## CHAPTER 1

# PROJECT DESCRIPTION

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# CHAPTER 1.0

# PROJECT DESCRIPTION

## 1.1 INTRODUCTION

The ConocoPhillips Los Angeles Refinery is proposing modifications to produce Ultra Low Sulfur Diesel (ULSD). Reducing the sulfur content of diesel leads to a reduction of sulfur oxides (SOx) and particulate sulfate emissions, fulfilling the California's Air Resources Board's (CARB) 2000 Diesel Risk Reduction Plan to minimize Californians' exposure to cancer risks associated with diesel particulate matter (PM). ConocoPhillips' proposed project will also comply with the South Coast Air Quality Management District's (SCAQMD) Rule 431.2 which requires a reduction in sulfur content in diesel used in stationary sources to a limit of 15 parts per million by weight (ppmw) effective June 1, 2004. ConocoPhillips is currently producing ULSD at its refineries in the Pacific Northwest, Northern California and Northeastern United States.

On January 18, 2001, United States Environmental Protection Agency's (U.S. EPA) 40 CFR §§ 80, 500 published a final rule on diesel fuel standards. As of June 1, 2006, refiners must begin selling highway diesel fuel that meets a maximum sulfur standard of 15 ppmw. The 2006 deadline was issued to ensure that adequate supplies of ULSD would be available to meet the demand in 2007, when according to the U.S. EPA, all on-road, diesel-fueled vehicles (new and current) must be equipped to run on ULSD fuel. In Los Angeles, heavy-duty trucks and buses contribute more than a quarter of the nitrogen oxide (NOx) pollution and 14 percent of the PM 2.5 pollution from mobile sources. Pollution-control devices for heavy duty engines are sensitive to sulfur and will not work unless the amount of sulfur in the fuel is reduced (U.S. EPA, 2003).

The SCAQMD's Rule 431.2 – (Sulfur Content Of Liquid Fuels, amended on September 15, 2000) contains a sulfur limit requirement consistent with the one later adopted by U.S. EPA. The current sulfur limit for diesel fuel sold for use in California is 500 ppmw which was approved by CARB in 1988 (Section 22 of Title 13, CCR). Rule 431.2 requires a reduction in the sulfur content of diesel to 15 ppmw starting mid-2006. Most California diesel fuel currently in use contains an average of 140 ppmw of sulfur. The SCAQMD is expecting a reduction of 130 ppmw in sulfur due to the new limit (CARB, 2003).

ConocoPhillips proposed project has been developed to comply with the federal, state and SCAQMD regulations that limit the sulfur content of diesel fuels.

## 1.2 AGENCY AUTHORITY

The California Environmental Quality Act (CEQA), Public Resources Code Section 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 of these projects be identified and implemented. The proposed modifications constitute a "project" as defined by CEQA. To fulfill the purpose and intent of CEQA, the SCAQMD is the "lead agency" for this project and has prepared this Negative Declaration to address the potential environmental impacts associated with the proposed project at the Wilmington Plant.

The lead agency is the public agency that has the principal responsibility for carrying out or approving a project that may have a significant adverse effect upon the environment (Public Resources Code §21067). Since the SCAQMD has the greatest responsibility for supervising or approving the project as a whole, it was determined that the SCAQMD would be the most appropriate public agency to act as lead agency (CEQA Guidelines §15051(b)).

To fulfill the purpose and intent of CEQA, the SCAQMD has prepared this Negative Declaration to address the potential adverse environmental impacts associated with the proposed project. A Negative Declaration for a project subject to CEQA is prepared when an environmental analysis of the project shows that there is no substantial evidence that the project may have a significant effect on the environment (CEQA Guidelines §15070(a)).

