

## **CHAPTER 1**

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### **PROJECT DESCRIPTION**

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## **1.0 INTRODUCTION**

On November 7, 2003, the South Coast Air Quality Management District (SCAQMD) adopted Rule 1105.1 - Reduction of PM10 and Ammonia Emissions from Fluid Catalytic Cracking Units, and certified the Final Environmental Assessment for Proposed Rule 1105.1 (2003 Final EA, SCAQMD No. 012403BAR). The staff report for Rule 1105.1 and the 2003 Final EA identified six refineries that operate fluid catalytic cracking units (FCCUs) that would be subject to the requirements of Rule 1105.1 and one of these six was identified as already operating in compliance with the rule. One of the five refineries that will need to comply with Rule 1105.1, the Wilmington Refinery, is operated by Shell Oil Products US (Shell). To comply with Rule 1105.1, which requires refiners to limit emissions of particulate matter less than 10 microns in diameter (PM10) and ammonia from FCCUs within a specified time limit, Shell operators considered their compliance options and developed the Shell Rule 1105.1 Compliance Project.

This document, prepared pursuant to the California Environmental Quality Act (CEQA), Public Resources Code 21000 et seq., constitutes a Negative Declaration for the Shell Rule 1105.1 Compliance Project. Further, this Negative Declaration has been prepared pursuant to CEQA Guidelines §15189 – Compliance with Performance Standard or Treatment Requirement Rule or Regulation, which applies to projects consisting solely of compliance with a performance standard or treatment requirement which was the subject of a previous environmental analysis. When preparing a negative declaration on a compliance project the lead agency shall, to the greatest extent feasible, use the previous environmental analysis (CEQA Guidelines §15189(a)). In this case, the previous environmental analysis regarding the potential adverse impacts associated with complying with Rule 1105.1 refers to the analysis contained in the 2003 Final EA. Therefore, the SCAQMD is relying on the analysis in the 2003 Final EA in the preparation of this Negative Declaration for the Shell Rule 1105.1 Compliance Project.

## **1.1 AGENCY AUTHORITY**

California 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 of these projects be identified and implemented. The Shell Rule 1105.1 Compliance Project constitutes a “project” as defined by CEQA. To fulfill the purpose and intent of CEQA, the SCAQMD is the “lead agency” for the Shell Rule 1105.1 Compliance Project, and as such is the agency that prepared the 2003 Final EA, as well as this current Negative Declaration. In addition, as the public agency which may grant the next discretionary approval, the SCAQMD now has prepared this Negative Declaration to address the potential environmental impacts associated with the Shell Rule 1105.1 Compliance Project, specifically, the removal of three existing electrostatic precipitators (ESPs) and the construction of three new ESPs (CEQA Guidelines §15189).

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 Shell Rule 1105.1 Compliance Project as a whole, it was determined that the SCAQMD would be the most appropriate public agency to act as lead agency for the proposed project (CEQA Guidelines §15051(b)).

To fulfill the purpose and intent of CEQA, the SCAQMD is relying on the 2003 Final EA for Rule 1105.1 that was certified in November 2003 and has prepared this Negative Declaration to address other potential adverse environmental impacts associated with the demolition of existing ESPs and the construction and operation of new ESPs at the Shell Wilmington Refinery.

## **1.2 PROJECT OBJECTIVE**

The purpose of the Shell Rule 1105.1 Compliance Project is to comply with emission limits in Rule 1105.1 which will reduce PM10 and ammonia emissions from the FCCU located at the Shell Wilmington Refinery.

## **1.3 BACKGROUND CEQA DOCUMENTS**

The impacts associated with implementing SCAQMD Rule 1105.1 were evaluated in the following CEQA documents. A chronological summary of the CEQA documents prepared for this project is presented below.

Notice of Preparation/Initial Study of an Environmental Assessment for Proposed Rule 1105.1 - Reduction of PM10 and Ammonia Emissions from Fluid Catalytic Cracking Units, September 10, 2002 (SCAQMD No. 091002BAR).

