

# **SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT**

## **Addendum to the Final Environmental Impact Report for the**

### **Chevron Products Company El Segundo Refinery Product Reliability and Optimization Project**

SCH. No. 2007081057

[Final EIR Certified May 9, 2008]

August 2015

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## **1.0 INTRODUCTION**

Chevron Products Company (Chevron) is proposing a modification to its El Segundo Refinery Product Reliability and Optimization (PRO) Project. Specifically, Chevron is proposing to modify the best available control technology (BACT) based nitrogen oxides (NO<sub>x</sub>) limit for a tail gas unit (TGU) incinerator that was constructed as part of the PRO Project. The TGU recovers sulfur from the off-gas (referred to as tail gas) of the Sulfur Recovery Unit (SRU). After the tail gas has been treated in the TGU, the remaining sulfur-bearing compounds are incinerated in the TGU incinerator, which is an emissions control device. The TGU incinerator converts the remaining sulfur-bearing compounds in the tail gas to sulfur oxides (SO<sub>x</sub>) and water. At the Chevron Refinery, the SO<sub>x</sub> in the TGU incinerator exhaust is then removed from the exit gas in a wet gas scrubber prior to discharge to the atmosphere. The proposed modification does not affect the operation of the SRU or the TGU as previously analyzed in the PRO Project EIR. The proposed modification only affects the TGU incinerator. The new NO<sub>x</sub> limit will comply with current BACT requirements. According to the incinerator manufacturer, continuous compliance with the new NO<sub>x</sub> Limit will require incinerator operational changes including an increase in the burner air to fuel ratio and incinerator fired duty (i.e., the amount of heat produced by the incinerator). The incinerator will not be physically modified but the proposed changes in the incinerator operation will result in a change in emissions. Because the currently proposed project involves a minor technical change of a previously approved project, modification of the previously approved document is required under the California Environmental Quality Act (CEQA). As discussed in this Addendum, it was determined that the previously proposed PRO Project and related environmental impacts were comprehensively evaluated in a previously certified CEQA document. This Addendum discloses environmental impacts resulting from the modification of one of the permits involved in the PRO Project.

The PRO Project was evaluated in the May 2008 Final Environmental Impact Report (EIR) (SCH No. 2007081057). The project evaluated in the 2008 Final EIR included modifications existing units including the No. 2 Crude Unit, No. 2 Residuum Stripper Unit (RSU), Minalk/Merox Unit, Waste Gas Compressors, Fluidized Catalytic Cracking Unit (FCCU), Alkylolation Unit, Vacuum Residuum Desulfurization Unit (VRDS), ISOMAX Unit, Cogeneration (Cogen) Facilities, and the Railcar Loading/Unloading Rack. New process units included sulfur processing facilities (i.e., Sour Water Stripper (SWS), Sulfur Recovery Unit (SRU), and TGU), Vapor Recovery and Safety Flare System, Water Treatment Facilities (i.e., reverse osmosis units and nitrogen removal units), and additional storage capacity. The modifications and additions served to increase the reliability, energy efficiency, and capacity of specific existing Refinery processing equipment; process crude oils to produce lower sulfur fuel products and increase production of commercial grade elemental sulfur; improve the management of blending components of CARB fuels; and, reduce the potential for atmospheric releases and related emissions from pressure relief devices (PRDs). The 2008 Final EIR determined the PRO Project would have significant impacts (see Section 2.0) and imposed feasible mitigation measures for air quality during construction and traffic during construction.

In May 2010, an Addendum to the 2008 PRO Project EIR was prepared that addressed modifications to the storage capacity originally proposed in the PRO Project and the addition of a

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wet gas scrubber to the TGU that was necessary to meet permitting requirements. The wet gas scrubber was installed downstream of the TGU incinerator to reduce SO<sub>x</sub> emissions.

In July 2013, a second Addendum to the 2008 PRO project EIR was prepared that addressed the No. 2 Crude Unit PRD project component. Implementation of the No. 2 Crude Unit PRD project component was delayed and, after further engineering evaluation and design, it was determined that the existing Low Sulfur Fuel Oil (LSFO) flare gas recovery (FGR) system and safety flare had the necessary capacity to accommodate emergency releases associated with the PRDs from the No. 2 Crude Unit PRD project component. Therefore, the vapor recovery components that were to be routed to the new Vapor Recovery and Safety Flare System proposed in the May 2008 Final EIR for the PRO Project were routed to the LSFO FGR system and safety flare and thus, the new proposed safety flare was no longer necessary.

Additionally, the July 2013 Addendum modifications included installing only one of the two previously proposed knock-out drums and replacing one pressure relief drum in the No. 2 Naphtha Hydrotreater Unit. Therefore, the waste gas compressors in the No. 2 Crude Unit that were proposed to be rerouted to the new Vapor Recovery and Safety Flare System will continue to be routed to the LSFO FGR system and safety flare. The modifications reduced emissions of carbon monoxide (CO), volatile organic compounds (VOC), NO<sub>x</sub>, SO<sub>x</sub>, particulate matter less than 10 microns in diameter (PM<sub>10</sub>), and particulate matter less than 2.5 microns in diameter (PM<sub>2.5</sub>) by 2.3, 9.8, 8.4, 0.1, 0.5, and 0.5 pounds per day (lb/day), respectively. These modifications have no relation, nor have any effect on the currently proposed project modification.

