operating Conditions

Total # of CEBs	4
Fuel Usage Per CEB	0.7 MMscf/day
CEB Max Gas Flow	39.460 MMBtu/hr

Project: Four CEBs Criteria Pollutant Emissions

Pollutant	Emission Factors[1]	Emissions Per CEB[2]		Emissions for All 4 CEBs	
		(lbs/day)	(lbs/yr)	(lbs/day)	(lbs/yr)
VOC	0.0042 lb/MMBtu	4.0	1,452	15.9	5,807
NO_x	0.018 lb/MMBtu	17.0	6,222	68.2	24,888
CO	0.0074 lb/MMBtu	7.0	2,558	28.0	10,232
PM	40 ug/L	1.75	638	7.0	2,552
SO_x	40 ppm H_2S	4.7	1,726	18.9	6,903

1. VOC, NO_x and CO emissions factors were obtained from manufacturer specifications. The PM emission factor is from AP-42 Table 13.5-1, note C (Industrial flares). The PM concentration assumes lightly smoking flare. This may significantly overestimate PM emissions for the CEBs. The SO_x emission factor is assumed based on a maximum concentration of 40 ppm H_2S from Rule 431.1.

2. Emissions are calculated using 1353 Btu/scf as the heating value, which is the rating estimated from a recent gas analysis.

Project: Four CEBs GHG Emissions

Pollutant	Emission Factors[1] (lb/MMscf)	Emissions Per CEB (MT/yr)	Total Emissions for All 4 CEBs (MT/yr)	Global Warming Potentials[2]	CO_2e Emissions Per CEB (MT/yr)	CO_2e Emissions for All 4 CEBs (MT/yr)
CH_4	2.3	0.27	1.07	21	5.60	22.40
N_2O	0.64	0.07	0.30	310	23.00	92.00
CO_2	163,116	18,909	75,637	1	18,909	75,637
				Total CO_2e Emissions:	18,938	75,752

1. N_2O and CH_4 emission factors are from AP-42, Chapter 1, Table 1.4-2. CO_2 emission factor is based on CO_2 Combustion Emission Factors (Fuel Basis) for Common Industry Fuel Types, Table 4-3, of the American Petroleum Institute's Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Gas Industry, August 2009. Available at: http://www.api.org/~/media/Files/EHS/climate-change/2009_GHG_COMPENDIUM.pdf.

2. Global warming potentials are from Table 1 of SCAQMD Rule 2700.

Project: Four CEBs TAC Emissions

TACs	Emission Factors[1] (lbs/MMscf)	Emissions Per CEB		Emissions for All 4 CEBs	
		lbs/day	lbs/yr	lbs/day	lbs/yr
Benzene	0.159	0.11	41	0.45	162
Formaldehyde	1.169	0.82	299	3.27	1,195
PAH	0.003	0.00	0.8	0.01	3.1
Naphthalene	0.011	0.01	2.8	0.03	11.2
Acetaldehyde	0.043	0.03	11.0	0.12	43.9
Acrolein	0.010	0.01	2.6	0.03	10.2
Ethylbenzene	1.444	1.01	369	4.04	1,476
Hexane	0.029	0.02	7	0.08	30
Toluene	0.058	0.04	14.8	0.16	59.3
Xylene	0.029	0.02	7.4	0.08	29.6

1. Emission factors are from SCAQMD Reporting Procedures for AB2588 Facilities Reporting their Quadrennial Air Toxic Emission Inventory, December 2014.

Table B-12. 400 Block Flares Operational Emissions

Baseline Operating Conditions

Total # of Flares	1
2013 Flare Fuel Usage	117.32 MMscf/yr

Baseline: Existing Flare Criteria Pollutant Emissions

Pollutant	Emissions[1]	
	lbs/day	lbs/yr
VOC	2.2	821
NO_x	41.8	15,251
CO	11.2	4,106
PM	2.4	880
SO_x	0.2	70

[1.] Annual emissions reported on the 2013 AER.

Baseline: Existing Flare GHG Emissions

Total CO_2e Emissions[1]:	11,166 MT/yr

[1.] Annual emissions reported on the 2013 CARB GHG inventory.

Baseline: Existing Flare TAC Emissions

TACs	Emission Factors[1] (lbs/MMscf)	Emissions	
		lbs/day	lbs/yr
Benzene	0.159	0.05	18.7
Formaldehyde	1.169	0.38	137
PAH	0.003	0.001	0.4
Naphthalene	0.011	0.004	1.3
Acetaldehyde	0.043	0.01	5.0
Acrolein	0.010	0.003	1.2
Ethylbenzene	1.444	0.46	169
Hexane	0.029	0.01	3.4
Toluene	0.058	0.02	6.8
Xylene	0.029	0.01	3.4

[1.] Emission factors are from SCAQMD Reporting Procedures for AB2588 Facilities Reporting their Quadrennial Air Toxic Emission Inventory, December 2014.

Table B-12. 400 Block Flares Operational Emissions

Alternative 2: Ready-Standby Conditions

Total # of CEBs	1
Fuel Usage Per CEB	35 Mscf/day
CEB Max Gas Flow	1.973 MMBtu/hr

Alternative 2: Criteria Pollutant Emissions During Standard Operation

Pollutant	Emission Factors[1]	Emissions[2]	
		(lbs/day)	(lbs/yr)
VOC	0.0042 lb/MMBtu	0.2	73
NO_x	0.018 lb/MMBtu	0.9	311
CO	0.0074 lb/MMBtu	0.4	128
PM	40 ug/L	0.09	32
SO_x	40 ppm H_2S	0.2	86

[1] VOC, NO_x and CO emissions factors were obtained from manufacturer specifications. The PM emission factor is from AP-42 Table 13.5-1, note C (Industrial flares). The PM concentration assumes lightly smoking flare. This may significantly overestimate PM emissions for the CEBs. The SO_x emission factor is assumed based on a maximum concentration of 40 ppm H_2S from Rule 431.1.

[2] Emissions are calculated using 1353 Btu/scf as the heating value, which is the rating estimated from a recent gas analysis.

Alternative 2: GHG Emissions During Standard Operation

Pollutant	Emission Factors[1] (lb/MMscf)	Emissions (MT/yr)	Global Warming Potentials[2]	CO_2e Emissions (MT/yr)
CH_4	2.3	0.01	21	0.28
N_2O	0.64	0.004	310	1.15
CO_2	163,116	945	1	945
Total CO_2e Emissions:				947

[1] N_2O and CH_4 emission factors are from AP-42, Chapter 1, Table 1.4-2. CO_2 emission factor is based on CO_2 Combustion Emission Factors (Fuel Basis) for Common Industry Fuel Types, Table 4-3, of the American Petroleum Institute's Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Gas Industry, August 2009. Available at: http://www.api.org/~/media/Files/EHS/climate-change/2009_GHG_COMPENDIUM.pdf.

[2] Global warming potentials are from Table 1 of SCAQMD Rule 2700.

Alternative 2: TAC Emissions During Standard Operation

TACs	Emission Factors[1] (lbs/MMscf)	Emissions Per CEB	
		lbs/day	lbs/yr
Benzene	0.159	0.006	2.0
Formaldehyde	1.169	0.041	15
PAH	0.003	0.0001	0.04
Naphthalene	0.011	0.0004	0.1
Acetaldehyde	0.043	0.002	0.5
Acrolein	0.010	0.0004	0.1
Ethylbenzene	1.444	0.051	18
Hexane	0.029	0.001	0.4
Toluene	0.058	0.002	0.7
Xylene	0.029	0.001	0.4

[1] Emission factors are from SCAQMD Reporting Procedures for AB2588 Facilities Reporting their Quadrennial Air Toxic Emission Inventory, December 2014.

Conversion Factors	
1353	Btu/scf
1070	Btu/scf
365	day/yr, operation
2.2	lbs/kg
34	MW of H_2S
379	scf/lb-mol
64	MW of SO_x
60	min/day
24	hrs/day
2204	lbs/MT
1000	kg/metric ton
453.59	g/lb
28.32	L/scf

Table B-13. 400 Block Oil/Water/Gas Separation System Fugitive Operational Emissions

Project: Oil/Water/Gas Separation System Fugitive VOC Emissions

Estimated Components for the Oil/Water/Gas Separation System[1]	Quantity[1]	Non-Leakers[1]		Leakers[1]		Non-Leakers <10,000 ppm[1]		Leakers >10,000 ppm[1]		THC and VOC Emissions			
		Percent of Total	Non-Leakers Components	Percent of Total	Leakers Components	Emission Factors[2] (lb/hr/comp)	Adjusted Emission Factors (lb/hr/comp x 1.2)	Emission Factors[2] (lb/hr/comp)	Adjusted Emission Factors (lb/hr/comp x 1.2)	Non-Leakers Daily Emissions (lbs/day)	Leakers Daily Emissions (lbs/day)	Daily Emissions (lbs/day)	Annual Emissions (lbs/yr)
Valves in Gas/Light Liquid Service	401	99.94%	401	0.06%	0.26	7.70E-05	9.24E-05	3.00E-01	3.60E-01	0.89	2.24	3.13	1,143
Valves in Light Crude Oil Service	401	99.94%	401	0.06%	0.26	4.20E-05	5.04E-05	1.60E-01	1.92E-01	0.48	1.20	1.68	614
Connectors in Gas/Light Liquid Service	451	99.94%	451	0.06%	0.29	2.60E-05	3.12E-05	5.70E-02	6.84E-02	0.34	0.48	0.82	298
Connectors in Light Crude Oil Service	451	99.94%	451	0.06%	0.29	2.20E-05	2.64E-05	5.10E-02	6.12E-02	0.29	0.43	0.71	261
Flanges in Gas/Light Liquid Service	479	99.94%	479	0.06%	0.31	6.20E-05	7.44E-05	1.30E-01	1.56E-01	0.85	1.16	2.02	736
Flanges in Light Crude Oil Service	479	99.94%	479	0.06%	0.31	5.30E-05	6.36E-05	5.70E-01	6.84E-01	0.73	5.09	5.82	2,125
Pressure Relief Valves in Gas Service	34	99.94%	34	0.06%	0.02	3.20E-04	3.84E-04	3.00E-01	3.60E-01	0.31	0.19	0.50	184
Pumps in Light Liquid Service	23	99.94%	23	0.06%	0.01	2.20E-03	2.64E-03	2.00E-01	2.40E-01	1.46	0.09	1.54	563
Compressors in Gas Service	2	99.94%	2	0.06%	0.00	3.20E-04	3.84E-04	3.00E-01	3.60E-01	0.02	0.01	0.03	11
Others in Gas/Light Liquid Service	42	99.94%	42	0.06%	0.03	3.20E-04	3.84E-04	3.00E-01	3.60E-01	0.39	0.23	0.62	227
Others in Light Crude Oil Service	41	99.94%	41	0.06%	0.03	2.90E-04	3.48E-04	1.60E-02	1.92E-02	0.34	0.01	0.35	129
									Total THC Emissions	**6.10**	**11.13**	**17.23**	**6,290**
									Total VOC Emissions[3]	**2.99**	**5.46**	**8.45**	**3,084**

[1.] Information provided by Breitburn. Assumes leak rate equivalent to 700 Block as there is no existing inspection data.

[2.] Emission factors are from Table IV-2c of the SCAQMD Guidelines for Fugitive Emissions Calculations, June 2003.

[3.] Based on a recent gas analysis result that 49.03% of total hydrocarbons is non-methane hydrocarbons.

Project: Oil/Water/Gas Separation System Fugitive TAC Emissions

TACs	Vapor Weight (% of VOC)[1]	Daily Emissions (lbs/day)	Annual Emissions (lbs/yr)
Hexane	0.40%	0.03	12.3
Benzene	0.60%	0.05	18.5
Ethylbenzene	0.40%	0.03	12.3
Toluene	1.00%	0.08	30.8
Xylene	1.40%	0.12	43.2

[1.] Vapor weight percentages of VOC emissions are assumed to be equal to the liquid weight percentages from the default crude oil speciation profile in the USEPA TANKS 4.0.9d program.