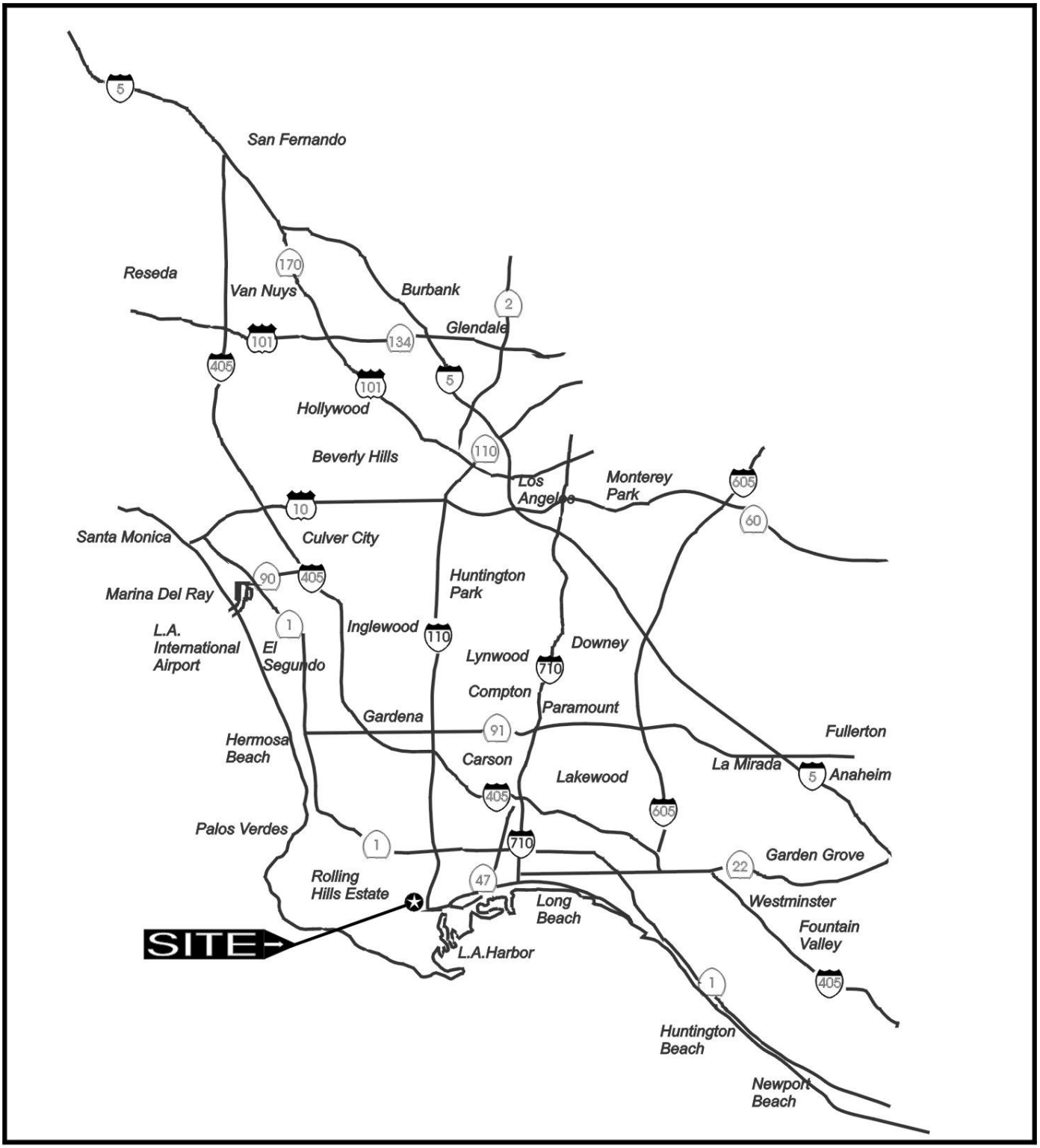
## 1.3 PROJECT LOCATION

ConocoPhillips Los Angeles Refinery operates at two different sites in the South Coast Air Basin which is a subarea of the SCAQMD's area of jurisdiction. One of the sites is located in the City of Carson (Carson Plant) and the other site is in the City of Los Angeles in the Wilmington community (Wilmington Plant). This proposed project includes physical modifications primarily to process facilities at the Wilmington Plant and only minor control system improvements at the Carson Plant. The ConocoPhillips Wilmington Plant consists of approximately 400 acres and is located in Los Angeles County at 1660 West Anaheim Street, Wilmington, California (see Figures 1 and 2). The eastern part of the Wilmington Plant borders a residential area, a roofing materials plant, and a portion of the Harbor 110 Freeway. The northern portion of the site borders Harbor Lake Park, Harbor College, Harbor Golf Course, and a small residential area. The western part of the site borders Gaffey Street including a firing range, vacant fields, recreational fields, and a U.S. Navy fuel storage facility. Finally, the southern portion of the site shares a border with a warehouse facility.