The TGU, which was proposed as part of the PRO Project EIR, was put into operation in June 2012. Due to the aforementioned inability of the TGU incinerator to comply with the permitted NO<sub>x</sub> limit, the TGU incinerator is currently operating under a variance issued by the SCAQMD Hearing Board (Case No. 831-366). During the TGU permitting process in 2010, the permitted carbon monoxide (CO), NO<sub>x</sub>, and sulfur oxides (SO<sub>x</sub>) emissions limits for the TGU incinerator were reduced from those evaluated in the 2008 PRO Project Final EIR and the reduction was disclosed in the May 2010 Addendum. The currently proposed modification would increase the allowable CO, NO<sub>x</sub>, and SO<sub>x</sub> emissions from those disclosed in the May 2010 Addendum, but would be less than the emissions originally analyzed in the May 2008 Final EIR for the TGU. As discussed below, the impacts associated with the currently proposed modification have been addressed in the previous CEQA document prepared for the PRO Project. The details of the currently proposed modification are explained in Section 5.2 of this Addendum.

The SCAQMD has evaluated the changes to the May 2008 project (as detailed in Section 5.2 of this Addendum) and determined that the currently proposed modification does not create any new significant adverse environmental impacts or make substantially worse any existing significant adverse environmental impacts, and only minor additions or changes are necessary to make the May 2008 Final EIR and prior addenda adequate for the revised project. Therefore, when considering the effects of the currently proposed modification, the SCAQMD has concluded that an Addendum is the appropriate document to be prepared in accordance with CEQA in order to evaluate potential environmental impacts associated with the currently proposed modification.



## **2.0 BASIS FOR DECISION TO PREPARE AN ADDENDUM**

The SCAQMD was the lead agency responsible for preparing the May 2008 Final EIR and is the public agency that has the primary responsibility for approving the currently proposed modification. Therefore, the SCAQMD is the appropriate lead agency to evaluate the potential environmental effects of the currently proposed modification that are the subject of this Addendum.

Based on the analysis of the currently proposed modification in Sections 6.0 and 7.0, the SCAQMD concludes that the only environmental area possibly adversely affected by the currently proposed modification is air quality. The May 2008 Final EIR identified significant adverse air quality impacts and transportation and traffic impacts during construction. Impacts to energy, hazard and hazardous materials, hydrology and water quality, noise, and transportation and traffic during operation were analyzed and concluded to be less than significant. As indicated in Section 6.0, the currently proposed modification does not change these conclusions: significant adverse air quality impacts during construction and operations and transportation and traffic impacts during construction of the PRO Project still occurred irrespective of the currently proposed modification to the project, since the peak construction period has already occurred. However, as shown in Subsection 6.2.1 of this Addendum, the currently proposed modification will not cause new significant adverse air quality impacts or increase the severity of significant adverse air quality impacts, or result in new significant adverse air quality impacts beyond those previously identified in the May 2008 Final EIR and prior addenda. Also, no construction is needed to implement the currently proposed modification, so no change to the analysis of traffic/transportation impacts during construction as analyzed in the May 2008 Final EIR would occur.

Under the currently proposed modification, the TGU emissions would be below the emissions established in the May 2008 Final EIR for CO, NO<sub>x</sub>, and SO<sub>x</sub>. VOC, PM<sub>10</sub>, and PM<sub>2.5</sub> emissions will increase by 2.9, 1.8, and 1.8 lb/day, respectively, which is well below the significance threshold. As a result, the currently proposed modification will result in no new significant adverse impacts or increase the severity of significant impacts previously identified in the May 2008 Final EIR.

Based on the analysis of potential environmental impacts from the currently proposed modification (Section 6.0), it can be concluded that the currently proposed modification does not create new significant adverse impacts or increase the severity of significant impacts previously identified in the May 2008 Final EIR. As a result, pursuant to CEQA Guidelines §15164(a), this document constitutes an Addendum to the May 2008 Final EIR for the Chevron Products Company El Segundo Refinery PRO Project. Section 6.0 of this Addendum further explains the basis for the determination to prepare an Addendum.

CEQA Guidelines §15164(a) allows a lead agency to prepare an Addendum to a Final EIR if some changes or additions are necessary but none of the conditions requiring a subsequent EIR or Negative Declaration are present.

The currently proposed modification will result in no new significant adverse effects or substantially increase the severity of significant effects previously identified in the May 2008 Final EIR. Further, the currently proposed modification consists of only a necessary minor change to the

May 2008 Final EIR that does not raise important new issues about the previously analyzed significant environmental effects. Thus, the currently proposed modification meets all of the conditions in the CEQA Guidelines §15164 for the preparation of an Addendum. Because the currently proposed modification meets all of the conditions for preparing an Addendum, a subsequent EIR pursuant to CEQA Guidelines §15162 is not required. This conclusion is supported by substantial evidence as explained in Sections 6.0 and 7.0 of this Addendum.

### **3.0 BACKGROUND CEQA DOCUMENTS**

The activities associated with the Chevron PRO Project were evaluated sequentially in the following CEQA documents. Summaries of the CEQA documents are provided below. The CEQA documents can be obtained by contacting the SCAQMD's Public Information Center at (909) 396-2039 or they can be downloaded from the SCAQMD's CEQA Webpage at the following Internet address:

2008 EIR: <http://www.aqmd.gov/home/library/documents-support-material/lead-agency-permit-projects/permit-project-documents---year-2008/feir-chevron>

2010 Addendum: <http://www.aqmd.gov/docs/default-source/ceqa/documents/permit-projects/2010/2010chevronaddendum.pdf?sfvrsn=4>

2013 Addendum: <http://www.aqmd.gov/docs/default-source/ceqa/documents/permit-projects/2013/addendum-to-the-final-eir-for-chevron-products-company-el-segundo-refinery-product-reliability-and-optimization-project.pdf?sfvrsn=4>

Notice of Preparation of an Environmental Impact Report (EIR) (SCAQMD, August 2007): A Notice of Preparation (NOP) and Initial Study for the Chevron Products Company El Segundo Refinery Product Reliability and Optimization Project were released for a 30-day public review and comment period on August 10, 2007. The Initial Study included a project description, project location, an environmental checklist, and a preliminary discussion of potential adverse environmental impacts. The NOP requested public agencies and other interested parties to comment on the scope and content of the environmental information to be evaluated in the Draft EIR.