Project: Oil/Water/Gas Separation System GHG Emissions

Source	VOC Emissions (lbs/yr)	Ratio of CH_4 to VOC[1]	Global Warming Potential[2]	CO_2e Emissions (MT/yr)
Oil/Water/Gas Separation System Components	3,084	1.04	21	30.6

[1.] Based on a recent gas analysis result that 49.03% of total hydrocarbons is non-methane hydrocarbons.

[2.] Global warming potential is from Table 1 of SCAQMD Rule 2700.

Table B-14. 400 Block WEMCO Separators Operational Emissions

Project: WEMCO Separators VOC Emissions

Source	Process Water Throughput Per Unit[1] (MMgal/day)	VOC Emission Factor[1] (lbs/MMgal)	Uncontrolled VOC Emissions Per Unit (lbs/day/unit)	Control Efficiency[1]	Controlled VOC Emissions Per Unit (lbs/day/unit)	# of Units	Daily Controlled VOC Emissions (lbs/day)	Annual Controlled VOC Emissions (lbs/yr)
WEMCO Separators	4.116	6.91	28.44	95%	1.42	2	2.84	1,038

1. Based on WEMCO manufacturer's specifications

Project: WEMCO Separators TAC Emissions

TACs	Vapor Weight (% of VOC)[1]	Daily Emissions (lbs/day)	Annual Emissions (lbs/yr)
Hexane	0.40%	0.01	4.2
Benzene	0.60%	0.02	6.2
Ethylbenzene	0.40%	0.01	4.2
Toluene	1.00%	0.03	10.4
Xylene	1.40%	0.04	14.5

1. Vapor weight percentages of VOC emissions are assumed to be equal to the liquid weight percentages from the default crude oil speciation profile in the USEPA TANKS 4.0.9d program.

Project: WEMCO Separators GHG Emissions

Source	VOC Emissions (lbs/yr)	Ratio of CH_4 to VOC[1]	Global Warming Potential[2]	CO_2e Emissions (MT/yr)
WEMCO Separators	1,038	1.04	21	10.3

1. Based on a recent gas analysis result that 49.03% of total hydrocarbons is non-methane hydrocarbons.

2. Global warming potential is from Table 1 of SCAQMD Rule 2700.

Table B-15. 400 Block Tank Farm Operational Emissions

Project: Tank Farm VOC Emissions

Location	Tank	Contents	Volume (gal)	Turnovers (#/yr)	Throughput (gal/yr)	VOC Emissions			Control Efficiency	Daily Controlled VOC Emissions (lbs/day)	Annual Controlled VOC Emissions (lbs/yr)
						Working Loss[1] (lbs/yr)	Breathing Loss[1] (lbs/yr)	Total Uncontrolled Emissions (lbs/yr)			
O/W/G system	Oil	crude oil	88,128	12	1,057,537	3,177.03	1,190.03	4,367.06	95%	0.60	218
WW treat/inj system	Surge 1	produced water	316,039	4	1,264,156	3,797.75	2,911.78	6,709.53		0.92	335
WW treat/inj system	Surge 2	produced water	82,752	4	331,008	994.41	986.02	1,980.43		0.27	99
WW treat/inj system	Clarifier	produced water	316,039	4	1,264,156	3,797.75	2,911.78	6,709.53		0.92	335
Slop tank	Slop	crude oil/slop	4,171	12	50,049	150.36	165.24	315.60		0.04	16
Total VOC Emissions:						**11,917**	**8,165**	**20,082**		**2.75**	**1,004**

1. Working and breathing losses are calculated using the EPA TANKS 4.0.9d program.

Project: Tank Farm TAC Emissions

Location	Tank	Contents	Uncontrolled TAC Emissions[1] (lbs/yr)					Control Efficiency	Controlled TAC Emissions (lbs/yr)				
			Benzene	Ethylbenzene	Hexane	Toluene	Xylene		Benzene	Ethylbenzene	Hexane	Toluene	Xylene
O/W/G system	Oil	crude oil	46.92	3.07	50.56	22.71	8.98	95%	2.35	0.15	2.53	1.14	0.45
WW treat/inj system	Surge 1	produced water	72.08	4.72	77.67	34.89	13.8		3.60	0.24	3.88	1.74	0.69
WW treat/inj system	Surge 2	produced water	21.28	1.39	22.93	10.3	4.07		1.06	0.07	1.15	0.52	0.20
WW treat/inj system	Clarifier	produced water	72.08	4.72	77.67	34.89	13.8		3.60	0.24	3.88	1.74	0.69
Slop tank	Slop	crude oil/slops	3.39	0.22	3.65	1.64	0.65		0.17	0.01	0.18	0.08	0.03
Total TAC Emissons:			**215.75**	**14.12**	**232.48**	**104.43**	**41.3**		**10.79**	**0.71**	**11.62**	**5.22**	**2.07**

1. TAC emissions are calculated using the EPA TANKS 4.0.9d program.

Project: Tank Farm GHG Emissions

Sources	VOC Emissions (lbs/yr)	Ratio of CH_4 to VOC[1]	Global Warming Potential[2]	CO_2e Emissions (MT/yr)
Oil Tank	218	1.04	21	2.2
Surge 1 Tank	335	1.04	21	3.3
Surge 2 Tank	99	1.04	21	1.0
Clarifier Tank	335	1.04	21	3.3
Slop Tank	16	1.04	21	0.2
Total GHG Emissions:				**10.0**

1. Based on a recent gas analysis result that 49.03% of total hydrocarbons is non-methane
2. Global warming potential is from Table 1 of SCAQMD Rule 2700.

Table B-15. 400 Block Tank Farm Operational Emissions

Project: 400 Block Wet Solids Removal Truck Trip Parameters

Maximum trucks/month	13 trucks/month
Maximum trucks/year	156 trucks/year
One-way distance traveled per truck[1]	75.3 mi/truck

[1.] Distance between the 400 Block Facility and Anterra Oilfield Waste Support Services.

Project: 400 Block Wet Solids Removal Truck Trip GHG Emissions

Greenhouse Gases	2015 Calendar Year Emission Factors[1,2] (g/mile)	Annual Off-site Emissions (MT/yr)	Gobal Warming Potentials[3]	Annual Off-site CO_2e Emissions (MT/yr)
	Annual			
CO_2	1,675	39.4	1	39.4
CH_4[4]	0.011	0.0003	21	0.01
N_2O[5]	0.058	0.0014	310	0.4
Total				39.8

[1.] Emission factors for trucks in SCAB were obtained from EMFAC2011.

[2.] The vacuum trucks were assumed to correspond to the T7 CAIRP EMFAC2011 vehicle category.

[3.] Global warming potentials are from Table 1 of SCAQMD Rule 2700.

[4.] CH_4 emission factor is calculated according to the CARB EMFAC2011 Frequently Asked Questions as follows: CH_4 = 0.0408 * TOG
http://www.arb.ca.gov/msei/emfac2011-faq.htm#emfac2011_web_db_qstn07

[5.] N_2O emission factor is calculated as follows:
g N_2O/mile = 0.3316 g N_2O/gal diesel × 95.2 gal diesel/ton CO_2 × ton/g × g CO_2/mile
The 0.3316 g/gal factor comes from the CARB EMFAC2011 Frequently Asked Questions
http://www.arb.ca.gov/msei/emfac2011-faq.htm#emfac2011_web_db_qstn07.
The 95.2 gal/ton factor is derived from the SCAB 2015 calendar year EMFAC2011 emissions output for T7 CAIRP trucks.

Conversion Factors	
365	day/yr
2.2	lbs/kg
24	hrs/day
1,000	kg/metric ton
42	gal/bbl

Table B-16. Drilling Emissions

Project: Drilling Criteria Pollutant Emissions[1]

Drilling Phase	VOC Emissions[2] (lb/day)	NO_x Emissions (lb/day)	SO_x Emissions (lb/day)	CO Emissions (lb/day)	PM Emissions (lb/day)
Move-In	1.22	15.76	2.83E-02	12.72	1.10
Drilling 1[3]	20.43	250.63	0.47	105.07	8.12
Drilling 2[4]	31.51	378.67	0.68	151.29	11.89
Move-Out	1.22	15.76	2.83E-02	12.72	1.10
Max Daily Emissions	**31.51**	**378.67**	**0.68**	**151.29**	**11.89**

[1] Emissions from drilling activities were calculated using CalEEMod. The exact drilling schedule may differ from what was assumed in CalEEMod.

[2] ROG as defined by CalEEMod is assumed to be equal to VOC as defined by SCAQMD.

[3] The "Drilling 1" phase encompasses the first 10 days of drilling.

[4] The "Drilling 2" phase encompasses the second 10 days of drilling.

Project: Drilling GHG Emissions[1]

Drilling Phase	CO_2e Emissions (MT/yr)
Move-In	2.56
Drilling 1[3]	233.48
Drilling 2[4]	342.58
Move-Out	2.56
Total GHG Emissions	**581.19**

[1] Emissions from drilling activities were calculated using CalEEMod. The exact drilling schedule may differ from what was assumed in CalEEMod.

[2] ROG as defined by CalEEMod is assumed to be equal to VOC as defined by SCAQMD.

[3] The "Drilling 1" phase encompasses the first 10 days of drilling.

[4] The "Drilling 2" phase encompasses the second 10 days of drilling.

Project: Drilling Equipment Fuel Consumption

Duration (days)	Minimum Fuel Consumption (gal)	Maximum Fuel Consumption (gal)
20	8000	8400

[1.] Typical drilling schedule and fuel consumption for drilling a well of 9000 feet using a Kenai Drill Rig #15. Information provided by Kenai Drilling.

Project: Drilling Equipment

Drilling Phase	Equipment[1]	Quantity[1]	Horsepower[1]	Load Factor[2]	Maximum Fuel Consumption[3] (gal)
Drilling 1[4]	Drill Rig Engine	2	540	50%	3397
	Generator	1	475	74%	
	Mud Pump Engine	2	540	74%	
Drilling 2[5]	Drill Rig Engine	2	540	50%	5003
	Generator	1	475	74%	
	Mud Pump Engine	4	540	74%	

[1] Information provided by Kenai Drilling.

[2] Load factors are the CalEEMod default values.

[3] The maximum fuel consumption for each phase is calculated based on the ratio of the total equipment rating at the corresponding loads.

[4] The "Drilling 1" phase encompasses the first 10 days of drilling.

[5] The "Drilling 2" phase encompasses the second 10 days of drilling.

Project: Drilling TAC Emissions

TACs	Emission Factors[1] (lbs/Mgal)	Maximum Daily Emissions[2] lbs/day
Benzene	0.1863	0.09
1,3-Butadiene	0.2174	0.11
Cadmium	0.0015	0.001
Formaldehyde	1.7261	0.86
Hexavalent Chromium	0.0001	0.00005
Arsenic	0.0016	0.001
Lead	0.0083	0.004
Nickel	0.0039	0.002
PAH	0.0559	0.03
Ammonia	0.8000	0.40

[1.] Emission factors are the SCAQMD default emission factors for diesel internal combustion engines available in the AER Help and Support. The ammonia emission factor is for equipment without SCR or SNCR.

[2.] Maximum daily emissions are calculated for the "Drilling 2" phase because the equipment in this phase consumes the most amount of fuel. Constant daily fuel consumption is assumed over the 10 days of the "Drilling 2" phase.

Table B-17. Drilling Assumptions[1]

Construction Phase	Duration	Operating Schedule (days/week)	# Worker Trips/Day	# Vendor Trips/Day	Total # Haul Trucks/Day
Move-In[2]	2 days	5	20	0	12
Drilling - 1st 10 days[3]	10 days	7	20	0	12
Drilling - 2nd 10 days[3]	10 days	7	20	0	12
Move-Out[2]	2 days	5	20	0	12

Equipment

Construction Phase	Equipment Type	CalEEMod Equipment Type	# of each Equipment Type	Rating (hp)	Load Factor[4] (%)	Operating hours/day	Fuel Type
Move-In[2]	Crane	Crane	1	300	29%	8	diesel
Drilling - 1st 10 days[3]	Generator	Generator Set	1	475	74%	24	diesel
	Drawworks Engine	Bore/Drill Rig	2	540	50%	24	diesel
	Mud Pump Engine	Pump	2	540	74%	24	diesel
Drilling - 2nd 10 days[3]	Generator	Generator Set	1	475	74%	24	diesel
	Drawworks Engine	Bore/Drill Rig	2	540	50%	24	diesel
	Mud Pump Engine	Pump	4	540	74%	24	diesel
Move-Out[2]	Crane	Crane	1	300	29%	8	diesel

Notes:

[1] Information provided by Kenai Drilling.