A Notice of Preparation and Initial Study (NOP/IS) for Rule 1105.1 was released for a 30-day public review and comment period from September 13, 2002 to October 15, 2002. The NOP/IS included a project description, project location, an environmental checklist and a preliminary discussion of potential adverse environmental effects that may result from implementing Rule 1105.1. The NOP/IS identified the topics of “air quality” and “hazards and hazardous materials” as the only areas that may be adversely affected by implementing Rule 1105.1. One comment letter regarding the NOP/IS was received. The NOP/IS, including the comment letter and its responses, has been archived in Appendix C of the Final EA for Rule 1105.1 and can be obtained by contacting the SCAQMD's Public Information Center at (909) 396-2039 or by visiting the following website at:

[http://www.aqmd.gov/ceqa/documents/2003/aqmd/finalEA/FEA\\_1105.doc](http://www.aqmd.gov/ceqa/documents/2003/aqmd/finalEA/FEA_1105.doc).

Draft Environmental Assessment for Proposed Rule 1105.1 - Reduction of PM10 and Ammonia Emissions from Fluid Catalytic Cracking Units, January 24, 2003 (SCAQMD, No. 012403BAR).

The Draft EA for Rule 1105.1, which was a substitute document for an environmental impact report (EIR) prepared pursuant to CEQA Guidelines §15252, was released for a 45-day public review and comment period from January 28, 2003 through March 13, 2003. The Draft EA included a comprehensive project description, a description of the existing setting that could be adversely affect by the proposed project, analysis of the potential adverse environmental impacts (air quality and hazards/hazardous materials), cumulative impacts, mitigation measures, project alternatives and all other relevant topics required by CEQA. The Draft EA analyzed refinery-specific impacts as well as impacts from the rule as a whole. The Draft EA also included a copy of the NOP/IS, copies of comment letters received on the NOP/IS, and responses to all comment letters received on the NOP/IS. It was concluded in the Draft EA that implementation of Rule 1105.1 would result in potential significant adverse impacts to air quality during construction for the installation of new air pollution control devices. Hazards/hazardous materials impacts were concluded to be insignificant. The Draft EA can be obtained by contacting the SCAQMD's Public Information Center at (909) 396-2039.

Final Environmental Assessment for Proposed Rule 1105.1 - Reduction of PM10 and Ammonia Emissions from Fluid Catalytic Cracking Units, September 30, 2003 (SCAQMD, No. 012403BAR, certified November 7, 2003).

The Final Environmental Assessment for Proposed Rule 1105.1 (2003 Final EA) included applicable changes to the text of the previous Draft EA and the responses to comments received during the 45-day public review and comment period. The SCAQMD received three comment letters on the Draft EA during the public comment period. The comment letters and their responses were included in Appendix E of the 2003 Final EA. The SCAQMD concluded that implementation of Rule 1105.1 could result in significant impacts to air quality during the construction phase to modify existing or install new air pollution control equipment. The Final EA analyzed refinery-specific impacts as well as impacts from the rule as a whole. Mitigation measures for construction emissions were incorporated into the 2003 Final EA and a Statement of Findings and a Statement of Overriding Considerations for the implementation of Rule 1105.1 were also adopted. The 2003 Final EA was certified by the SCAQMD Governing Board on November 7, 2003. The 2003 Final EA, which includes comment letters relative to the Draft EA and their responses (which are archived in Appendix E), the NOP/IS (which is archived in Appendix C), and comment letters relative to the NOP/IS and their responses (which are archived in Appendix D) can be obtained by contacting the SCAQMD's Public Information Center at (909) 396-2039 or by visiting following website at:

[http://www.aqmd.gov/ceqa/documents/2003/aqmd/finalEA/FEA\\_1105.doc](http://www.aqmd.gov/ceqa/documents/2003/aqmd/finalEA/FEA_1105.doc).

The SCAQMD is relying on these documents in the analysis for the proposed Shell Rule 1105.1 Compliance Project.

#### **1.4 BACKGROUND INFORMATION**

Subsequent to the adoption of Rule 1105.1 and certification of the 2003 Final EA, the Western States Petroleum Association (WSPA) filed a lawsuit against the SCAQMD challenging the certification of the 2003 Final EA and approval of Rule 1105.1 (WSPA vs. SCAQMD et al, Superior Court of California, County of Los Angeles, Case No. BS087190). The lawsuit asserted, among other things, that emission reductions to be achieved from implementing Rule 1105.1 were over-estimated, implementation of Rule 1105.1 would not be cost effective, and that the CEQA document failed to consider all environmental impacts of available emissions control technologies to comply with the emission limits. The judge found that all the contentions made by WSPA were without merit. WSPA filed an appeal of this judgment (WSPA vs. SCAQMD et al, Court of Appeal of the State of California, Second Appellate District, Division Seven, Case No. B181303) and the court once again concluded that WSPA's arguments were without merit. Further, the court concluded that the SCAQMD met its obligation under CEQA to conduct an environmental assessment of Rule 1105.1. Therefore, in accordance with Public Resources Code (PRC) §21167.3(b), the 2003 Final EA has been determined to comply with CEQA.