Draft EIR (SCAQMD, 2008a): The Draft EIR was released for a 45-day public review and comment period on March 7, 2008. The Draft EIR included a comprehensive project description, a description of the existing environmental setting, a preliminary analysis of potential adverse environmental impacts for each environmental topic (including cumulative impacts) that could be adversely affected by the PRO Project, mitigation measures, project alternatives, and all other relevant topics required by CEQA. The Draft EIR also included a copy of the NOP and Initial Study, copies of the five comment letters received on the NOP and Initial Study, and responses to all comment letters received on the NOP and Initial Study. It was concluded in the Draft EIR that the Chevron Products Company El Segundo Refinery PRO Project may have significant adverse impacts on air quality and traffic during construction in spite of implementing mitigation measures and less than significant noise and hazard impacts.

Final EIR (SCAQMD, 2008b): The Final EIR was prepared by revising the Draft EIR to incorporate applicable updated project information and to respond to comments received on the

Draft EIR. The Final EIR contained five comment letters and responses to comments received on the Draft EIR. The changes included in the Final EIR did not constitute significant new information relating to the environmental analysis or mitigation measures. The Final EIR was certified on May 9, 2008. The May 2008 Final EIR Chapter 1 – Introduction and Executive Summary is presented in Appendix A of this Addendum.

Addendum (SCAQMD, 2010): The 2010 Addendum to the 2008 PRO Project EIR was prepared that addressed modifications to the storage capacity originally proposed in the PRO Project and the addition of a wet gas scrubber to the TGU to meet permitting requirements. The TGU emissions were recalculated to be consistent with the permit limits, which reduced the NO<sub>x</sub> emissions from those presented in the May 2008 Final EIR. The changes did not constitute significant new information under CEQA Guidelines §15164(a) so an Addendum was the appropriate CEQA document. The 2010 Addendum was certified May 13, 2010.

Addendum (SCAQMD, 2013): The 2013 Addendum to the 2008 PRO Project EIR was prepared that addressed several changes to the No. 2 Crude Unit PRD component of the 2008 PRO Project (No. 2 Crude Unit PRD project component) that were made during the permitting process. The changes did not constitute significant new information under CEQA Guidelines §15164(a) so an Addendum was the appropriate CEQA document. The 2013 Addendum was certified July 24, 2013.

#### **4.0 PROJECT LOCATION**

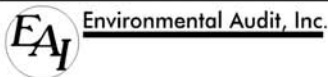
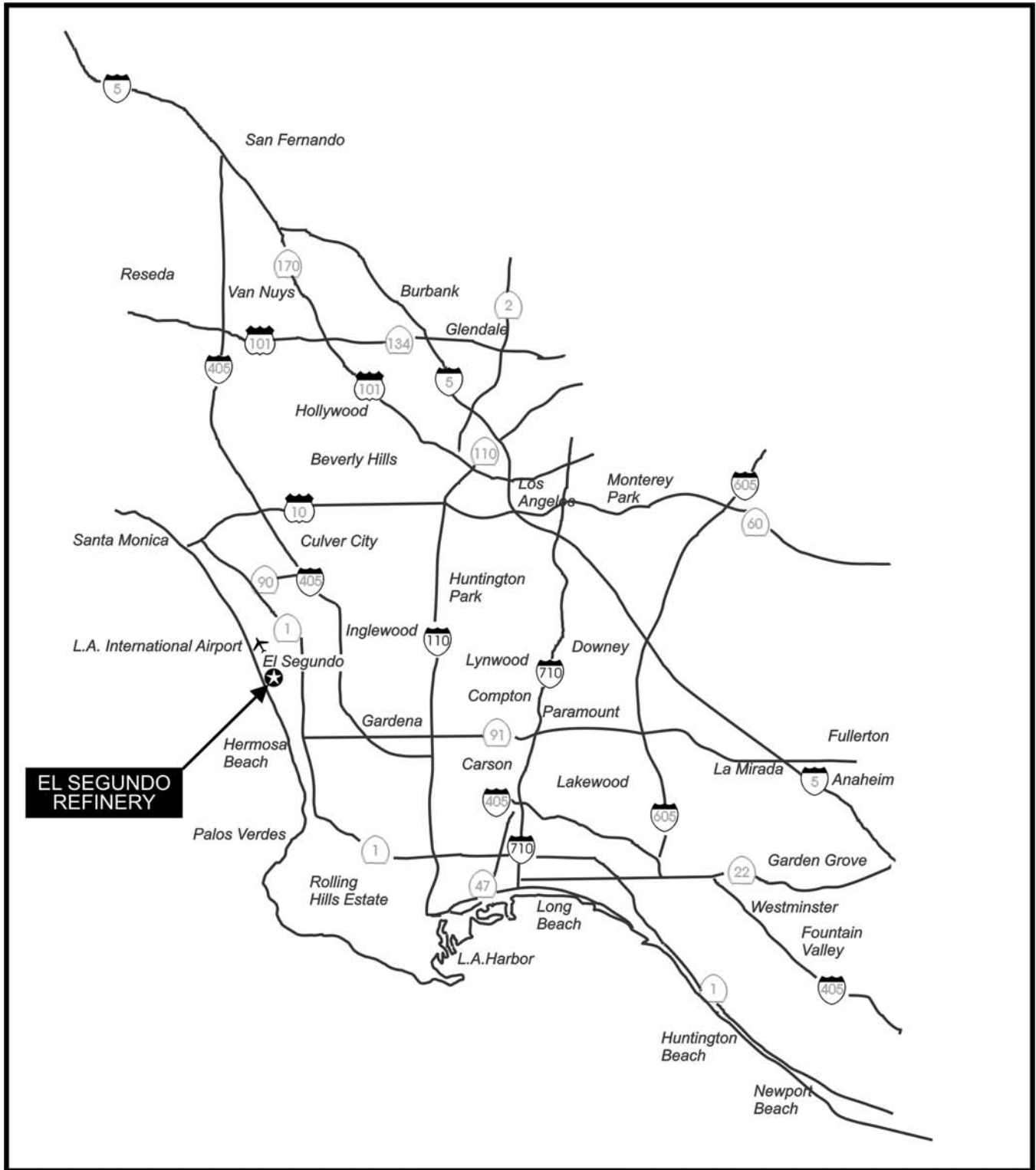
The currently proposed modification will occur within the confines of the Chevron El Segundo Refinery. The Refinery is located within the overall southern California region, as shown in Figure 1. The Refinery is located at 324 West El Segundo Boulevard, El Segundo, California, as shown in Figure 2.