[2] Move-in and move-out phases are the same.

[3] Drilling is split into (2) 10-day periods; the only difference is that the second half has all 4 mud pump engines running at once, while the first half only has 2 mud pump engines running at a time.

[4] Load factors are based on CalEEMod defaults.

Table B-18. Microturbine Emissions

Cumulatives: Addition of 14 Microturbines

Total # of Microturbines	14
Rating of each Microturbine	65 kW
Fuel Usage for 14 Microturbines	225,000 scf/day

Cumulatives: 14 Microturbines Criteria Pollutant Emissions

Pollutant	Emission Factors	Emissions for All 14 Microturbines	
		(lbs/day)	(lbs/yr)
VOC	1.0 lb/MW-hr	21.8	7,972
NO_x	0.5 lb/MW-hr	10.9	3,986
CO	6.0 lb/MW-hr	131	47,830
PM	6.73 lb/MMscf	1.5	553
SO_x	40 ppm H_2S	1.5	555

[1.] VOC, NO_x and CO emissions factors are from the CARB Certification for Capstone C65 Microturbines (Executive Order DG-030 A). The PM emission factor is the default emission factor from the SCAQMD AER Help and Support. The SO_x emission factor is assumed based on a maximum concentration of 40 ppm H_2S from Rule 431.1.

Cumulatives: 14 Microturbines GHG Emissions

Pollutant	Emission Factors[1] (lbs/MMscf)	Emissions (MT/yr)	Global Warming Potentials[2]	CO_2e Emissions (MT/yr)
CH_4	2.3	0.086	21	1.8
N_2O	2.2	0.082	310	25.4
CO_2	120,000	4,471	1	4,471
			Total CO_2e Emissions:	**4,499**

[1.] Emission factors are from AP-42, Chapter 1.4

[2.] Global warming potentials are from Table 1 of SCAQMD Rule 2700.

Cumulatives: 14 Microturbines TAC Emissions

TACs	Emission Factors[1] (lbs/MMscf)	Daily Emissions (lbs/day)	Annual Emissions (lbs/yr)
Benzene	0.0122	0.0027	1.0
1,3-Butadiene	0.000439	0.0001	0.04
Formaldehyde	0.724	0.16	59.5
PAH	0.000918	0.0002	0.1
Naphthalene	0.00133	0.0003	0.1
Acetaldehyde	0.0408	0.0092	3.4
Acrolein	0.00653	0.0015	0.5
Ammonia	3.200	0.72	262.8
Ethylbenzene	0.0326	0.0073	2.7
Propylene oxide	0.0296	0.0067	2.4
Toluene	0.133	0.030	10.9
Xylene	0.0653	0.015	5.4

[1.] Emission factors are from SCAQMD Reporting Procedures for AB2588 Facilities for Reporting their Quadrennial Air Toxic Emission Inventory, December 2014. The ammonia emission factor is for equipment without SCR or SNCR.

Alternative 3: Addition of 175 Microturbines

Total # of Microturbines	175
Fuel Usage for 175 Microturbines	2,812,500 scf/day

Conversion Factors	
1353	Btu/scf
365	day/yr, operation
2.2	lbs/kg
453.59	g/lb
379	scf/lb-mol
64	MW of SO_x
60	min/hr
24	hrs/day
2204	lbs/MT
1000	kg/metric ton
1,000,000	Btu/MMBtu
42	gal/bbl
2000	lb/ton

Table B-19. Summary of Total Construction Criteria Air Pollutant Emissions (Peak Day, Regional)

Year[1]	Activity	Construction Phase	VOC[2]	NO_x	CO	SO_2	PM_{10} Total	$PM_{2.5}$ Total
			Maximum (lbs/day)					
2015	Main Facility (700 Block) Construction	Construction (bulk truck loading, thermal oxidizer modification, O/G/W modification)	0.65	1.93	2.10	0.003	0.16	0.16
	4 CEBs	Grading	0.93	9.03	5.90	0.01	0.68	0.57
		Installation of 4 CEBs	1.35	8.72	5.85	0.01	2.85	0.76
	Total Daily Emissions (700 Block construction, 4 CEBs)		2.92	19.68	13.85	0.02	3.70	1.49
2016	400 Block Reinjection Facility Construction	Site Preparation	0.50	6.71	6.26	0.02	10.00	1.18
		Grading 1[3]	2.53	29.17	15.71	0.03	3.87	1.68
		Grading 2[4]	0.002	0.003	0.04	0.00004	7.46	0.75
		Construction 1[5]	5.26	45.33	26.26	0.07	13.92	3.24
		Construction 2[6]	0.66	6.97	3.41	0.004	2.67	0.58
Maximum Daily Emissions[7]			5	45	26	0.1	14	3
SCAQMD Threshold[8]			75	100	550	150	150	55
Above Threshold?			**No**	**No**	**No**	**No**	**No**	**No**

Notes:

[1] The exact construction schedule may vary from what was assumed in CalEEMod.

[2] ROG as defined by CalEEMod is assumed to be equal to VOC as defined by SCAQMD.

[3] The 3/4-ton pickup trucks would not operate on the same days as the rest of the construction equipment for the Grading phase. The "Grading 1" phase includes all of the construction equipment except for the 3/4-ton pickup trucks.

[4] The 3/4-ton pickup trucks would not operate on the same days as the rest of the construction equipment for the Grading phase. The "Grading 2" phase includes only the 3/4-ton pickup trucks.

[5] The 60-ton crane and boom truck would not operate on the same days as the rest of the construction equipment for the Construction phase. The "Construction 1" phase includes all of the construction equipment except for the 60-ton crane and boom truck.

[6] The 60-ton crane and boom truck would not operate on the same days as the rest of the construction equipment for the Construction phase. The "Construction 2" phase includes only the 60-ton crane and boom truck.

[7] For the purposes of finding the maximum daily emissions, the grading and installation of 4 CEBs and 700 Block construction of bulk loading, etc. are assumed to overlap; the 400 Block phases are assumed not to overlap.

[8] SCAQMD CEQA significance thresholds.

Abbreviations:

CEQA - California Environmental Quality Act
CO - carbon monoxide
lbs - pounds
NO_x - nitrogen oxides
PM_{10} - particulate matter of 10 microns in diameter or smaller
$PM_{2.5}$ - particulate matter of 2.5 microns in diameter or smaller
ROG - reactive organic gas
SCAQMD - South Coast Air Quality Management District
SO_2 - sulfur dioxide
VOC - volatile organic compound

Reference:

[1] SCAQMD air quality CEQA significance thresholds. Available at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2. Accessed: January 2015.

Table B-20. Summary of On-Site Construction Criteria Air Pollutant Emissions (Peak Day, Local)

Activity	Construction Phase	Year[1]	NO_x	CO	PM_{10} Total	$PM_{2.5}$ Total
			Maximum (lbs/day)			
Main Facility (700 Block) Construction	Construction (bulk truck loading, thermal oxidizer modification, O/G/W modification)	2015	1.9	2.1	0.2	0.2
4 CEBs	Grading	2015	8.9	5.3	0.6	0.5
	Installation of 4 CEBs	2015	8.6	5.3	2.8	0.7
Total Daily Emissions (700 Block Bulk Truck Loading Construction, 4 CEBs)		2015	19.4	12.7	3.5	1.4
SCAQMD Localized Significance Threshold[2]			80	571	4	3
Above Threshold?			**No**	**No**	**No**	**No**
400 Block Reinjection Facility Construction	Site Preparation	2016	0.02	0.05	9.3	0.9
	Grading 1[3]	2016	28.9	14.5	3.7	1.6
	Grading 2[4]	2016	0.003	0.04	7.5	0.7
	Construction 1[5]	2016	**44.2**	**23.3**	**13.5**	**3.1**
	Construction 2[6]	2016	7.0	3.4	2.7	0.6
Maximum Daily Emissions (All 400 Block Phases)		2016	44.2	23.3	13.5	3.1
SCAQMD Localized Significance Threshold[7]			111	1,082	21	6
Above Threshold?			**No**	**No**	**No**	**No**

Notes:

[1] The exact construction schedule may vary from what was assumed in CalEEMod.

[2] SCAQMD CEQA localized significance thresholds (LSTs) for a 1 acre site in Southeast LA County at a 25 m receptor distance.

[3] The 3/4-ton pickup trucks would not operate on the same days as the rest of the construction equipment for the Grading phase. The "Grading 1" phase includes all of the construction equipment except for the 3/4-ton pickup trucks.

[4] The 3/4-ton pickup trucks would not operate on the same days as the rest of the construction equipment for the Grading phase. The "Grading 2" phase includes only the 3/4-ton pickup trucks.

[5] The 60-ton crane and boom truck would not operate on the same days as the rest of the construction equipment for the Construction phase. The "Construction 1" phase includes all of the construction equipment except for the 60-ton crane and boom truck.

[6] The 60-ton crane and boom truck would not operate on the same days as the rest of the construction equipment for the Construction phase. The "Construction 2" phase includes only the 60-ton crane and boom truck.

[7] SCAQMD CEQA localized significance thresholds (LSTs) for a 2 acre site in Southeast LA County at a 50 m receptor distance.

Abbreviations:

CEQA - California Environmental Quality Act
CO - carbon monoxide
lbs - pounds
NO_x - nitrogen oxides
PM_{10} - particulate matter of 10 microns in diameter or smaller
$PM_{2.5}$ - particulate matter of 2.5 microns in diameter or smaller
ROG - reactive organic gas
SCAQMD - South Coast Air Quality Management District
SO_2 - sulfur dioxide
VOC - volatile organic compound

Reference:

[1] SCAQMD air quality CEQA localized significance thresholds. Available at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/appendix-c-mass-rate-lst-look-up-tables.pdf?sfvrsn=2. Accessed: December 2014.

Table B-21. Annual GHG Emissions from Construction and Related Activities

Construction Activity	Construction Phase	Year[1]	Off-road Equipment[2]	On-road Vehicles	Total
			CO_2e Emissions (MT/year)		
Main Facility (700 Block) Construction	Construction (bulk truck loading, thermal oxidizer modification, O/G/W modification)	2015	1.1	0.0	1.1
4 CEBs	Grading	2015	3.6	0.5	4.1
	Installation of 4 CEBs	2015	8.7	1.3	10.1
400 Block Reinjection Facility Construction	Site Preparation	2016	0.05	9.4	9.5
	Grading 1[3]	2016	13.0	1.2	14.1
	Grading 2[4]	2016	0.03	0.0	0.03
	Construction 1[5]	2016	309.4	27.4	336.8
	Construction 2[6]	2016	20.9	0.0	20.9
				Total for All Construction (MT CO_2e)	**396.5**
				30-year Amortized (MT/year CO_2e)	**13.2**

Notes:

[1] The exact construction schedule may vary from what was assumed in CalEEMod.

[2] The off-road equipment category also includes on-road vehicles that primarily travel onsite (pickup trucks, water trucks, boom trucks)

[3] The 3/4-ton pickup trucks would not operate on the same days as the rest of the construction equipment for the Grading phase. The "Grading 1" phase includes all of the construction equipment except for the 3/4-ton pickup trucks.

[4] The 3/4-ton pickup trucks would not operate on the same days as the rest of the construction equipment for the Grading phase. The "Grading 2" phase includes only the 3/4-ton pickup trucks.

[5] The 60-ton crane and boom truck would not operate on the same days as the rest of the construction equipment for the Construction phase. The "Construction 1" phase includes all of the construction equipment except for the 60-ton crane and boom truck.

[6] The 60-ton crane and boom truck would not operate on the same days as the rest of the construction equipment for the Construction phase. The "Construction 2" phase includes only the 60-ton crane and boom truck.