## 1.4 OVERVIEW OF CURRENT OPERATIONS

Crude oil is a mixture of hydrocarbon compounds and relatively small amounts of other materials, such as oxygen, nitrogen, sulfur, salt, and water. Petroleum refining is a coordinated arrangement of manufacturing processes designed to produce physical and chemical changes in the crude oil to remove most of the non-hydrocarbon substances, break the crude oil into its various components, and blend them into various useful products. The overall refining process uses four kinds of techniques: (1) separation, including distilling hydrocarbon liquids into gases, gasoline, diesel fuel, fuel oil, and heavier residual materials; (2) cracking or breaking large hydrocarbon molecules into smaller ones by thermal or catalytic processes; (3) reforming using heat and catalysts to rearrange the chemical structure of a particular oil stream to improve its quality; and (4) combining by chemically combining two or more hydrocarbons to produce high-grade gasoline.

The Wilmington Plant in Wilmington produces a variety of products including gasoline, jet fuel, diesel fuel, petroleum gases, sulfuric acid, and sulfur.

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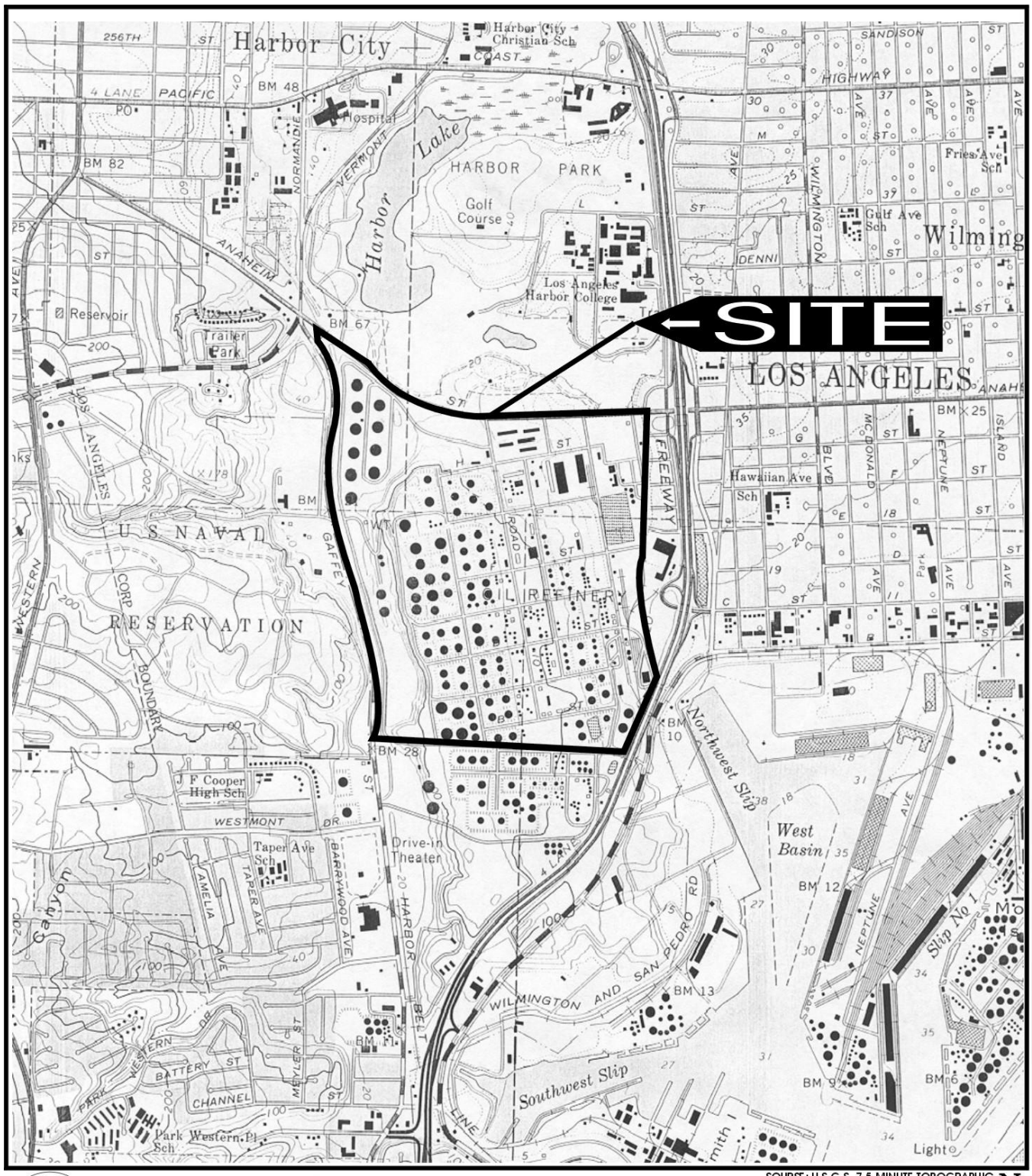
REGIONAL MAP
ConocoPhillips Wilmington Plant