#### **5.0 BACKGROUND AND PROJECT DESCRIPTION**

The TGU is a component of the SRU that serves to recover sulfur and combust any remaining hydrogen sulfide (H<sub>2</sub>S) in the exhaust gas into SO<sub>x</sub>. The SRUs provide an important role in Refinery operations by converting H<sub>2</sub>S streams from the fuel gas treating units and sour water strippers into commercial sulfur, which is sold as a product. The new SRU (identified as SRU No. 73) approved in the May 2008 Final EIR is the fourth SRU at the Refinery. As shown in Figure 3, since June 2012 when SRU No. 73 began operation, SO<sub>x</sub> emission rates from the combined SRU operations at the Refinery have been reduced on a per barrel basis of molten sulfur produced.

This section presents a description of the TGU project component of the PRO Project as evaluated in the May 2008 Final EIR, as well as a description of the modification to the TGU from the May 2010 Addendum and the currently proposed modification.

**ADDENDUM TO THE FINAL EIR FOR THE CHEVRON PRODUCTS COMPANY EL SEGUNDO REFINERY PRODUCT RELIABILITY AND OPTIMIZATION PROJECT**

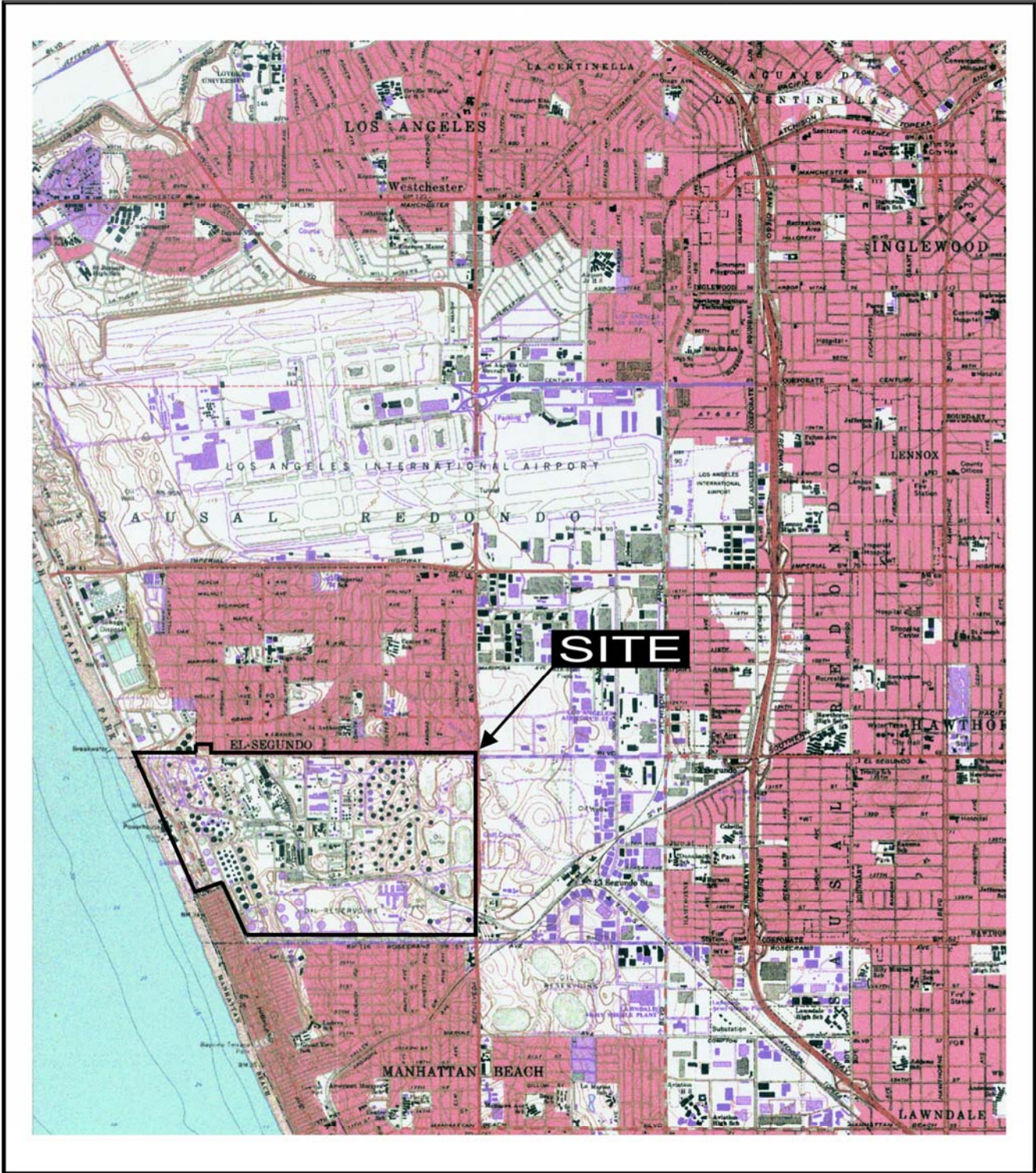


**REGIONAL MAP**  
Chevron Products Company  
El Segundo Refinery





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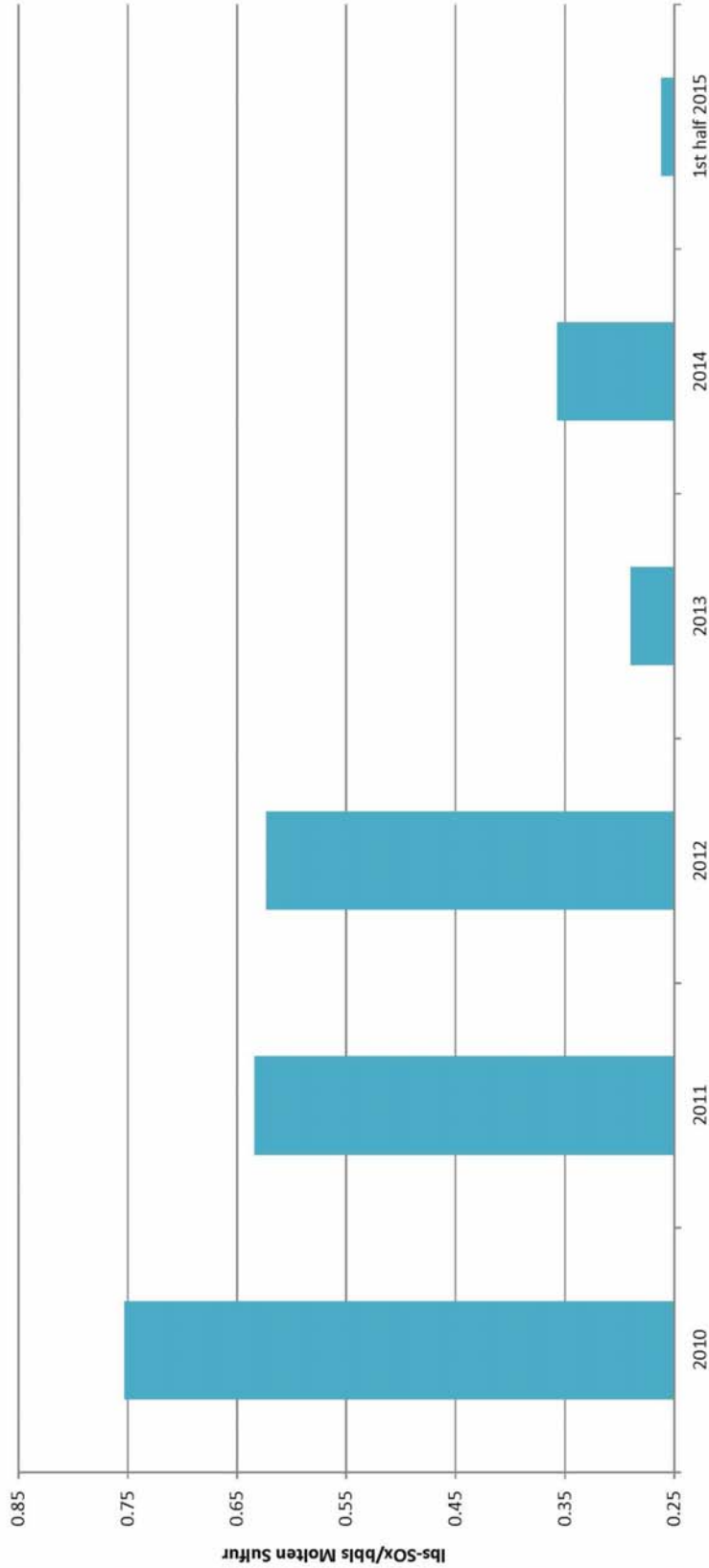