#### **1.5 BASIS FOR DECISION TO PREPARE A NEGATIVE DECLARATION**

The SCAQMD was the lead agency responsible for preparing the 2003 Final EA and is the public agency that has the primary responsibility for approving the currently proposed project. Therefore, the SCAQMD is the appropriate lead agency to evaluate the potential environmental effects of the currently proposed project which is the subject of this Negative Declaration. Based on the following background, the SCAQMD has determined that a Negative Declaration is the appropriate document to evaluate the proposed modifications at the Shell Wilmington Refinery.

The SCAQMD has a certified regulatory program pursuant to PRC §21080.5. CEQA Guidelines §15187 requires agencies (including agencies whose regulatory programs have been certified by the Resources Agency pursuant to §21080.5 of the PRC) to perform an environmental analysis of the reasonably foreseeable methods by which compliance with a rule or regulation will be achieved at the time of the adoption of a rule, regulation, or requiring the installation of air pollution control equipment, as long as the environmental analysis includes the following:

- An analysis of reasonably foreseeable environmental impacts of the methods of compliance;
- A analysis of reasonably foreseeable feasible mitigation measures relating to those impacts; and

- An analysis of reasonably foreseeable alternative means of compliance with the rule or regulation, which would avoid or eliminate the identified impacts (CEQA Guidelines §15187(c)(1-3)).

The 2003 Final EA for Rule 1105.1 prepared by the SCAQMD complies with the requirements of CEQA Guidelines §15187. Furthermore, the 2003 Final EA contained a refinery-specific analysis of the impacts of complying with the rule.

CEQA Guidelines §15189 establishes requirements for the lead agency to evaluate projects that consist solely of compliance with a performance standard or treatment standard which were the subject of an environmental analysis described in CEQA Guidelines §15187. If preparing a negative declaration, mitigated negative declaration or EIR on the compliance project the lead agency for the compliance project shall, to the greatest extent feasible, use the environmental analysis prepared pursuant to §15187 (CEQA Guidelines §15189(a)). Therefore, the SCAQMD is relying on the analysis in the 2003 Final EA in the preparation of this Negative Declaration for the Shell Rule 1105.1 Compliance Project.

To comply with Rule 1105.1, the 2003 Final EA assumed that all of the existing ESPs at five of the six refineries would either be replaced with new models or rebuilt by December 31, 2006 or by December 31, 2008, if a requested extension was approved. The assumptions in the analysis for the Shell Rule 1105.1 Compliance Project are almost the same as the assumptions used in 2003 Final EA, though there are some minor differences between the two. The following outlines these differences:

- The 2003 Final EA assumed that only one ESP would be demolished and/or constructed or rebuilt at a time. Shell operators are proposing to build two new ESPs and then demolish the two existing ESPs immediately after the two new ESPs are brought online.
- The 2003 Final EA assumed that the demolition of an existing ESP and the construction activities to rebuild a new ESP would occur as Phase Ia and IIa, respectively and plate cleaning preparation of an existing ESP and construction activities to rebuild the existing ESP would occur as Phase Ib and IIb, respectively. Operations of the new and/or modified ESPs would occur as Phase 3. Instead, for the Shell Rule 1105.1 Compliance Project, Phase 1 entails the construction of two new ESPs, Phase 2 is the demolition of the existing ESPs, and Phase 3 is the construction of a third new ESP and demolition of the third existing ESP.
- The use of specific types of construction equipment was assumed in the analysis of the 2003 Final EA for demolition and construction activities. Shell operators propose to use slightly different equipment than what was analyzed in the 2003 Final EA for these (see Table 1-4 and Appendix A for further details).

- The 2003 Final EA assumed demolition and construction activities would occur for a maximum of 16 hours per day. For the Shell Rule 1105.1 Compliance Project, peak construction activities are expected to occur a maximum of 10 hours per day throughout the entire project except during January 2007 (i.e., during the scheduled turnaround of the FCCU) when the peak construction activities are expected to occur 24 hours per day.
- The 2003 Final EA assumed no or limited construction emissions from grading activities because the refinery operators were assumed to demolish the old ESPs and install new ESPs on the same foundations as the old ESPs. Because Shell operators propose to first construct two new ESPs, prior to demolishing the existing ESPs, the proposed site for the new ESPs will be graded and new foundations will be poured.