Figure 1

Project No. 2221
N:\2221\Regoinal Map.CDR

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SITE LOCATION MAP
ConocoPhillips Los Angeles Refinery
WILMINGTON PLANT

Figure 2

Project No. 2221
N:/2221/Site Location Map

## 1.5 PROPOSED PROJECT DESCRIPTION

The ConocoPhillips Los Angeles Refinery currently produces low sulfur diesel (500 ppmw) at both the Wilmington and Carson Plants. Low sulfur diesel is primarily produced at the Wilmington Plant in the Mid-Barrel Hydrotreater Unit 90, along with a small amount from the heavy portion of naphtha produced in FCC Naphtha Hydrotreater Unit 59. The ConocoPhillips Los Angeles Refinery also periodically produces a small amount of CARB Diesel at the Carson Plant in a batch operation at the high pressure Gas Oil Hydrotreater HDT, which normally hydrotreats FCC gas oil feed.

The project has two major components: (1) revamp the Mid-barrel Hydrotreater Unit 90 to decrease the hydrotreating reaction space velocity to meet the required diesel sulfur level; and (2) modify the mid-barrel handling and logistics to segregate diesel from higher sulfur jet fuel. The proposed project will also improve naphtha caustic treating and hydrogen distribution at the Wilmington Plant; and improve control of the Crude Unit heavy gas oil distillation cutpoint at the Carson Plant. This proposed project does not increase diesel production, affect the Refinery's existing ability to produce CARB Diesel at the Carson Plant Gas Oil Hydrotreater HDT, or increase crude throughput. The location of the equipment that would be modified as part of the proposed project is shown in Figure 3. The following refinery units and processes will be affected by the proposed project.