**EA** Environmental Audit, Inc.

**SITE LOCATION MAP**  
Chevron Products Company  
El Segundo Refinery

0 2,000'





Note: Based on annual data for all operating SRUs (three prior to the new SRU, which became operational in June 2012).



**EMISSION RATE OF SOx EMITTED PER BARREL SULFUR PRODUCED CHEVRON SRUs**

Project No. 2505C

N:\2505C\Figure 3 - Sox-S Emission Rate Chart (rev1).cdr

Figure 3

## **5.1 TGU component of the May 2008 Final PRO Project EIR**

In the May 2008 Final EIR, the design of the SRU included the exhaust from the SRU vented to a new TGU for further processing of H<sub>2</sub>S and SO<sub>x</sub> before discharging to the atmosphere. The TGU included a new incinerator. As part of the permitting process in 2010, a wet gas scrubber for SO<sub>x</sub> removal was added to the TGU to meet permitting requirements and the fired duty was increased from 32.7 million British Thermal Units per hour (mmBtu/hr) to 41.9 mmBtu/hr. Construction of the TGU project component was originally proposed to take place concurrently with the entire PRO Project, but was delayed during the permitting process. The 2010 permitting modifications were analyzed in the May 2010 Addendum. Construction began in 2010 and the TGU began operation in June 2012.