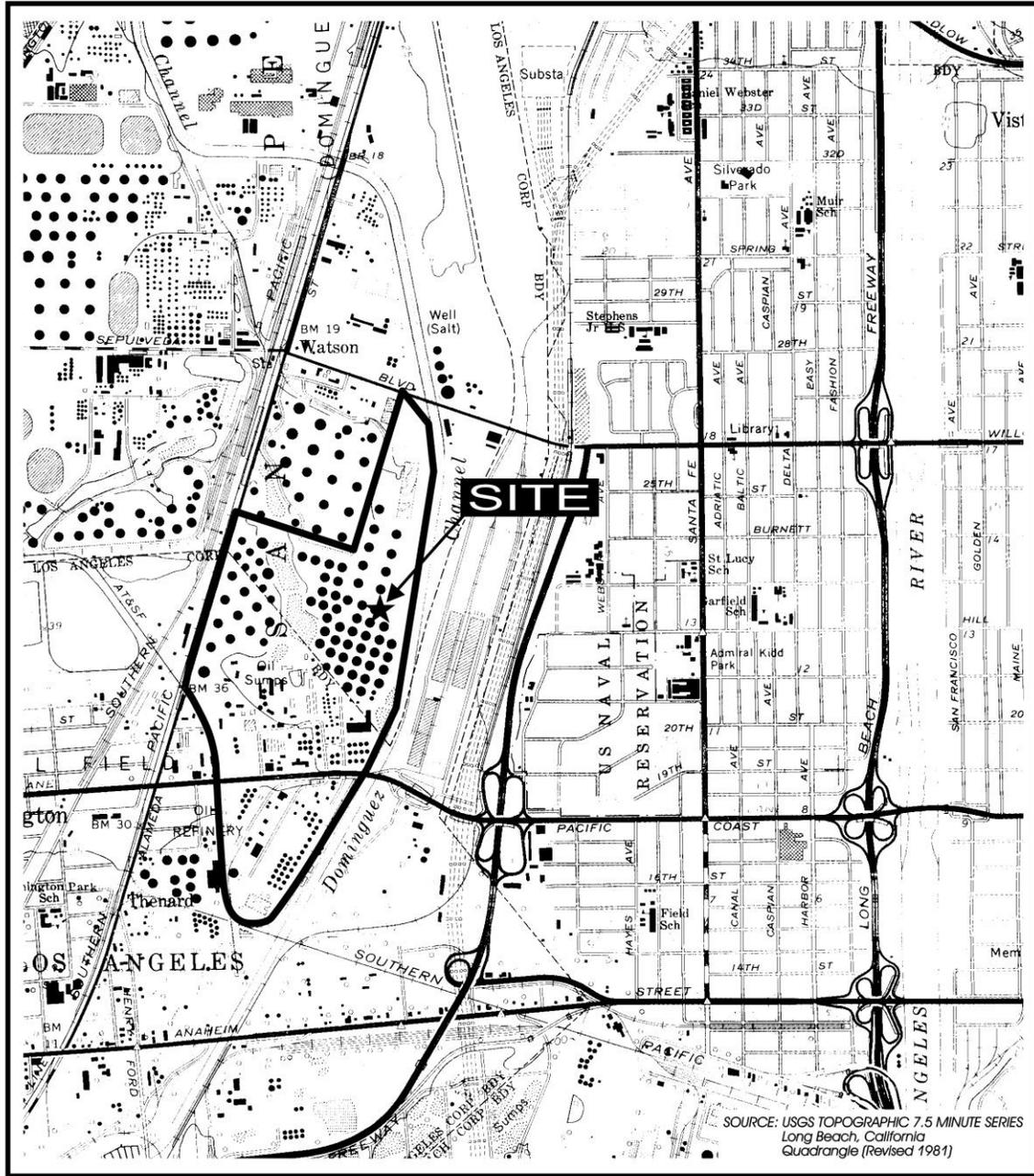
Thus, CEQA requires that SCAQMD only complete a further analysis of the air quality impacts during construction activities. The environmental analysis in Chapter 2 of this document demonstrates that the demolition of the existing ESPs and the installation and operation of new ESPs will not cause a new significant adverse environmental impact or make substantially worse, (i.e., beyond what was analyzed in the 2003 Final EA), an existing environmental impact requiring an EIR. An analysis of the environmental topics in the CEQA Guidelines indicates that the proposed project will not result in any new significant adverse environmental impacts; therefore, a Negative Declaration is the appropriate CEQA document for the proposed project.