Abbreviations:

CO_2e - carbon dioxide equivalent

GHG - greenhouse gas

MT - metric tonnes

Table B-22. Incremental Criteria and GHG Emissions from Operational Equipment and Drilling for the Project

Proposed Project Phases		Baseline Emissions						Project and Related Emissions						Incremental Emissions					
		VOC	NO_x	SO_x	CO	PM	CO_2e	VOC	NO_x	SO_x	CO	PM	CO_2e	VOC	NO_x	SO_x	CO	PM	CO_2e[1]
		(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(MT/yr)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(MT/yr)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(MT/yr)
Main Facility	Truck Trips	0.11	2.74	0.01	0.54	0.09	113	0.65	14.77	0.04	3.33	0.55	742	0.54	12.02	0.04	2.79	0.46	629
	Truck Idling	0.004	0.04	0.00004	0.03	0.0002	0.6	0.03	0.24	0.0003	0.17	0.001	4.2	0.02	0.20	0.0002	0.15	0.001	3.5
	Truck Loading Operations	1.59	0.00	0.00	0.00	0.00	5.8	10.42	0.00	0.00	0.00	0.00	37.7	8.82	0.00	0.00	0.00	0.00	32.0
	Truck Loading System Fugitives	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.00	1.4	0.40	0.00	0.00	0.00	0.00	1.4
400 Block Flares	Existing Flare / 4 CEBs	2.25	41.78	0.19	11.25	2.41	11,166	15.91	68.19	18.91	28.03	6.99	75,752	13.66	26.40	18.72	16.78	4.58	64,586
400 Block Reinjection Facility	O/W/G Separation System Fugitives	0.00	0.00	0.00	0.00	0.00	0.00	8.45	0.00	0.00	0.00	0.00	30.6	8.45	0.00	0.00	0.00	0.00	30.6
	WEMCOs	0.00	0.00	0.00	0.00	0.00	0.00	2.84	0.00	0.00	0.00	0.00	10.3	2.84	0.00	0.00	0.00	0.00	10.3
	Tank Farm	0.00	0.00	0.00	0.00	0.00	0.00	2.75	0.00	0.00	0.00	0.00	10.0	2.75	0.00	0.00	0.00	0.00	10.0
	Wet Solids Removal Truck Trips[3]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.8	0.00	0.00	0.00	0.00	0.00	39.8
Total Equipment Operational Emissions		**3.95**	**44.57**	**0.20**	**11.81**	**2.50**	**11,285**	**41.44**	**83.20**	**18.96**	**31.54**	**7.54**	**76,627**	**37.49**	**38.63**	**18.76**	**19.72**	**5.04**	**65,342**
SCAQMD Significance Threshold (lb/day)														*55*	*55*	*150*	*550*	*55*	*10,000*
SCAQMD Significance Threshold Exceeded?														***NO***	***NO***	***NO***	***NO***	***NO***	***YES***
Maximum Incremental Drilling Emissions *		NA	NA	NA	NA	NA	NA	31.51	378.67	0.68	151.29	11.89	581	31.51	378.67	0.68	151.29	11.89	581
Total Operational and Drilling Emissions		**3.95**	**44.57**	**0.20**	**11.81**	**2.50**	**11,285**	**72.96**	**461.87**	**19.63**	**182.83**	**19.43**	**77,209**	**69.00**	**417.30**	**19.44**	**171.02**	**16.93**	**65,923**
SCAQMD Significance Threshold (lb/day)														55	55	150	550	55	10,000
SCAQMD Significance Threshold Triggered?														**YES**	**YES**	**NO**	**NO**	**NO**	**YES**
																			NO, after AB32 offsets[2]

* As discussed in the Initial Study, Section 1.5.4.1, Breitburn has established that it is possible to increase oil production enough to necessitate the proposed Project even without drilling any new wells. Nonetheless, the EIR will evaluate the potential impacts of drilling one new well at a time because it is reasonably foreseeable that Breitburn may drill new wells in the future to maintain or increase production as related to the operation of the newly proposed facilities (the proposed Project is located on an active oil field, where drilling and oil production

1. Construction GHG emissions are not included here but are very small (approximately 13 MT/yr).

2. Breitburn is required to offset all GHG emissions for some operational equipment and all drilling activities because existing annual GHG emissions exceed the AB 32 25,000 MT/yr threshold. The remaining incremental increase in GHG emissions for the proposed Project is related to construction and some operational emissions. The proposed Project is expected to result in less than significant impacts related to GHGs.

3. Wet solid removal truck trips will increase on an annual basis compared to the baseline. Peak daily truck trips will not increase compared to current operations and thus, peak day emissions for criteria pollutants will not change.

Table B-23. Incremental Criteria and GHG Emissions from Operational Equipment for Alternative 1: No Project

Alternative 1 Operations		Baseline Emissions						Alternative 1 Emissions[1]						Incremental Emissions					
		VOC	NO_x	SO_x	CO	PM	CO_2e	VOC	NO_x	SO_x	CO	PM	CO_2e	VOC	NO_x	SO_x	CO	PM	CO_2e
		(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(MT/yr)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(MT/yr)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(MT/yr)
Main Facility	Truck Trips	0.11	2.74	0.01	0.54	0.09	113	0.11	2.74	0.01	0.54	0.09	113	0.00	0.00	0.00	0.00	0.00	0
	Truck Idling	0.004	0.04	0.00004	0.03	0.0002	0.6	0.004	0.04	0.00004	0.03	0.0002	0.6	0.00	0.00	0.00	0.00	0.00	0
	Truck Loading Operations	1.59	0.00	0.00	0.00	0.00	5.8	1.59	0.00	0.00	0.00	0.00	5.8	0.00	0.00	0.00	0.00	0.00	0
400 Block	Existing Flare	2.25	41.78	0.19	11.25	2.41	11,166	2.25	41.78	0.19	11.25	2.41	11,166	0.00	0.00	0.00	0.00	0.00	0
Total Equipment Operational Emissions		**3.95**	**44.57**	**0.20**	**11.81**	**2.50**	**11,285**	**3.95**	**44.57**	**0.20**	**11.81**	**2.50**	**11,285**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0**
SCAQMD Significance Threshold (lb/day)														*55*	*55*	*150*	*550*	*55*	*10,000*
SCAQMD Significance Threshold Triggered?														***NO***	***NO***	***NO***	***NO***	***NO***	***NO***

[1.] Alternative 1 is the No Project scenario, where emissions are the same as in the Baseline.

Table B-24a. Incremental Criteria and GHG Emissions from Operational Equipment and Drilling for Alternative 2: Gas Reinjection System During Standard Operation of the Gas Reinjection System

Alternative 2 Operations		Baseline Emissions						Alternative 2 Emissions[1]						Incremental Emissions					
		VOC	NO_x	SO_x	CO	PM	CO_2e	VOC	NO_x	SO_x	CO	PM	CO_2e	VOC	NO_x	SO_x	CO	PM	CO_2e[2]
		(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(MT/yr)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(MT/yr)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(MT/yr)
Main Facility	Truck Trips	0.11	2.74	0.01	0.54	0.09	113	0.65	14.77	0.04	3.33	0.55	742	0.54	12.02	0.04	2.79	0.46	629
	Truck Idling	0.004	0.04	0.00004	0.03	0.0002	0.6	0.03	0.24	0.0003	0.17	0.001	4.2	0.02	0.20	0.0002	0.15	0.001	3.5
	Truck Loading Operations	1.59	0.00	0.00	0.00	0.00	5.8	10.42	0.00	0.00	0.00	0.00	37.7	8.82	0.00	0.00	0.00	0.00	32.0
	Truck Loading System Fugitives	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.00	1.4	0.40	0.00	0.00	0.00	0.00	1.4
400 Block Flares	Existing Flare / 4 CEBs	2.25	41.78	0.19	11.25	2.41	11,166	0.20	0.85	0.24	0.35	0.09	947	-2.05	-40.93	0.04	-10.90	-2.32	-10,219
400 Block Reinjection Facility	O/W/G Separation System Fugitives	0.00	0.00	0.00	0.00	0.00	0.00	8.45	0.00	0.00	0.00	0.00	30.6	8.45	0.00	0.00	0.00	0.00	30.6
	WEMCOs	0.00	0.00	0.00	0.00	0.00	0.00	2.84	0.00	0.00	0.00	0.00	10.3	2.84	0.00	0.00	0.00	0.00	10.3
	Tank Farm	0.00	0.00	0.00	0.00	0.00	0.00	2.75	0.00	0.00	0.00	0.00	10.0	2.75	0.00	0.00	0.00	0.00	10.0
	Wet Solids Removal Truck Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.8	0.00	0.00	0.00	0.00	0.00	39.8
Total Equipment Operational Emissions		**3.95**	**44.57**	**0.20**	**11.81**	**2.50**	**11,285**	**25.73**	**15.86**	**0.28**	**3.86**	**0.64**	**1,823**	**21.78**	**-28.71**	**0.08**	**-7.96**	**-1.87**	**-9,463**
SCAQMD Significance Threshold (lb/day)														*55*	*55*	*150*	*550*	*55*	*10,000*
SCAQMD Significance Threshold Exceeded?														***NO***	***NO***	***NO***	***NO***	***NO***	***NO***
Maximum Incremental Drilling Emissions *		NA	NA	NA	NA	NA	NA	31.51	378.67	0.68	151.29	11.89	581	31.51	378.67	0.68	151.29	11.89	581
Total Operational and Drilling Emissions		**3.95**	**44.57**	**0.20**	**11.81**	**2.50**	**11,285**	**57.24**	**394.53**	**0.96**	**155.15**	**12.52**	**2,404**	**53.29**	**349.97**	**0.76**	**143.33**	**10.02**	**-8,881**
SCAQMD Significance Threshold (lb/day)														55	55	150	550	55	10,000
SCAQMD Significance Threshold Triggered?														**NO**	**YES**	**NO**	**NO**	**NO**	**NO**
																			NO, after AB32 offsets[3]

* As discussed in the Initial Study, Section 1.5.4.1, Breitburn has established that it is possible to increase oil production enough to necessitate the proposed Project even without drilling any new wells. Nonetheless, the EIR will evaluate the potential impacts of drilling one new well at a time because it is reasonably foreseeable that Breitburn may drill new wells in the future to maintain or increase production as related to the operation of the newly proposed facilities (the proposed Project is located on an active oil field, where drilling and oil production are part of baseline operations).

1. For Alternative 2: Gas Reinjection System, the maximum scenario is when the gas reinjection system fails and the gas will be sent to the CEBs. The maximum daily emissions are the same as the maximum daily emissions from the Project. Because the gas reinjection system will be operational for most of the year, the annual GHG emissions from the CEBs will be between 0 and 75,752 MT/yr. Regardless of what the emissions are, the GHG emissions will still be insignificant because of AB 32 offsets.

2. Construction GHG emissions are not included here but are very small (approximately 13 MT/yr).

3. Breitburn is required to offset all GHG emissions for some operational equipment and all drilling activities because existing annual GHG emissions exceed the AB 32 25,000 MT/yr threshold. The remaining incremental increase in GHG emissions for the proposed Project is related to construction and some operational emissions. The proposed Project is expected to result in less than significant impacts related to GHGs.

Table B-24b. Incremental Criteria and GHG Emissions from Operational Equipment and Drilling for Alternative 2: Gas Reinjection System During Non-Operation of the Gas Reinjection System (e.g. maintenance, etc.)