## **5.2 Currently Proposed Modification**

In 2010, the TGU incinerator was permitted with an ultra-low NO<sub>x</sub> burner (ULNB). The incinerator manufacturer guaranteed that the incinerator with the ULNB could comply with a NO<sub>x</sub> emission limit of 0.02 pounds per million British Thermal Unit (lb/mmBtu), which was much lower than the established BACT at the time the Permit-to-Construct was issued. However, the ULNB has not performed as well in the TGU incinerator as guaranteed by the manufacturer. Chevron has proposed to revise the TGU incinerator NO<sub>x</sub> limit to 0.05 lb/mmBtu, which complies with BACT. The incinerator manufacturer advises that the incinerator must be operated at a higher air to fuel ratio to continuously comply with the proposed 0.05 lb/mmBtu NO<sub>x</sub> limit. The maximum incinerator fired duty will be increased from the current 41.9 mmBtu/hr to 47.2 mmBtu/hr to heat the additional air fed to the incinerator. Chevron has requested that the permitted incinerator fired duty be increased by an additional 2.9 mmBtu/hr to provide operational flexibility of the TGU incinerator. Consequently, the TGU is operating under a variance issued by the SCAQMD Hearing Board (Case No. 8931-366) that allows the TGU incinerator to operate at a maximum NO<sub>x</sub> level of 0.05 lb/mmBtu and a maximum fired duty of 50.1 mmBtu/hr. The currently proposed modification of the NO<sub>x</sub> limit and incinerator fired duty will not require any physical changes to the TGU. In addition, the potential increased emissions associated with starting up and shutting down the SRU, as limited by the permit, were analyzed in this Addendum. The permit will specifically limit startup and shutdown emissions at 132 lb/day of NO<sub>x</sub> that was previously included as part of the total operational limits (see Table 5), so still within what was analyzed in the May 2008 Final EIR.

Table 1 summarizes the TGU operating parameters as originally proposed in the May 2008 Final EIR, as amended previously, and as currently proposed. As shown in Table 1, the emissions from the currently proposed modification will be less than originally analyzed in the May 2008 Final EIR.

## **6.0 IMPACT ANALYSIS**

The following sections present a description of the impact analysis contained in the May 2008 Final EIR associated with the TGU project component, as well as the analysis of the impacts of the TGU component of the May 2010 Addendum, and the currently proposed modification. To provide a comprehensive impact analysis of the modifications to the TGU, the May 2010



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Addendum TGU modifications and the currently proposed modification are combined for comparison to the TGU as analyzed in the May 2008 Final EIR.

**TABLE 1**

Summary of TGU Operating Parameters and Emission Limits

Criteria	Units	May 2008 FEIR	May 2010 Addendum	July 2013 Addendum	Proposed Modification
Firing Rate	mmbtu/hr	32.7	41.9	NA <sup>(1)</sup>	50.1
NOx Emission Limit	ppm	40	5.2	NA	--
NOx Emission Limit	lb/mmBtu	--	0.02	NA	0.05
NOx Emission Limit	lb/day	133.5	18.3	NA	60.1
SOx Emission Limit	ppm	30	12	NA	12
SOx Emission Limit	lb/day	139.3	58	NA	68.6

(1) NA = Not applicable. The July 2013 Addendum addressed modifications to the No. 2 Crude Unit PRV component of the PRO Project with no TGU modifications.

The baseline used in the May 2008 Final EIR was the facility as it existed at the time the NOP/IS was published (August 2007) per the requirements of CEQA Guidelines §15125. The May 2008 Final EIR considered all direct (emissions associated with proposed new units, e.g., sulfur recovery facilities, new storage tanks, etc.), as well as indirect impacts of the PRO Project (e.g., emissions associated with mobile sources). Equipment potentially impacted by the PRO Project (both upstream and downstream) were also evaluated to determine if the PRO Project would result in an emissions increase, even though the equipment was operating within permit limits and no permit modification would be required. However, no other equipment, beyond those evaluated in the PRO Project, were identified that would result in an increase in emissions due to the PRO Project (see May 2008 Final EIR, page 4-10). The currently proposed modification to the previously approved project is a minor modification that does not change the conclusions of the May 2008 Final EIR. In addition, there is no change to the circumstances under which the PRO Project was undertaken, therefore, there is no change to the baseline or environmental setting of the proposed project.

This section sequentially presents the initial project evaluated in the May 2008 Final EIR and the currently proposed modification to show the chronology of the impact analysis, and to show the comparison of the currently proposed modification with the May 2008 Final EIR Project.

**6.1 Summary of Air Quality Impacts in the May 2008 Final EIR**

The NOP/IS prepared for the May 2008 Final EIR evaluated all environmental topics in accordance with CEQA and determined that ten of the 17 environmental topic areas identified in the environmental checklist (CEQA Guidelines, Appendix G) would not be significantly adversely affected by the PRO Project. These topics were aesthetics; agricultural resources; biological resources; cultural resources; geology and soils; land use and planning; mineral resources; population and housing; public services; and, recreation. Five comment letters were received on the NOP/IS. However, none of the comments requested evaluation of the ten topics that the



NOP/IS determined would not be significantly affected by the PRO Project. Thus, these less than significant environmental topics were not addressed further in the May 2008 Final EIR.