## **1.6 PROJECT LOCATION**

The proposed project includes modifications to the Shell Wilmington Refinery which is located at 2101 East Pacific Coast Highway in the Wilmington district of the City of Los Angeles. Figures 1-1 and 1-2 shows the regional and site locations of the Refinery. The Refinery occupies about 300 acres of land, with the larger portion located within the jurisdiction of the City of Los Angeles and the smaller portion located within the City of Carson. The Refinery is bounded to the north by Sepulveda Boulevard, to the west by Alameda Street, to the south by the Southern Pacific Railroad tracks, and to the east by the Dominguez Channel. The Refinery is bisected by Pacific Coast Highway, with the larger portion of the Refinery to the north of Pacific Coast Highway and the smaller portion to the south. The Refinery and all adjacent areas are zoned for heavy industrial use. The closest residential area is about one-half mile east of the Refinery in the City of Long Beach (see Figure 1-2).

The Refinery is zoned for heavy industrial uses (M3-1). The land use in the vicinity of the Refinery includes oil production facilities, refineries, hydrogen plants, coke handling facilities, automobile wrecking/dismantling facilities, and other industrial facilities. The main operating portions of the Refinery are located within the Wilmington-Harbor City Planning Area (City of Los Angeles), which permits heavy industrial uses including petroleum refining on the Shell property (City of Los Angeles, 1999). A separate conditional use permit is not required for this proposed project. The Wilmington-Harbor





 Environmental Audit, Inc.

SITE LOCATION MAP  
SHELL REFINERY



Project No. 2440  
N:\2440\SiteLocMap.cdr

Figure 1-2

City Plan places no additional restrictions on refineries, and specifically allows for construction without regard to height limitations. A portion of the Refinery's tank farm and its Sulfur Recovery Plant are located within the City of Carson. This portion of the Refinery is located in the City of Carson's MH zone according to the City of Carson's Land Use element of its General Plan. Adjacent land uses also are heavy industrial and include other refineries, a hydrogen plant, undeveloped lots and container storage areas.

With regard to the equipment that will be affected by the proposed project, the existing ESPs are located adjacent to the FCCU (see Figure 1-3) and the new ESPs will be located within the same general area as the existing ESPs.