Alternative 2 Operations		Baseline Emissions						Alternative 2 Emissions[1]						Incremental Emissions					
		VOC (lbs/day)	NO_x (lbs/day)	SO_x (lbs/day)	CO (lbs/day)	PM (lbs/day)	CO_2e (MT/yr)	VOC (lbs/day)	NO_x (lbs/day)	SO_x (lbs/day)	CO (lbs/day)	PM (lbs/day)	CO_2e (MT/yr)	VOC (lbs/day)	NO_x (lbs/day)	SO_x (lbs/day)	CO (lbs/day)	PM (lbs/day)	CO_2e[2] (MT/yr)
Main Facility	Truck Trips	0.11	2.74	0.01	0.54	0.09	113	0.65	14.77	0.04	3.33	0.55	742	0.54	12.02	0.04	2.79	0.46	629
	Truck Idling	0.004	0.04	0.00004	0.03	0.0002	0.6	0.03	0.24	0.0003	0.17	0.001	4.2	0.02	0.20	0.0002	0.15	0.001	3.5
	Truck Loading Operations	1.59	0.00	0.00	0.00	0.00	5.8	10.42	0.00	0.00	0.00	0.00	37.7	8.82	0.00	0.00	0.00	0.00	32.0
	Truck Loading System Fugitives	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.00	1.4	0.40	0.00	0.00	0.00	0.00	1.4
400 Block Flares	Existing Flare / 4 CEBs	2.25	41.78	0.19	11.25	2.41	11,166	15.91	68.19	18.91	28.03	6.99	75,752	13.66	26.40	18.72	16.78	4.58	64,586
400 Block Reinjection Facility	O/W/G Separation System Fugitives	0.00	0.00	0.00	0.00	0.00	0.00	8.45	0.00	0.00	0.00	0.00	30.6	8.45	0.00	0.00	0.00	0.00	30.6
	WEMCOs	0.00	0.00	0.00	0.00	0.00	0.00	2.84	0.00	0.00	0.00	0.00	10.3	2.84	0.00	0.00	0.00	0.00	10.3
	Tank Farm	0.00	0.00	0.00	0.00	0.00	0.00	2.75	0.00	0.00	0.00	0.00	10.0	2.75	0.00	0.00	0.00	0.00	10.0
	Wet Solids Removal Truck Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.8	0.00	0.00	0.00	0.00	0.00	39.8
Total Equipment Operational Emissions		**3.95**	**44.57**	**0.20**	**11.81**	**2.50**	**11,285**	**41.44**	**83.20**	**18.96**	**31.54**	**7.54**	**76,627**	**37.49**	**38.63**	**18.76**	**19.72**	**5.04**	**65,342**
SCAQMD Significance Threshold (lb/day)														*55*	*55*	*150*	*550*	*55*	*10,000*
SCAQMD Significance Threshold Exceeded?														***NO***	***NO***	***NO***	***NO***	***NO***	***YES***
Maximum Incremental Drilling Emissions *		NA	NA	NA	NA	NA	NA	31.51	378.67	0.68	151.29	11.89	581	31.51	378.67	0.68	151.29	11.89	581
Total Operational and Drilling Emissions		**3.95**	**44.57**	**0.20**	**11.81**	**2.50**	**11,285**	**72.96**	**461.87**	**19.63**	**182.83**	**19.43**	**77,209**	**69.00**	**417.30**	**19.44**	**171.02**	**16.93**	**65,923**
SCAQMD Significance Threshold (lb/day)														55	55	150	550	55	10,000
SCAQMD Significance Threshold Triggered?														**YES**	**YES**	**NO**	**NO**	**NO**	**YES**

NO, after AB32 offsets[3]
NO

* As discussed in the Initial Study, Section 1.5.4.1, Breitburn has established that it is possible to increase oil production enough to necessitate the proposed Project even without drilling any new wells. Nonetheless, the EIR will evaluate the potential impacts of drilling one new well at a time because it is reasonably foreseeable that Breitburn may drill new wells in the future to maintain or increase production as related to the operation of the newly proposed facilities (the proposed Project is located on an active oil field, where drilling and oil production are part of baseline operations).

1. For Alternative 2: Gas Reinjection System, the maximum scenario is when the gas reinjection system fails and the gas will be sent to the CEBs. The maximum daily emissions are the same as the maximum daily emissions from the Project. Because the gas reinjection system will be operational for most of the year, the annual GHG emissions from the CEBs will be between 0 and 75,752 MT/yr. Regardless of what the emissions are, the GHG emissions will still be insignificant because of AB 32 offsets.

2. Construction GHG emissions are not included here but are very small (approximately 13 MT/yr).

3. Breitburn is required to offset all GHG emissions for some operational equipment and all drilling activities because existing annual GHG emissions exceed the AB 32 25,000 MT/yr threshold. The remaining incremental increase in GHG emissions for the proposed Project is related to construction and some operational emissions. The proposed Project is expected to result in less than significant impacts related to GHGs.

Table B-25. Incremental Criteria and GHG Emissions from Operational Equipment and Drilling for Alternative 3: Additional Microturbines During Standard Operation of the Microturbines

Alternative 3 Operations		Baseline Emissions						Alternative 3 Emissions[1]						Incremental Emissions					
		VOC	NO_x	SO_x	CO	PM	CO_2e	VOC	NO_x	SO_x	CO	PM	CO_2e	VOC	NO_x	SO_x	CO	PM	CO_2e[2]
		(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(MT/yr)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(MT/yr)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(lbs/day)	(MT/yr)
Main Facility	175 Microturbines	0.00	0.00	0.00	0.00	0.00	0.00	273.00	136.50	19.00	1,638.00	18.93	56,233	273.00	136.50	19.00	1,638.00	18.93	56,233
	Truck Trips	0.11	2.74	0.01	0.54	0.09	113	0.65	14.77	0.04	3.33	0.55	742	0.54	12.02	0.04	2.79	0.46	629
	Truck Idling	0.004	0.04	0.00004	0.03	0.0002	0.6	0.03	0.24	0.0003	0.17	0.001	4.2	0.02	0.20	0.00	0.15	0.00	3.5
	Truck Loading Operations	1.59	0.00	0.00	0.00	0.00	5.8	10.42	0.00	0.00	0.00	0.00	37.7	8.82	0.00	0.00	0.00	0.00	32.0
	Truck Loading System Fugitives	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.00	1.4	0.40	0.00	0.00	0.00	0.00	1.4
400 Block Flares	Existing Flare / 0 CEBs	2.25	41.78	0.19	11.25	2.41	11,166	0.00	0.00	0.00	0.00	0.00	0	-2.25	-41.78	-0.19	-11.25	-2.41	-11,166
400 Block Reinjection Facility	O/W/G Separation System Fugitives	0.00	0.00	0.00	0.00	0.00	0.00	8.45	0.00	0.00	0.00	0.00	30.6	8.45	0.00	0.00	0.00	0.00	30.6
	WEMCOs	0.00	0.00	0.00	0.00	0.00	0.00	2.84	0.00	0.00	0.00	0.00	10.3	2.84	0.00	0.00	0.00	0.00	10.3
	Tank Farm	0.00	0.00	0.00	0.00	0.00	0.00	2.75	0.00	0.00	0.00	0.00	10.0	2.75	0.00	0.00	0.00	0.00	10.0
	Wet Solids Removal Truck Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.8	0.00	0.00	0.00	0.00	0.00	39.8
Total Equipment Operational Emissions		**3.95**	**44.57**	**0.20**	**11.81**	**2.50**	**11,285**	**298.53**	**151.51**	**19.04**	**1641.51**	**19.48**	**57,109**	**294.58**	**106.94**	**18.84**	**1,629.69**	**16.97**	**45,823**
SCAQMD Significance Threshold (lb/day)														*55*	*55*	*150*	*550*	*55*	*10,000*
SCAQMD Significance Threshold Exceeded?														***YES***	***YES***	***NO***	***YES***	***NO***	***YES***
Maximum Incremental Drilling Emissions *		NA	NA	NA	NA	NA	NA	31.51	378.67	0.68	151.29	11.89	581	31.51	378.67	0.68	151.29	11.89	581
Total Operational and Drilling Emissions		**3.95**	**44.57**	**0.20**	**11.81**	**2.50**	**11,285**	**330.05**	**530.18**	**19.72**	**1792.80**	**31.36**	**57,690**	**326.09**	**485.61**	**19.52**	**1,780.98**	**28.86**	**46,405**
SCAQMD Significance Threshold (lb/day)														55	55	150	550	55	10,000
SCAQMD Significance Threshold Triggered?														**YES**	**YES**	**NO**	**YES**	**NO**	**YES**
																			NO, after AB32 offsets[3]

* As discussed in the Initial Study, Section 1.5.4.1, Breitburn has established that it is possible to increase oil production enough to necessitate the proposed Project even without drilling any new wells. Nonetheless, the EIR will evaluate the potential impacts of drilling one new well at a time because it is reasonably foreseeable that Breitburn may drill new wells in the future to maintain or increase production as related to the operation of the newly proposed facilities (the proposed Project is located on an active oil field, where drilling and oil production are part of baseline operations).

1. The Alternative 3 scenario is the Project scenario with the addition of up to 175 microturbines and no CEBs operating. If the microturbines are not operating (e.g. maintenance, etc.), then the gas would go to the 4 CEBs and thus, emissions would be the same as the Project.

2. Construction GHG emissions are not included here but are very small (approximately 13 MT/yr).

3. Breitburn is required to offset all GHG emissions for some operational equipment and all drilling activities because existing annual GHG emissions exceed the AB 32 25,000 MT/yr threshold. The remaining incremental increase in GHG emissions for the proposed Project is related to construction and some operational emissions. The proposed Project is expected to result in less than significant impacts related to GHGs.

Table B-26. Incremental Criteria and GHG Emissions from Operational Equipment and Drilling for Cumulatives (14 Microturbines)

Proposed Project Phases		Baseline Emissions						Project and Related Emissions						Incremental Emissions					
		VOC (lbs/day)	NO_x (lbs/day)	SO_x (lbs/day)	CO (lbs/day)	PM (lbs/day)	CO_2e (MT/yr)	VOC (lbs/day)	NO_x (lbs/day)	SO_x (lbs/day)	CO (lbs/day)	PM (lbs/day)	CO_2e (MT/yr)	VOC (lbs/day)	NO_x (lbs/day)	SO_x (lbs/day)	CO (lbs/day)	PM (lbs/day)	CO_2e[1] (MT/yr)
Main Facility	14 Microturbines	0.00	0.00	0.00	0.00	0.00	0.00	21.84	10.92	1.52	131.04	1.51	4,499	21.84	10.92	1.52	131.04	1.51	4,499
	Truck Trips	0.11	2.74	0.01	0.54	0.09	113	0.65	14.77	0.04	3.33	0.55	742	0.54	12.02	0.04	2.79	0.46	629
	Truck Idling	0.004	0.04	0.00004	0.03	0.0002	0.6	0.03	0.24	0.0003	0.17	0.001	4.2	0.02	0.20	0.00	0.15	0.00	3.5
	Truck Loading Operations	1.59	0.00	0.00	0.00	0.00	5.8	10.42	0.00	0.00	0.00	0.00	37.7	8.82	0.00	0.00	0.00	0.00	32.0
	Truck Loading System Fugitives	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.00	0.00	0.00	0.00	1.4	0.40	0.00	0.00	0.00	0.00	1.4
400 Block Flares	Existing Flare / 4 CEBs	2.25	41.78	0.19	11.25	2.41	11,166	15.91	68.19	18.91	28.03	6.99	75,752	13.66	26.40	18.72	16.78	4.58	64,586
400 Block Reinjection Facility	O/W/G Separation System Fugitives	0.00	0.00	0.00	0.00	0.00	0.00	8.45	0.00	0.00	0.00	0.00	30.6	8.45	0.00	0.00	0.00	0.00	30.6
	WEMCOs	0.00	0.00	0.00	0.00	0.00	0.00	2.84	0.00	0.00	0.00	0.00	10.3	2.84	0.00	0.00	0.00	0.00	10.3
	Tank Farm	0.00	0.00	0.00	0.00	0.00	0.00	2.75	0.00	0.00	0.00	0.00	10.0	2.75	0.00	0.00	0.00	0.00	10.0
	Wet Solids Removal Truck Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.8	0.00	0.00	0.00	0.00	0.00	39.8
Total Equipment Operational Emissions		**3.95**	**44.57**	**0.20**	**11.81**	**2.50**	**11,285**	**63.28**	**94.12**	**20.48**	**162.58**	**9.06**	**81,126**	**59.33**	**49.55**	**20.28**	**150.76**	**6.55**	**69,841**
SCAQMD Significance Threshold (lb/day)														*55*	*55*	*150*	*550*	*55*	*10,000*
SCAQMD Significance Threshold Exceeded?														***YES***	***NO***	***NO***	***NO***	***NO***	***YES***
Maximum Incremental Drilling Emissions *		NA	NA	NA	NA	NA	NA	31.51	378.67	0.68	151.29	11.89	581	31.51	378.67	0.68	151.29	11.89	581
Total Operational and Drilling Emissions		**3.95**	**44.57**	**0.20**	**11.81**	**2.50**	**11,285**	**94.80**	**472.79**	**21.15**	**313.87**	**20.94**	**81,707**	**90.84**	**428.22**	**20.96**	**302.06**	**18.44**	**70,422**
SCAQMD Significance Threshold (lb/day)														55	55	150	550	55	10,000
SCAQMD Significance Threshold Triggered?														**YES**	**YES**	**NO**	**NO**	**NO**	**YES**
																			NO, after AB32 offsets[2]

* As discussed in the Initial Study, Section 1.5.4.1, Breitburn has established that it is possible to increase oil production enough to necessitate the proposed Project even without drilling any new wells. Nonetheless, the EIR will evaluate the potential impacts of drilling one new well at a time because it is reasonably foreseeable that Breitburn may drill new wells in the future to maintain or increase production as related to the operation of the newly proposed facilities (the proposed Project is located on an active oil field, where drilling and oil production are part of

1. Construction GHG emissions are not included here but are very small (approximately 13 MT/yr).

3. Breitburn is required to offset all GHG emissions for some operational equipment and all drilling activities because existing annual GHG emissions exceed the AB 32 25,000 MT/yr threshold. The remaining incremental increase in GHG emissions for the proposed Project is related to construction and some operational emissions. The proposed Project is expected to result in less than significant impacts related to GHGs.