Seven of the 17 environmental topic areas in the environmental checklist required further evaluation in the EIR including air quality; energy; hazards and hazardous materials; hydrology and water quality; noise; solid and hazardous waste; and transportation and traffic. The May 2008 Final EIR concluded that five of the seven environmental topics evaluated in the EIR would not be significantly adversely affected by the PRO Project or could be mitigated to a level of insignificance. Air quality impacts during construction and VOC emissions prior to offsets during operation were determined to be significant, as well as, traffic during construction. The analysis shows that these environmental areas would not be substantially affected by or create new significant impacts from the currently proposed modification. Therefore, the conclusions for these environmental topic areas from the May 2008 Final EIR do not change as a result of implementing the currently proposed modification.

As discussed in the following paragraphs, the May 2008 Final EIR identified potentially significant adverse impacts after the implementation of feasible mitigation measures for air quality during construction, and traffic impacts during construction.

The May 2008 Final EIR concluded that the Chevron PRO Project would result in the following significant unavoidable adverse impacts:

- Emissions of CO, VOC, NO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> were expected to exceed mass daily significance thresholds during construction, even after mitigation; therefore, construction air quality impacts were considered to be significant. Mitigation measures included requirements such as the development of a construction emission management plan and the development of a fugitive dust emission control plan.
- Traffic associated with construction activities could result in significant adverse transportation/traffic impacts even after mitigation measures included as part of the PRO Project. Mitigation measures included requirements for construction workers to use specific travel routes.
- Cumulative construction emissions of CO, VOC, NO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> associated with the PRO Project combined with other cumulative projects could result in significant adverse air quality impacts. Mitigation measures included requirements such as prohibiting the idling of construction equipment beyond five minutes and the suspension of emission generating construction activities during first stage smog alerts.
- Cumulative operational emissions of CO, VOC, NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> associated with the PRO Project combined with other cumulative projects could result in significant adverse air quality impacts. The PRO Project operational emissions alone were less than significant.
- Cumulative construction traffic associated with the PRO Project combined with other cumulative projects could result in significant adverse cumulative traffic impacts. Mitigation was imposed on construction traffic associated with the PRO Project. Other

cumulative projects would be expected to be significant in themselves. Mitigation measures are typically implemented through local jurisdictions.

## **6.2 Analysis of Impacts from the Currently Proposed Modification**

This Addendum includes an evaluation of all 17 of the environmental topics identified in the environmental checklist (CEQA Guidelines, Appendix G) and concluded that the discussion of three environmental topics evaluated in the May 2008 Final EIR would require minor changes by the currently proposed modification - air quality, energy, and solid waste. The following subsections present the changes to the air quality, energy, and solid waste impacts associated with the currently proposed modification along with the three environmental topics identified for potentially significant impacts from the PRO Project. Section 7.0 presents the analysis of the remaining 11 environmental topic areas where the impacts of the currently proposed modification were evaluated in the Addendum and found not to be potentially significant.

### **6.2.1 Air Quality**

Both construction and operational air quality impacts were evaluated in the May 2008 Final EIR. Air quality impacts that equal or exceed the significance thresholds identified in Table 2 are considered to be potentially significant adverse air quality impacts.

#### **Construction Emissions**

The currently proposed modification will not require any physical changes to the Refinery, and no construction activities will occur. The original construction emission analysis in the May 2008 Final EIR as modified in the May 2010 Addendum was conservative, encompasses the currently proposed modification, and is already constructed, so therefore, does not require additional analysis under CEQA.

#### **Operational Impacts (Criteria Pollutants)**

##### May 2008 Final EIR

In the May 2008 Final EIR, the PRO Project at the Refinery was expected to generate emissions associated with: the No. 2 Crude Unit, No. 2 Residuum Stripper Unit, Minalk/Merox Unit, Waste Gas Compressors, FCCU, Alkylation Unit, VRDS Unit, ISOMAX Unit, Cogen Train D, and railcar loading/unloading rack. The new sulfur processing facilities, Vapor Recovery and Safety Flare System, Additional Storage Facilities, and Cooling Tower also were expected to generate emissions. The total operational emissions associated with the May 2008 Final EIR are summarized in Table 3 (Table 4-5 of the May 2008 Final EIR). Table 4 (Table 4-6 of the May 2008 Final EIR) shows the significance determination with and without mitigation. The operation of the PRO Project was not expected to exceed the SCAQMD significance thresholds for emissions of CO, NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>. The stationary source VOC emissions were considered significant. However, after complying with SCAQMD Rule 1303 - New Source Review requirements for offsets for the VOC emissions, VOC emissions were considered less than significant. Therefore, the air quality impacts associated with operational emissions from the PRO Project were considered less than significant.