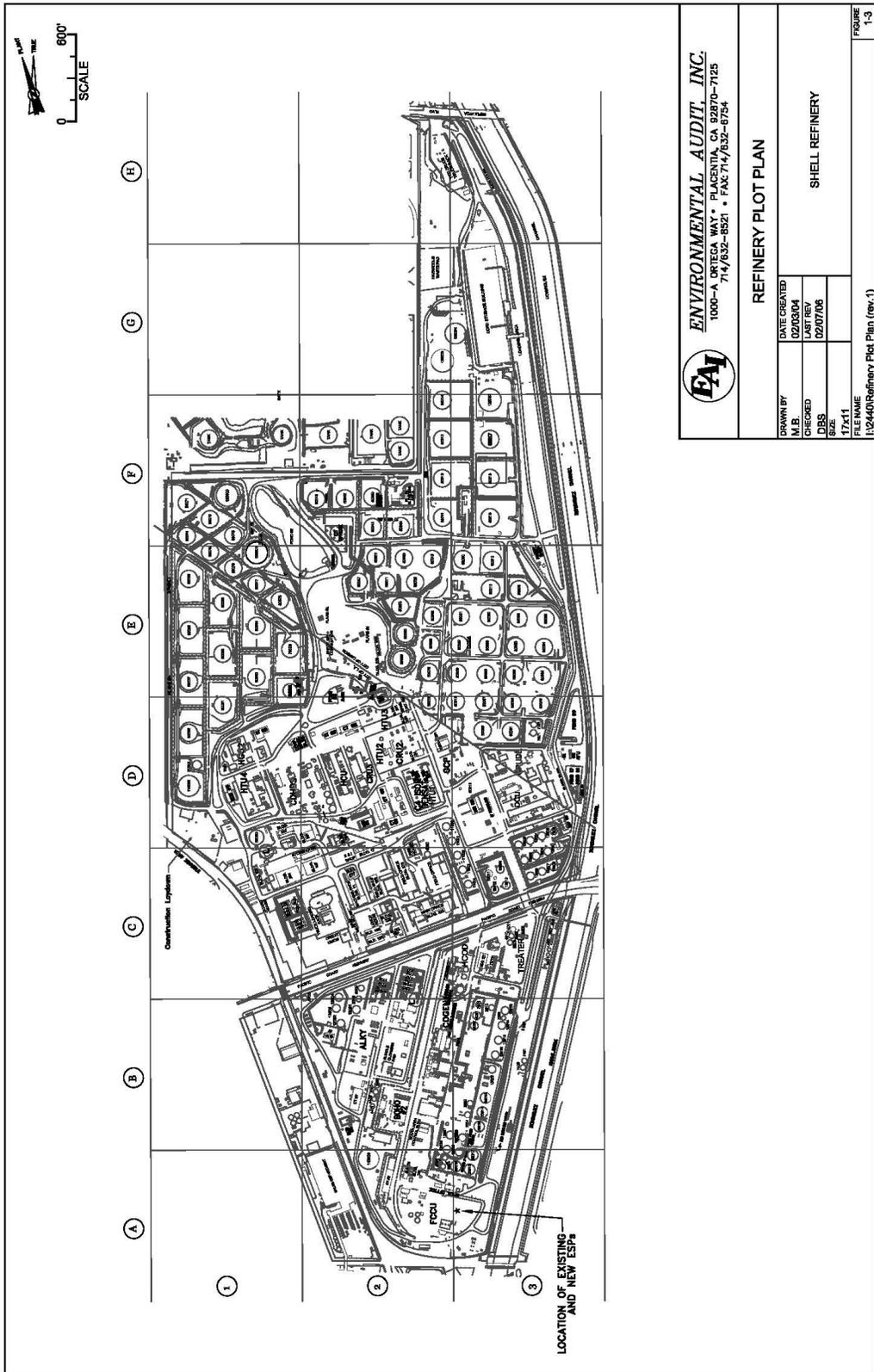
## **1.7 PROJECT DESCRIPTION**

### **1.7.1 Summary of Project Evaluated in 2003 Final EA**

At the time Rule 1105.1 was proposed for adoption, the project was evaluated in the 2003 Final EA. The following is a summary of project description in the 2003 Final EA and it describes what the adoption of Rule 1105.1 would achieve:

1. Establish an emission standard for filterable PM10 at 3.6 pounds per hour; 2.8 pounds per 1,000 barrels (bbls) of fresh feed; or, 0.005 grains per dry standard cubic foot (gr/dscf), corrected at three percent dry oxygen.
2. Establish an emission standard for ammonia slip at ten parts per million by volume (ppmv), corrected at three percent dry oxygen, from FCCUs.
3. Establish an initial compliance date of December 31, 2006.
4. Establish an extension to the initial compliance date of no later than December 31, 2008, for the purpose of coordinating installation of the PM10 control equipment with the FCCU turnaround for refineries to meet the standards for filterable PM10 and ammonia slip emissions from FCCUs, provided that a facility submits a written request by July 1, 2006 (subject to SCAQMD approval).
5. Allow an additional extension of the December 31, 2008 compliance date up to 90 days after start-up for the facility operator to conduct performance tests provided that the FCCU turnaround has not been completed by that date and the FCCU is operating with all necessary control equipment.
6. Require the facility operator to submit an application at least 30 days prior to the initial or extended compliance date, as applicable, to elect to comply with one or more of the emission standards.
7. Establish initial and annual compliance testing requirements to determine actual PM10 and ammonia slip emissions from FCCUs.

SHELL RULE 1105.1 COMPLIANCE PROJECT



8. Establish monitoring, recordkeeping and reporting requirements, to assure continuous compliance with the baseline (for existing control equipment) and future (for new control equipment) emission rates of PM10 and ammonia slip from FCCUs.
9. Specify test methods and calculation procedures for determining compliance with the PM10 and ammonia slip emission standard requirements.
10. Exempt affected refineries from having to comply with the PM10 and ammonia emission standards during startup and shutdown periods and for planned routine maintenance provided that each startup and shutdown period does not exceed 120 hours.
11. Exclude particulate emissions from existing CO boilers that are located downstream of existing electrostatic precipitators from the compliance demonstration for the filterable PM10 emission limit standards.