Table B-27. Toxics Maximum Impact Locations – Project with Drilling

	Health Effect	Risk or Hazard Index	Significance Threshold	Exceeds Threshold?	ID	UTM_X	UTM_Y
MEIR	Cancer	1.13E-06	1.00E-05	NO	R-84	400900	3756000
MEIW	Cancer	6.14E-07	1.00E-05	NO	W-473	401350	3756700
MEIR	Chronic	0.00	1.00	NO	R-84	400900	3756000
MEIW	Chronic	0.01	1.00	NO	W-473	401350	3756700
PMI	Acute	0.07	1.00	NO	B-72	402104	3755848
MEIR	Acute	0.01	1.00	NO	R-19	401650	3756150
MEIW	Acute	0.04	1.00	NO	W-472	401300	3756700

Table B-28. Ambient Air Quality Standards for Criteria Pollutants – Project with Drilling

Pollutant	Averaging Time	Background Concentration[1]	Incremental Concentration[2]	Total Concentration[3]	Ambient Air Quality Standard[4]		Exceeds Standard?
NO_2 [5]	1-Hour	85 ppb	19 ppb	104 ppb	180 ppb	CAAQS	NO
		53.3 ppb	19 ppb	72 ppb	100 ppb	NAAQS (98th percentile)	NO
	Annual	14.8 ppb	0.8 ppb	16 ppb	30 ppb	CAAQS	NO
					53.4 ppb	NAAQS	NO
PM_{10} [6]	24-Hour	--	3.5 ug/m^3	--	2.5 ug/m^3	SCAQMD	YES
	Annual	--	0.0 ug/m^3	--	1.0 ug/m^3	SCAQMD	NO
$PM_{2.5}$ [6]	24-Hour	--	3.5 ug/m^3	--	2.5 ug/m^3	SCAQMD	YES
SO_2 [6]	1-Hour	6.3 ppb	5.9 ppb	12.2 ppb	250 ppb	CAAQS	NO
					75 ppb	NAAQS (99th percentile)	NO
	24-Hour	1.7 ppb	1.8 ppb	3.5 ppb	40 ppb	CAAQS	NO
CO	1-Hour	6.5 ppm	0.11 ppm	6.61 ppm	20 ppm	CAAQS	NO
					35 ppm	NAAQS	NO
	8-Hour	2.2 ppm	0.08 ppm	2.3 ppm	9 ppm	CAAQS, NAAQS	NO
Sulfates[7]	24-Hour	--	0.1 ug/m^3	--	25 ug/m^3	CAAQS	NO

1. From the SCAQMD 2013 Air Quality Data Table; NO_2 and CO are from the La Habra air quality monitor (Source Number 16, "Northern Orange County") and SO_2 is from the Los Angeles (Main St.) air quality monitor (Source Number 1, "Central LA"). Available at: http://www.arb.ca.gov/aqmis2/aqdselect.php?tab=specialrpt for 1-hr SO_2 and 1-hr CO and at: http://www.aqmd.gov/home/library/air-quality-data-studies/historical-data-by-year for the other background concentrations.

2. For all pollutants, averaging times, and standards, the incremental concentration is the maximum incremental concentration among all the receptors. The 1-hour NO_2 NAAQS is for the 98th percentile of the daily maximum 1-hour concentrations, but using the absolute maximum incremental concentration is a more conservative approach. The 1-hour SO_2 NAAQS is for the 99th percentile of the daily maximum 1-hour concentrations, but using the absolute maximum is more conservative.

3. For NO_2, SO_2, and CO, the incremental concentrations were added to the background concentrations to get the total concentrations.

4. SCAQMD CEQA Ambient Air Quality Standard Significance Thresholds. Available at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2

5. The annual NO_2:NO_x ratio is 75%, as specified in the EPA guidance. According to Table 2-4 of the SCAQMD Final Localized Significance Threshold Methodology, the hourly NO_2:NO_x ratio is 11.4% for receptors within 200 m and 25.8% for receptors between 200 and 500 m. The 1-hour NO_2:NO_x ratio used for the remaing receptors was the most recent value of 80% from the EPA guidance. The EPA guidance is available at http://www.epa.gov/scram001/guidance/clarification/NO2_Clarification_Memo-20140930.pdf. The SCAQMD Final LST Methdology is available at http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/final-lst-methodology-document.pdf?sfvrsn=2.

6. To be conservative, it is assumed that all PM is PM_{10} and $PM_{2.5}$ and all SO_x is SO_2.

7. Sulfates are estimated by assuming 2% of SO_x emissions are sulfate. It is assumed that maximally impacted receptors are located within 100 m of sources and atmospheric conversion from SO_x to sulfates is minimal.

Constants

46.0055	g/mol NO_2
64.066	g/mol SO_2
28.01	g/mol CO
24.5	L/mol
1000	ppm to ppb
80%	NO_2:NO_x (1-hour)
75%	NO_2:NO_x (annual)
2%	Sulfates:SO_x

Table B-29. Ambient Air Quality Standards for Criteria Pollutants – Project with Drilling

Pollutant	Averaging Time	Background Concentration[1]	Incremental Concentration[2]	Total Concentration[3]	Ambient Air Quality Standard[4]		Exceeds Standard?
NO_2 [5]	1-Hour	85 ppb	1 ppb	86 ppb	180 ppb	CAAQS	NO
		53.3 ppb	1 ppb	54 ppb	100 ppb	NAAQS (98th percentile)	NO
	Annual	14.8 ppb	0.8 ppb	16 ppb	30 ppb	CAAQS	NO
					53.4 ppb	NAAQS	NO
PM_{10} [6]	24-Hour	--	0.1 ug/m^3	--	2.5 ug/m^3	SCAQMD	NO
	Annual	--	0.0 ug/m^3	--	1.0 ug/m^3	SCAQMD	NO
$PM_{2.5}$ [6]	24-Hour	--	0.1 ug/m^3	--	2.5 ug/m^3	SCAQMD	NO
SO_2 [6]	1-Hour	6.3 ppb	5.9 ppb	12.2 ppb	250 ppb	CAAQS	NO
					75 ppb	NAAQS (99th percentile)	NO
	24-Hour	1.7 ppb	1.8 ppb	3.5 ppb	40 ppb	CAAQS	NO
CO	1-Hour	6.5 ppm	0.00 ppm	6.50 ppm	20 ppm	CAAQS	NO
					35 ppm	NAAQS	NO
	8-Hour	2.2 ppm	0.00 ppm	2.2 ppm	9 ppm	CAAQS, NAAQS	NO
Sulfates[7]	24-Hour	--	0.1 ug/m^3	--	25 ug/m^3	CAAQS	NO

1. From the SCAQMD 2013 Air Quality Data Table; NO_2 and CO are from the La Habra air quality monitor (Source Number 16, "Northern Orange County") and SO_2 is from the Los Angeles (Main St.) air quality monitor (Source Number 1, "Central LA"). Available at: http://www.arb.ca.gov/aqmis2/aqdselect.php?tab=specialrpt for 1-hr SO_2 and 1-hr CO and at: http://www.aqmd.gov/home/library/air-quality-data-studies/historical-data-by-year for the other background concentrations.

2. For all pollutants, averaging times, and standards, the incremental concentration is the maximum incremental concentration among all the receptors. The 1-hour NO_2 NAAQS is for the 98th percentile of the daily maximum 1-hour concentrations, but using the absolute maximum incremental concentration is a more conservative approach. The 1-hour SO_2 NAAQS is for the 99th percentile of the daily maximum 1-hour concentrations, but using the absolute maximum is more conservative.

3. For NO_2, SO_2, and CO, the incremental concentrations were added to the background concentrations to get the total concentrations.

4. SCAQMD CEQA Ambient Air Quality Standard Significance Thresholds. Available at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2

5. The annual NO_2:NO_x ratio is 75%, as specified in the EPA guidance. According to Table 2-4 of the SCAQMD Final Localized Significance Threshold Methodology, the hourly NO_2:NO_x ratio is 11.4% for receptors within 200 m and 25.8% for receptors between 200 and 500 m. The 1-hour NO_2:NO_x ratio used for the remaining receptors was the most recent value of 80% from the EPA guidance. The EPA guidance is available at http://www.epa.gov/scram001/guidance/clarification/NO2_Clarification_Memo-20140930.pdf. The SCAQMD Final LST Methodology is available at http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/final-lst-methodology-document.pdf?sfvrsn=2.

6. To be conservative, it is assumed that all PM is PM_{10} and $PM_{2.5}$ and all SO_x is SO_2.

7. Sulfates are estimated by assuming 2% of SO_x emissions are sulfate. It is assumed that maximally impacted receptors are located within 100 m of sources and atmospheric conversion from SO_x to sulfates is minimal.

Constants

46.0055	g/mol NO_2
64.066	g/mol SO_2
28.01	g/mol CO
24.5	L/mol
1000	ppm to ppb
80%	NO_2:NO_x (1-hour)
75%	NO_2:NO_x (annual)
2%	Sulfates:SO_x

Table B-30. Toxics Maximum Impact Locations – Cumulatives (14 Microturbines)

	Health Effect	Risk or Hazard Index	Significance Threshold	Exceeds Threshold?	ID	UTM_X	UTM_Y
MEIR	Cancer	1.13E-06	1.00E-05	NO	R-84	400900	3756000
MEIW	Cancer	6.14E-07	1.00E-05	NO	W-473	401350	3756700
MEIR	Chronic	0.00	1.00	NO	R-84	400900	3756000
MEIW	Chronic	0.01	1.00	NO	W-473	401350	3756700
PMI	Acute	0.07	1.00	NO	B-72	402104	3755848
MEIR	Acute	0.01	1.00	NO	R-19	401650	3756150
MEIW	Acute	0.04	1.00	NO	W-472	401300	3756700

Table B-31. Ambient Air Quality Standards for Criteria Pollutants – Cumulatives (14 Microturbines)

Pollutant	Averaging Time	Background Concentration[1]	Incremental Concentration[2]	Total Concentration[3]	Ambient Air Quality Standard[4]		Exceeds Standard?
NO_2 [5]	1-Hour	85 ppb	20 ppb	105 ppb	180 ppb	CAAQS	NO
		53.3 ppb	20 ppb	73 ppb	100 ppb	NAAQS (98th percentile)	NO
	Annual	14.8 ppb	2.6 ppb	17 ppb	30 ppb	CAAQS	NO
					53.4 ppb	NAAQS	NO
PM_{10} [6]	24-Hour	--	3.6 ug/m^3	--	2.5 ug/m^3	SCAQMD	YES
	Annual	--	0.9 ug/m^3	--	1.0 ug/m^3	SCAQMD	NO
$PM_{2.5}$ [6]	24-Hour	--	3.6 ug/m^3	--	2.5 ug/m^3	SCAQMD	YES
SO_2 [6]	1-Hour	6.3 ppb	5.9 ppb	12.2 ppb	250 ppb	CAAQS	NO
					75 ppb	NAAQS (99th percentile)	NO
	24-Hour	1.7 ppb	1.8 ppb	3.5 ppb	40 ppb	CAAQS	NO
CO	1-Hour	6.5 ppm	0.27 ppm	6.77 ppm	20 ppm	CAAQS	NO
					35 ppm	NAAQS	NO
	8-Hour	2.2 ppm	0.17 ppm	2.4 ppm	9 ppm	CAAQS, NAAQS	NO
Sulfates[7]	24-Hour	--	0.1 ug/m^3	--	25 ug/m^3	CAAQS	NO

1. From the SCAQMD 2013 Air Quality Data Table; NO_2 and CO are from the La Habra air quality monitor (Source Number 16, "Northern Orange County") and SO_2 is from the Los Angeles (Main St.) air quality monitor (Source Number 1, "Central LA"). Available at: http://www.arb.ca.gov/aqmis2/aqdselect.php?tab=specialrpt for 1-hr SO_2 and 1-hr CO and at: http://www.aqmd.gov/home/library/air-quality-data-studies/historical-data-by-year for the other background concentrations.