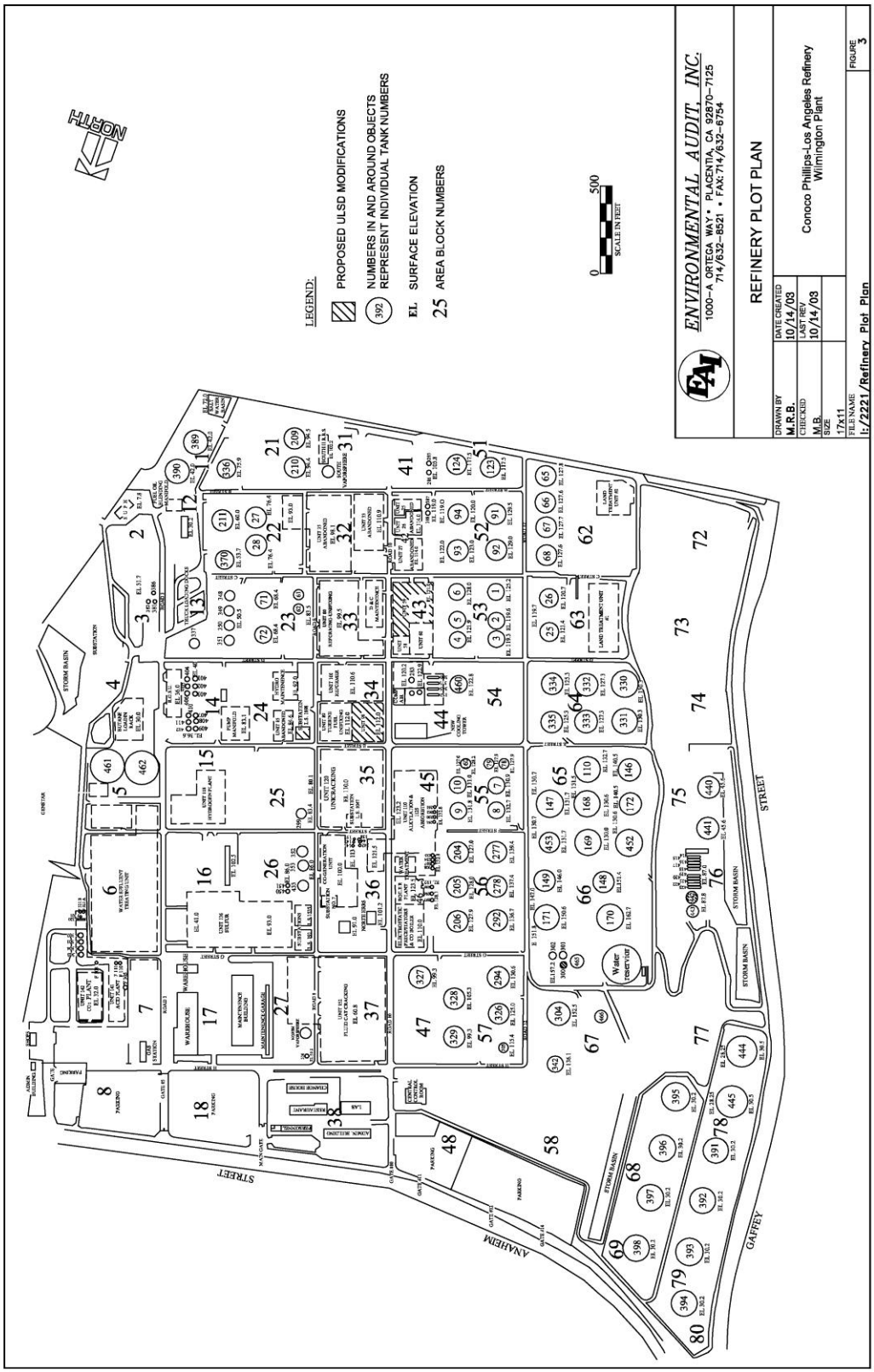
### Mid-Barrel Hydrotreater U-90

Changes to Unit 90 include modifying the reactor loop to replace the existing reactors with two new larger reactors oriented in series. The reactor effluent exchanger train will be replaced with new exchangers to improve heat recovery and minimize pressure drop at the higher recycle gas circulation rate. The proposed project does not include modifying the Unit 90 product stripper and fractionation section because the maximum throughput capacity will not increase.

The existing recycle gas compressor will be modified to double its capacity by replacing the compressor internals with the maximum size rotor currently available. The recycle gas scrubber requires tray replacement to handle the increase in recycle gas rate.

The existing charge heater B-201 will be replaced with a functionally equivalent heater of the same maximum firing rate. The heater must be replaced to limit pressure drop through the tubes at the higher reactor inlet pressure and to ensure the heater will meet current API standards at all expected firing rates. The replacement heater will employ best available control technology (BACT), which consists of ultra-low NOx burners that will emit less NOx than the burners in the existing heater.