The 2003 Final EA determined that six refineries in southern California operate FCCUs that would be subject to the requirements in Rule 1105.1. However, emissions data from one of the six refineries demonstrated compliance with Rule 1105.1. The 2003 Final EA evaluated both the direct and indirect air quality impacts of implementing Rule 1105.1 for the remaining five refineries. The 2003 Final EA assumed that these five refineries would demolish their existing ESPs and construct new ESPs; or clean the plates of the existing ESPs and rebuild them by December 31, 2006 or by December 31, 2008, if a requested extension is approved. Other project-specific assumptions in the 2003 Final EA include the following:

- Because of space limitations at the five affected refineries, the need to keep operations going, and when each refinery has scheduled the next FCCU turnaround, only one ESP per refinery could potentially be demolished and/or constructed/rebuilt at a time.
- Due to refinery planning and permitting requirements, none of the refineries were expected to begin their modifications prior to 2004. Therefore, to derive the peak construction-related emissions, the construction activities were expected to occur over a 48-month period for the “worst-case.”
- Demolition of an existing ESP and construction of a new ESP would occur as Phase Ia and IIa, respectively.
- Plate cleaning preparation of an existing ESP and construction activities to rebuild the existing ESP would occur as Phase Ib and IIb, respectively.
- Operations of the new or modified ESPs would occur as Phase III.

The assumptions used in each phase of the construction activities in the 2003 Final EA are shown in Table 1-1.

**TABLE 1-1  
ASSUMPTIONS USED IN 2003 FINAL EA<sup>(1)</sup>**

<b>Construction Phase</b>	<b>Number of Workers</b>	<b>Days/Hours of Construction</b>	<b>Construction Equipment Required</b>
Phase Ia: ESP Demolition Activities	34	6 days/week 16 hours/day	3 cranes, 1 forklift, 2 flatbed trucks, 1 tractor trailer, 1 front-end loader, 1 pile driver/extractor.
Phase Ib: ESP Plate Cleaning Activities	38	6 days/week 16 hours/day	3 cranes, 1 forklift, 2 flatbed trucks, 1 tractor trailer, 1 front-end loader, 1 pile driver/extractor, and 1 vacuum truck.
Phase IIa: Construction of New ESP	34	5 days/week 16 hours/day	3 cranes, 1 forklift, 2 flatbed trucks, 1 tractor trailer, 1 front-end loader, 1 pile driver/extractor, 10 electric welders, and 10 acetylene torches.
Phase IIb: Rebuilding Existing ESP	38	6 days/week 20 hours/day	3 cranes, 1 forklift, 2 flatbed trucks, 1 tractor trailer, 1 front-end loader, 1 pile driver/extractor, 10 electric welders, and 10 acetylene torches.
Phase III: Operations of New/Rebuilt ESPs	0	N/A <sup>(2)</sup>	20 additional one-way truck trips per year

(1) Source: SCAQMD, 2003.

(2) No additional workers were expected following completion of construction activities. The refineries would continue to operate 24 hours per day.

**1.7.2 Shell Rule 1105.1 Compliance Project**

Operators of the Shell Wilmington Refinery have reviewed various options for complying with Rule 1105.1. Currently, Shell operates a series of cyclones followed by three dry ESPs to control particulates from their FCCU. The ESPs were installed over 30 years ago. Because of their age, the existing ESPs are no longer as efficient in capturing particulates as the new models currently available. For this reason, Shell operators have decided to remove the three existing ESPs and install three new ESPs as control equipment for the FCCU.

Specifically, the Shell Rule 1105.1 Compliance Project consists of the following components which will involve construction activities occurring over three phases (see Figure 1-4):

- Phase 1: Construct two new ESPs during a nine-month period. The existing ESPs will continue to operate during this time.

- Phase 2: Demolish two existing ESPs during a three-month period. Note that Phase 1 and Phase 2 will overlap during the turnaround (shutdown period) of the FCCU.
- Phase 3: Construct a third ESP and demolish the third existing ESP during a three-month period.

Construction of the Shell Rule 1105.1 Compliance project is scheduled to begin in May 2006 and to be complete by June 2007. Phases 1 and 2 are expected to overlap with each other during January 2007, to coincide with the scheduled turnaround of the FCCU.