2. For all pollutants, averaging times, and standards, the incremental concentration is the maximum incremental concentration among all the receptors. The 1-hour NO_2 NAAQS is for the 98th percentile of the daily maximum 1-hour concentrations, but using the absolute maximum incremental concentration is a more conservative approach. The 1-hour SO_2 NAAQS is for the 99th percentile of the daily maximum 1-hour concentrations, but using the absolute maximum is more conservative.

3. For NO_2, SO_2, and CO, the incremental concentrations were added to the background concentrations to get the total concentrations.

4. SCAQMD CEQA Ambient Air Quality Standard Significance Thresholds. Available at: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf?sfvrsn=2

5. The annual NO_2:NO_x ratio is 75%, as specified in the EPA guidance. According to Table 2-4 of the SCAQMD Final Localized Significance Threshold Methodology, the hourly NO_2:NO_x ratio is 11.4% for receptors within 200 m and 25.8% for receptors between 200 and 500 m. The 1-hour NO_2:NO_x ratio used for the remaing receptors was the most recent value of 80% from the EPA guidance. The EPA guidance is available at http://www.epa.gov/scram001/guidance/clarification/NO2_Clarification_Memo-20140930.pdf. The SCAQMD Final LST Methdology is available at http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/final-lst-methodology-document.pdf?sfvrsn=2.

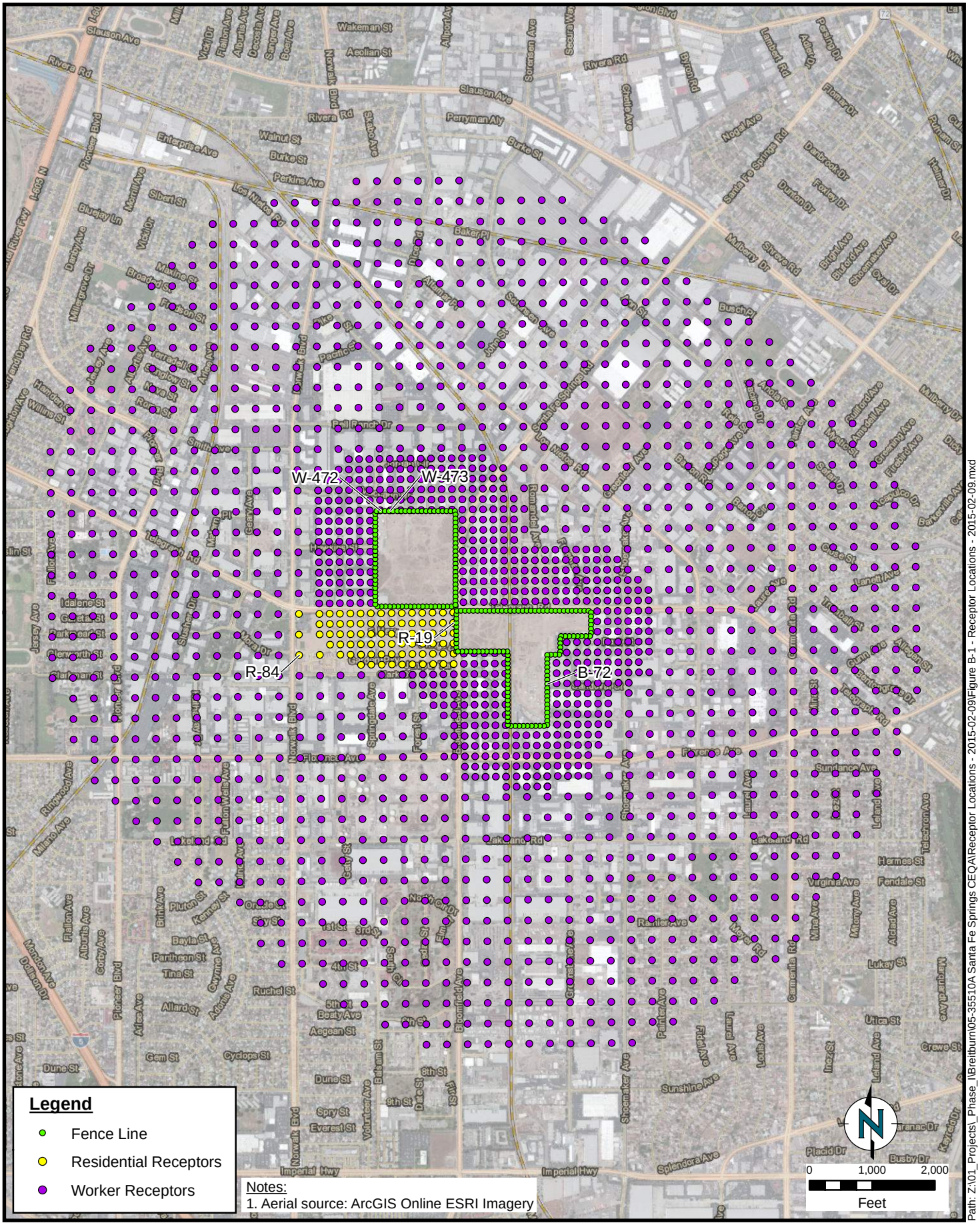
6. To be conservative, it is assumed that all PM is PM_{10} and $PM_{2.5}$ and all SO_x is SO_2.

7. Sulfates are estimated by assuming 2% of SO_x emissions are sulfate. It is assumed that maximally impacted receptors are located within 100 m of sources and atmospheric conversion from SO_x to sulfates is minimal.

Constants

46.0055	g/mol NO_2
64.066	g/mol SO_2
28.01	g/mol CO
24.5	L/mol
1000	ppm to ppb
80%	NO_2:NO_x (1-hour)
75%	NO_2:NO_x (annual)
2%	Sulfates:SO_x

Figure



Path: Z:\01_Projects_Phase_I\Breitburn\05-35510A Santa Fe Springs CEQA\Receptor Locations - 2015-02-09\Figure B-1 - Receptor Locations - 2015-02-09.mxd

ENVIRON

Receptor Locations

Figure
B-1

DRAFTED BY: SShin | Date: 4/6/2015

Santa Fe Springs, California 90670

PROJECT: 05-35510A

APPENDIX C

DRAFT ENVIRONMENTAL IMPACT REPORT PUBLIC COMMENTS AND RESPONSES

COMMENT LETTER NO. 1
Mr. Michael Salman: May 20, 2015

Subject: FW: EIR comments on Breitburn/Santa Fe Springs project

From: Michael Salman [mailto:salman@history.ucla.edu]
Sent: Wednesday, May 20, 2015 10:31 AM
To: Cynthia Carter
Subject: EIR comments on Breitburn/Santa Fe Springs project

Dear Ms Carter,

I am writing to submit comments on the SCAQMD Draft EIR on the Breitburn Energy project for its Santa Fe Springs petroleum production facility. The State Clearinghouse Number is: 2014121014.

My comments concern the evaluation of project alternatives for the installation of 4 CEB 800 burners.

The EIR looks at alternatives to the installation of 4 CEBs, including the installation of micro turbines. To replace all 4 CEBs with micro turbines, 175 70KW micro turbines would be required to equal the gas burning capacity of the CEBs. 1-1

One CEB can burn 936 Mcf/day. One microturbine can burn 21.6 Mcf/day. Thus 43.333 micro turbines are needed to burn as much as one CEB.

The discussion of alternatives noted that the cost of installing 175 micro turbines would be greater than that of installing 4 CEBs, and it noted that the emissions from 175 micro turbines would be greater.

However, I believe the EIR made the following mistakes and omissions:

1. The EIR did not consider the return on costs from electricity generated by micro turbines. This would pay down the costs of the micro turbines. 1-2
2. The EIR did not consider the opportunity for pollution offsets by generating electricity in gas burning micro turbines and thereby reducing the amount of electricity generated by coal fired plants.
3. The EIR did not evaluate a scenario in which a mixture of micro turbines and CEBs are installed - sufficient micro turbines to burn the daily average amounts of produced gas (roughly equal to the capacity of 1 CEB ior 44 micro turbines) and then adding up to 3 CEBs to handle the occasional temporary higher flows of gas from gassy pockets hit in new drilliing. 1-3

The discussion of alternatives to the project is inadequate without consideration of the above mentioned factors and alternative scenarios. 1-4

My interest in the Santa Fe Springs case stems from an AQMD and Los Angeles Department of City Planning case concerning the Murphy Drill Site in Los Angeles, 90018, operated by FMOG (previously by PXP). Unlike the M2 industrial zoning of the Breitburn site in Santa Fe Springs, the FMOG site in Los Angeles is in densely populated urban residential area. FMOG proposes to install one and maybe two CEB 800s to burn gas from two of its local well sites. SCAQMD issued a permit to construct in 2013, based on an application containing misrepresentations about the project which I have brought to the attention of SCAQMD's permitting manager, William Thompson. 1-5

1

In both the Santa Fe Springs case and at Murphy in Los Angeles, the SCAQMD micro turbine program seems to have been forgotten, and proper analysis of pollution offsets, efficiency, and cost recovery seem to have been foregone.

I live near the Murphy site. The City Planning case on it is still active.

I am sure this was not SCAQMD's intent.

1-5

Yours

Michael Salman
323-333-1238

2

COMMENT LETTER NO. 1
Mr. Michael Salman: May 20, 2015

Response 1-1
Thank you for your comments. The SCAQMD notes that your comments are related to the evaluation of alternatives for the installation of 4 CEB 800 burners and Alternative 3 – Additional Microturbines, which would replace the 4 CEBs with microturbines. Responses to your individual comments are below.

Response 1-2
The commenter suggests that the EIR should consider the return on costs from electricity generated by microturbines, which would lower the net costs of the microturbines, and consider the opportunity for pollution offsets by generating electricity in gas burning microturbines and thereby reducing the amount of electricity generated by coal-fired plants.

Section 15126.6(d) of the CEQA Guidelines states:

> The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed.

The Draft EIR contains sufficient information to allow a meaningful comparison with the proposed Project. As discussed in DEIR Section 4.3.1.3, Alternative 3 was eliminated from further consideration and analysis because of the additional significant impact of noise from operation of microturbines (which was not significant for the Project) and site suitability/infrastructure availability. These factors were used to eliminate Alternative 3 from further consideration and analysis in the EIR, per CEQA Guidelines §15126.6(c)(iii) and §§15126.6(f)(1) and (3). Relative capital costs were discussed (FEIR, page 4-9), but there is sufficient non-cost-related information to eliminate Alternative 3 from further consideration and analysis, and additional details on possible net cost reductions (electricity sales or pollution offsets) would not affect the conclusion. In addition, there are no coal-fired power plants in the Basin that could even theoretically be used to generate criteria pollution offsets. Therefore, the EIR did not make errors or omissions based on microturbine net costs or the potential for pollution offsets.