The existing cooling tower E-221 will be demolished and replaced with a new cooling tower of the same capacity. The existing cooling tower will be demolished to make room for the new reactors and charge heater.


NORTH
LEGEND:
PROPOSED ULSD MODIFICATIONS
NUMBERS IN AND AROUND OBJECTS REPRESENT INDIVIDUAL TANK NUMBERS
EL. SURFACE ELEVATION
25 AREA BLOCK NUMBERS
0
500
SCALE IN FEET
ENVIRONMENTAL AUDIT, INC.
1000-A ORTEGA WAY • PLACENTIA, CA 92870-7125
714/632-8521 • FAX: 714/632-6754
REFINERY PLOT PLAN
DRAWN BY M.R.B.
CHECKED M.B.
SIZE 17x11
DATE CREATED 10/14/03
LAST REV 10/14/03
FILE NAME I:/2221/Refinery Plot Plan
Conoco Phillips-Los Angeles Refinery Wilmington Plant
FIGURE 3
STREET
ANAHEIM
GAFFEY
STORM BASIN
PARKING

## Mid Barrel Handling and Shipping Modifications

Common pipeline facilities are currently used for the transport of jet and diesel fuels from the Wilmington Plant to the Torrance Tank Farm. The sulfur content of jet fuel is much higher than that of ULSD. The improved handling and shipping modifications are needed so that ULSD will not be contaminated with higher sulfur jet fuel, which could cause ULSD to exceed the 15 ppmw sulfur limit. Without these system improvements, the pipeline would need to be flushed with ULSD, generating transmix (interface or mixture of two products in a pipeline). Transmix is not a usable finished product and typically must be recycled to produce usable products.

Modifications to mid-barrel handling and shipping at the Wilmington Plant include a new jet shipping pump; two new pumps for handling jet and diesel blendstocks; one new sample pump and associated piping to create separate facilities for handling jet and diesel fuel.

## Hydrogen System

The hydrogen distribution piping will be changed to enable the exclusive use of high purity hydrogen at Unit 90 for maximizing hydrogen partial pressure at the reactor inlet. New piping is needed to properly distribute reformer hydrogen to other refinery processes not requiring continued use of high purity hydrogen.

### Storage Tank Modifications

As part of the proposed project, existing storage tank (Tank 331) at the Wilmington Plant will be placed into jet/diesel service. Tank 331 is an existing storage tank that has been empty for more than two years. Tank 331 is currently permitted by the SCAQMD and no permit modifications will be required for this tank.

## Crude Unit DU-5 at the Carson Plant

The straightrun diesel or heavy gas oil (HGO) in the Unit 90 feed contains the toughest sulfur species to hydrotreat. The crude column must be capable of controlling the HGO cutpoint temperature between 650 and 700°F to achieve desirable catalyst life. The scope provides additional thermocouples and possible changes to existing control valves to improve HGO cutpoint control. This will allow the crude column to be operated on advanced computer control at the current Crude Unit throughput capacity rate.

The physical modifications associated with the changes at the Carson Plant are very minor. No major construction activities are required and these changes will be incorporated into a normally scheduled refinery turnaround (i.e., refinery shutdown for routine maintenance) or into regular, ongoing maintenance activities. Existing maintenance workers can perform the minor modifications (add thermocouples and modify existing control valves) that are required to the unit. These changes will not result in physical impacts to the environment (air emissions, noise, traffic, etc.) so that the discussion of the environmental impacts in Chapter 2 is limited to the Wilmington Plant (CEQA Guidelines §15064(d)(1)).

## 1.6 REQUIRED PERMITS

The proposed project will require Permits to Construct/Operate from the SCAQMD and will require building permits from the City of Los Angeles. No other permits are expected to be required.

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~~**1.6 REQUIRED PERMITS**~~

~~The proposed project will require Permits to Construct/Operate from the SCAQMD and will require building permits from the City of Carson. No other permits are expected to be required.~~