The assumptions in the analysis for the Shell Rule 1105.1 Compliance Project are almost the same as the assumptions in the 2003 Final EA, though there are some minor differences between the two. The following outlines these differences:

- The 2003 Final EA assumed that only one ESP would be demolished and/or constructed or rebuilt at a time. Shell operators are proposing to build two new ESPs and then demolish the two existing ESPs immediately after the two new ESPs are brought online.
- The 2003 Final EA assumed the demolition of an existing ESP and construction activities to rebuild a new ESP would occur as Phase Ia and IIa, respectively, and plate cleaning preparation of an existing ESP and construction activities to rebuild the existing ESP would occur as Phase Ib and IIb, respectively. Operations of the new and/or modified ESPs would occur as Phase 3. Instead, for the Shell Rule 1105.1 Compliance Project, Phase 1 entails the construction of two new ESPs, Phase 2 is the demolition of the two existing ESPs, and Phase 3 is the construction of a third new ESP and the demolition of the third existing ESP.
- The use of specific types of construction equipment was assumed in the analysis of the 2003 Final EA for demolition and construction activities. Shell operators propose to use slightly different equipment than what was analyzed in the 2003 Final EA for these (see Table 1-4 and Appendix A for further details).
- The 2003 Final EA assumed demolition and construction activities would occur for a maximum of 16 hours per day. For the Shell Rule 1105.1 Compliance Project, peak construction activities are expected to occur a maximum of 10 hours per day throughout the entire project except during January 2007 (i.e., during the scheduled turnaround of the FCCU) when the peak construction activities are expected to occur 24 hours per day.
- The 2003 Final EA assumed no or limited construction emissions from grading because the refinery operators were assumed to demolish the old ESPs and install new ESPs on the same foundations as the old ESPs. Because Shell operators

proposed to first construct two new ESPs, prior to demolishing the existing ESPs, the proposed site for the new ESPS will be graded and new foundations will be poured.

Based on the fact that Shell operators have decided to demolish their existing ESPs and replace them with new dry ESPs, the scope of the Shell Rule 1105.1 Compliance Project is within the scope of the project evaluated in the 2003 Final EA. In addition, the analysis of environmental impacts in Chapter 2 has concluded that the environmental impacts from the Shell Rule 1105.1 Compliance Project are within the scope of the environmental analysis in the 2003 Final EA.

### **1.7.3 Other Proposed FCCU Modifications**

*Shell is proposing some other modifications/maintenance activities to the FCCU during the FCCU turnaround period. Shell FCCU operators inspected the existing Riser in the FCCU during the 2003 FCCU turnaround. The inspections found that the five inch thick refractory lining in the top portion of the Riser (a section that is downstream of the feed nozzles and upstream of the Disengager) is spalling (cracking and flaking) and is approaching the end of its life. The Riser is a large refractory-lined pipe that routes the hydrocarbon feed/catalyst mixture to the Disengager. Typical refractory life is about 20 years. This section of the FCCU Riser will be 21 years old in 2007. Riser replacements or replacement of sections of a riser are routinely conducted every 20 years. Therefore, Shell is proposing to replace the top portion of the existing Riser with a new Riser.*

*The replacement of this portion of the Riser is considered routine replacement/routine maintenance. No increase in FCCU throughput or emissions will result following replacement of this portion of riser pipe. The replacement of this top section of the Riser is a replacement-in-kind, as the replaced section will be functionally identical to the old section. The replaced section will not increase the process rate through the Riser or the FCCU. There is no change in the process conditions and no change in process rate of the FCCU.*

*The diameter of the new portion of the Riser may be slighter larger than the existing diameter of the Riser (inside diameter of 56 versus 52 inches). The larger pipe diameter will reduce the velocity of the mixture as it enters the Disengager. This is expected to provide a more stable refractory life (reduce the potential for spalling) and lead to less catalyst particle breakage.*

Shell Wilmington Refinery  
Rule 1105.1 Compliance Project

Construction Schedule

Phase	2006								2007					
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan*	Feb	Mar	Apr	May	Jun
Phase 1 - Construction of 2 ESPs	█	█	█	█	█	█	█	█	█					
Phase 2 - Demolition of two existing ESPs									█	█	█			
Phase 3 - Construction of 3rd ESP & demolition of 3rd existing ESP												█	█	█

\* Peak month due to 24-hour operation during FCCU Turnaround.

1-15