Response 1-3
The comment suggests that the EIR should evaluate a scenario with a mixture of microturbines and CEBs, such as 44 microturbines substituting for 1 of the CEB flares. As noted in the FEIR (Section 4.1):

> "The range of alternatives must be sufficient to permit a reasoned choice, but need not include every conceivable project alternative. CEQA Guidelines §15126.6(c) specifically

> notes that the range of alternatives required in a CEQA document is governed by a 'rule of reason' and only necessitates that the CEQA document set forth those alternatives necessary to permit a reasoned choice."

Alternative 3 maximizes the use of microturbines (175 additional microturbines) for the produced gas, with the CEBs in a ready-standby condition only. The Project relies on the CEBs to combust the produced gas that does not go to the existing microturbines (34). Alternative 3 was eliminated from further consideration and analysis in the EIR because it: 1) produced a new significant impact (noise); 2) increased emissions such that additional SCAQMD significance thresholds were exceeded; 3) did not meet site suitability and infrastructure availability needs (e.g., limited space on site and electrical infrastructure for a lower level of distributed generation); and 4) incompatibility with Project Objective #4 because it would impair the efficiency, flexibility and economic viability of the operations. Analysis results of the scenario such as described in your comment (e.g., 43 additional microturbines with 3 CEBs) compared to the Project and Alternative 3 are presented below.

Noise: For noise, the increase in noise levels for Block 700 operations and an additional 175 microturbines was determined to be significant (see EIR Table 4-3). The Project itself had less than significant Block 700 operational noise impacts (see EIR Table 3-24). Noise impact analysis of an additional 43 microturbines (replacing 1 CEB) predicts an increase of 5.0 dBA at night and a 2.5 dBA CNEL; increases in night time noise would be significant (> 3dB) and CNEL increases would be close to significant. The Project itself had no significant noise impacts (and lower noise impacts in general). Thus, the Project is environmentally superior to a scenario with an additional 43 microturbines.

Air Quality: The emissions of a scenario where 43 microturbines replace one of the CEBs are shown in the table below.

	43 Microturbines / 3 CEBs: Incremental Emissions				
	VOC	**NO_x**	**SO_x**	**CO**	**PM**
	(lbs/day)	**(lbs/day)**	**(lbs/day)**	**(lbs/day)**	**(lbs/day)**
Equipment Operations	**100.59**	**55.12**	**15.55**	**415.20**	**4.81**
SCAQMD Significance Threshold	*55*	*55*	*150*	*550*	*55*
Threshold exceeded?	***YES***	***YES***	*NO*	*NO*	*NO*
Maximum incremental drilling emissions	31.51	378.67	0.68	151.29	11.89
Total Operational and Drilling Emissions	**132.11**	**433.79**	**16.23**	**566.49**	**16.69**
SCAQMD Threshold	55	55	150	550	55
Threshold Triggered?	**YES**	**YES**	NO	**YES**	NO

The suggested scenario does have lower emissions than Alternative 3, but it still shows operational equipment-only emissions are above the SCAQMD significance threshold for VOC and NOx and operational with drilling emissions being significant for VOC, NOx and CO (see EIR Appendix B, Table B-25 for Alternative 3). In addition, the Project remains lower polluting than the suggested scenario, as the Project's operational equipment emissions are all below the SCAQMD significance threshold and Project operational and drilling emissions only are significant for VOC and NOx, but not for CO(see EIR Appendix B, Table B-22 for the Project). Thus, the Project is environmentally superior to a scenario with an additional 43 microturbines.

Site Suitability / Infrastructure Availability: The suggested scenario would reduce the number of additional microturbines by 132 and produce less distributed power than Alternative 3. This would lessen the space needed on site and reduce potential power infrastructure changes.

Project Objectives: Alternative 3 was determined to impair Project Objective #4 (efficiency, safety, flexibility and economic viability) of the facility. The suggested scenario would lessen, but not eliminate, the impairment of this Project objective (compared to Alternative 3).

Response 1-4

For the reasons stated in Responses 1-2 and 1-3, return on costs from electricity generated by additional microturbines and an opportunity for pollution offsets would not affect the determination that Alternative 3 should be eliminated from further consideration and analysis in the EIR due to significant noise impacts and site suitability/infrastructure availability factors (CEQA Guidelines §§15126.6(c)(iii), 15126.6(f)(1) and (3)).

The impacts (or benefits) of variations on Alternative 3 ranging from the addition of fewer microturbines than in Alternative 3 (with the example being the replacement of one of the CEBs

with 43 microturbines) would be between those impacts of Alternative 3 and the Project described in the EIR, as described in the Response to Comment 1-3. The suggested scenario does not eliminate those features that led Alternative 3 to be eliminated from further consideration and analysis in the EIR, to wit:

- Noise impacts of the suggested scenario would still be significant (which they are not in the Project)
- Emissions of the suggested scenario still result in the exceedence of an additional SCAQMD significance threshold (i.e., CO emissions) that does not occur for the Project
- Fewer site/infrastructure limitations than Alternative 3 but still factors on the space-constrained site with its existing electrical infrastructure
- Would still impair meeting Project Objective #4 (operational efficiency, safety, flexibility, and economic viability), particularly because of costs (15x the cost for microturbines compared to CEBs, for the same processed gas rate – see EIR p. 4-9) and site/infrastructure limitations described above

As documented in the Response to Comment 1-3, the suggested scenario described in your comment (an intermediate number of additional microturbines with less produced gas going to the CEBs) produces impacts within the range of alternatives analysed in the EIR (no additional microturbines for the Project and a maximum number of additional microturbines in Alternative 3). Although the DEIR satisfies the requirements under CEQA (CEQA Guidelines §15126.6(c)) to present a reasonable range of alternatives and the suggested scenario is presented within that range of the proposed project and Alternative 3, the additional analyses done in Response to Comment 1-3 show that the suggested scenario would also have been eliminated from further consideration and analysis in the EIR and confirms the conclusion of the EIR that the Project remains the environmentally superior build alternative.

Response 1-5

The SCAQMD understands the commenter is interested in the Murphy Drill Site in Los Angeles (90018). The SCAQMD understands that the commenter is continuing interactions with SCAQMD staff concerning permit applications for the Murphy Drill Site. SCAQMD has not forgotten the microturbine program as the comment suggests. As noted in Responses 1-2 and 1-4, SCAQMD has conducted the proper level of analysis for this project, which is unrelated to the Murphy Drill Site. Thank you again for your comments.

COMMENT LETTER NO. 2
DIVISION OF OIL, GAS & GEOTHERMAL RESOURCES: May 26, 2015

NATURAL RESOURCES AGENCY EDMUND G. BROWN JR., GOVERNOR

DEPARTMENT OF CONSERVATION

DIVISION OF OIL, GAS, & GEOTHERMAL RESOURCES

5816 CORPORATE AVENUE • SUITE 100 • CYPRESS, CALIFORNIA 90630

PHONE 714/ 816-6847 • **FAX** 714/ 816-6853 • **WEB SITE** conservation.ca.gov

May 26, 2015

Ms. Cynthia Carter
South Coast Air Quality Management District
21865 E. Copley Drive
Diamond Bar, CA 91765

Draft Environmental Impact Report
Breitburn Santa Fe Springs Blocks 400/700 Upgrade Project
SCH # 2014121014

Dear Ms. Carter:

The Department of Conservation's Division of Oil, Gas, and Geothermal Resources (Division) has reviewed the above referenced project. The Division supervises the drilling, operation, maintenance, and abandonment of oil, gas, and geothermal wells in California. In addition, the Division supervises the operation, maintenance, and removal or abandonment of tanks and facilities attendant to oil and gas production, including many pipelines that are within oil and gas fields. The Division offers the following comments for your consideration. 2-1

Based on information provided in the Draft Environmental Impact Report (DEIR), the project area is within the Santa Fe Springs oil field. Division records indicate that several active, idle, and abandoned wells, along with facility equipment and pipelines, are within the project area. Division statutes, regulations and other information can be found at: www.conservation.ca.gov. Individual well records are available either online or at our office by making an appointment with our records clerk. 2-1

It is reasonably foreseeable that wells will be drilled, reworked, and abandoned in the future, in connection with Breitburn Operating, LP's ongoing operations in the Santa Fe Springs field. Each of these well operations, including well stimulation, will require a notice from the operator, and a permit from the Division may be issued after a geologic and engineering review of the proposed operations. 2-2

Since Breitburn Operating LP's fluid handling equipment is proposed to be modified, as indicated in the DEIR, it is also reasonably foreseeable that Breitburn Operating, LP may propose new water injection projects and/or propose to modify existing water injection projects. The Division has primary responsibility and authority in California for the regulation of Class II fluid injection wells. The Division also reviews proposed injection projects, and issues Project Approval Letters (PAL's) after thorough geologic and engineering reviews. It is important to note that no injection is allowed into sub-10,000 mg/L total dissolved solids aquifers that have not been previously exempted. 2-3

The possibility for future problems from oil and gas wells that have been plugged and abandoned, or reabandoned, to the Division's current specifications are remote. However, the Division recommends that a diligent effort be made to avoid building over, or in close proximity to any well. 2-4

Please contact Weiru Chen at (714) 816-6847 prior to construction, for the Division's Construction-Site Plan review procedures or questions. The Division has available online an informational packet entitled, "Construction-Site Plan Review Program" at: http://www.conservation.ca.gov/dog/for_operators/Pages/construction_site_review.aspx.

Thank you for the opportunity to comment. If you have any questions, please contact Kathleen Andrews at (714) 816-6847 or via email at: Kathleen.Andrews@conservation.ca.gov. 2-5

Sincerely,

Kenneth Carlson
Environmental and Facilities Unit Supervisor

cc: DOGGR- HQ, Adele Lagomarsino

COMMENT LETTER NO. 2
DIVISION OF OIL, GAS & GEOTHERMAL RESOURCES: May 26, 2015

Response 2-1

Thank you for your comments. The Project recognizes that the Department of Conservation's Division of Oil, Gas, and Geothermal Resources (DOGGR) has the primary responsibility and authority for the regulation of drilling, operation, maintenance, and abandonment of oil, gas, and geothermal wells in California. The Project also recognizes that DOGGR reviews proposed injection projects and issues permits and approvals after thorough geologic and engineering reviews, as set forth in DOGGR's comments.

Response 2-2

As described in Section 2.9 of the Draft EIR, Breitburn may elect to drill additional injection and/or production wells in the future. These activities would be required to be conducted in accordance with DOGGR regulations, as noted on page 2-24 of the Final EIR "[t]hese activities would all be performed in accordance with the City of Santa Fe Springs Municipal Code Zoning regulations for the M-2 zone and applicable DOGGR regulations for oil well-related activities."

Response 2-3

The Project recognizes that DOGGR has the primary responsibility and authority for the regulation of drilling, operation, maintenance and abandonment of oil, gas, and geothermal wells, as well as the permitting of Class II fluid injection wells. As noted in Response 2-2, the Project recognizes that it will conduct its fluid injection well activities in compliance with all applicable DOGGR regulations and permitting requirements. Please also note that all Class II injection activities at the Breitburn Santa Fe Springs Oil Field occur within the boundaries of the exempt aquifer area defined in the 1974 "California Oil and Gas Fields Volume II" and acknowledged in the 1982 primacy agreement between EPA and DOGGR (see Final EIR, Figure 2-1 for location of the Santa Fe Springs Oil Field). Potential impacts with regard to produced water injection at the field are evaluated on page 3-64 of the Draft EIR.

Response 2-4

SCAQMD agrees with DOGGR's comment that the chances of problems with oil and gas wells that have been plugged and abandoned, or re-abandoned to the Division's current specifications are remote. SCAQMD acknowledges DOGGR's recommendation that a diligent effort should be made to avoid building over, or in close proximity to any well. The Project equipment, as described in the Project Description, is not sited over any plugged, abandoned, or re-abandoned well(s). In addition, the City of Santa Fe Springs Code of Ordinances §117.127 (Abandonment Requirements Prior to New Construction) states that prior to the issuance by the city of any building or grading permit for property upon which there are active or abandoned well(s), the applicant must complete the Division of Oil and Gas "Construction Project Site Review and Well Abandonment Procedure."

Response 2-5

Your information is appreciated. Thank you again for your comments.