**TABLE 2**  
Air Quality Significance Thresholds

<b>Mass Daily Thresholds<sup>(a)</sup></b>		
<b>Pollutant</b>	<b>Construction<sup>(b)</sup></b>	<b>Operation<sup>(c)</sup></b>
<b>NO<sub>x</sub></b>	100 lbs/day	55 lbs/day
<b>VOC</b>	75 lbs/day	55 lbs/day
<b>PM10</b>	150 lbs/day	150 lbs/day
<b>PM2.5</b>	55 lbs/day	55 lbs/day
<b>SO<sub>x</sub></b>	150 lbs/day	150 lbs/day
<b>CO</b>	550 lbs/day	550 lbs/day
<b>Lead</b>	3 lbs/day	3 lbs/day
<b>Toxic Air Contaminants, Odor, and GHG Thresholds</b>		
<b>TACs</b> (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk $\geq$ 10 in 1 million Chronic and Acute Hazard Index $\geq$ 1.0 (project increment) Cancer Burden $\geq$ 0.5 excess cancer cases (in areas $\geq$ 1 in 1 million)	
<b>Odor</b>	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
<b>GHG</b>	10,000MT/yr CO <sub>2</sub> eq for industrial facilities	
<b>Ambient Air Quality for Criteria Pollutants<sup>(d)</sup></b>		
<b>NO<sub>2</sub></b> 1-hour average annual average	In attainment; significant if project causes or contributes to an exceedance of any standard: 0.18 ppm (state) 0.03 ppm (state) and 0.0534 ppm (federal)	
<b>PM10</b> 24-hour annual average	10.4 $\mu\text{g}/\text{m}^3$ (construction) <sup>(e)</sup> and 2.5 $\mu\text{g}/\text{m}^3$ (operation) 1.0 $\mu\text{g}/\text{m}^3$	
<b>PM2.5</b> 24-hour average	10.4 $\mu\text{g}/\text{m}^3$ (construction) <sup>(e)</sup> and 2.5 $\mu\text{g}/\text{m}^3$ (operation)	
<b>SO<sub>2</sub></b> 1-hour average 24-hour average	0.25 ppm (state) and 0.075 ppm (federal – 99 <sup>th</sup> percentile) 0.04 ppm (state)	
<b>Sulfate</b> 24-hour average	25 $\mu\text{g}/\text{m}^3$ (state)	
<b>CO</b> 1-hour average 8-hour average	In attainment; significant if project causes or contributes to an exceedance of any standard: 20 ppm (state) and 35 ppm (federal) 9.0 ppm (state/federal)	
<b>Lead</b> 30-day average Rolling 3-month average Quarterly average	1.5 $\mu\text{g}/\text{m}^3$ (state) 0.15 $\mu\text{g}/\text{m}^3$ (federal) 1.5 $\mu\text{g}/\text{m}^3$ (federal)	

a) Source: SCAQMD Air Quality Significance Thresholds, [www.aqmd.gov/ceqa/handbook/signthres.pdf](http://www.aqmd.gov/ceqa/handbook/signthres.pdf).

b) Construction thresholds apply to both the SCAB and Coachella Valley (Salton Sea and Mojave Desert Air Basin)

c) For Coachella Valley, the mass daily thresholds for operation are the same as the construction thresholds.

d) Ambient air quality thresholds for criteria pollutants based on SCAQMD Rule 1303, Table A-2 unless otherwise stated.

e) Ambient air quality threshold based on SCAQMD Rule 403.

KEY: ppm = parts per million;  $\mu\text{g}/\text{m}^3$  = microgram per cubic meter; lbs/day = pounds per day; MT/yr CO<sub>2</sub>eq = metric tons per year of CO<sub>2</sub> equivalents,  $\geq$  greater than or equal to,  $>$  greater than

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**TABLE 3**  
Stationary Source Operational Emissions Summary  
May 2008 Final EIR  
(lbs/day)

Sources	CO	VOC	NOx	SOx	PM10	PM2.5 <sup>(1)</sup>
<b>STATIONARY SOURCES:</b>						
<b>MODIFICATIONS</b>						
No. 2 Crude Unit PRDs	--	10.3	--	--	--	--
No. 2 Residuum Stripper Unit PRDs	--	3.4	--	--	--	--
Minalk/Merox Unit PRDs	--	4.1	--	--	--	--
Waste Gas Compressors	--	0	--	--	--	--
FCCU	--	10.8	--	--	--	--
Alkylation Unit	--	15.8	--	--	--	--
VRDS Unit	--	22.6	--	--	--	--
ISOMAX Unit	--	26.7	-555.7 <sup>(2)</sup>	--	--	--
Cogen Train D	72.3	48.2	178.4	63.1	0 <sup>(3)</sup>	0 <sup>(3)</sup>
Railcar Loading/Unloading Rack	--	4.7	--	--	--	--
<b>NEW UNITS</b>						
Sulfur Processing Facilities						
SWS	--	3.0	--	--	--	--
SRU	--	--	--	--	--	--
TGU	304.6	4.1	133.5	139.3	5.7 <sup>(6)</sup>	5.7
TGU Fugitives	--	1.0	--	--	--	--
Vapor Recovery and Safety Flare System	2.3	3.2	8.4	0.1	0.5 <sup>(6)</sup>	0.5
Additional Storage Facilities	--	45.6	--	--	--	--
Cooling Tower	--	--	--	--	5.8	5.8 <sup>(4)</sup>
<b>Total Stationary Source Emission Increases<sup>(5)</sup></b>	<b>379.2</b>	<b>203.5</b>	<b>-235.4</b>	<b>202.5</b>	<b>12.0</b>	<b>12.0</b>
<b>OFF-SITE EMISSION SOURCES:</b>						
New Workers Commuting	3.8	0.4	0.4	<0.01	0.02	0.02
Fugitive Road Dust	--	--	--	--	0.15	0.01
Locomotive Engines	6.3	2.4	46.1	3.92	1.52	1.47
<b>Total Off-Site Emission Increases:</b>	<b>10.1</b>	<b>2.8</b>	<b>46.5</b>	<b>3.93</b>	<b>1.69</b>	<b>1.50</b>
<b>Total Operational Emission Increases:<sup>(5)</sup></b>	<b>389.3</b>	<b>206.3</b>	<b>-188.9</b>	<b>206.4</b>	<b>13.7</b>	<b>13.6</b>

- (1) PM2.5 is ratioed to PM10 using [https://www.aqmd.gov/ceqa/handbook/PM2\\_5/pm2\\_5ratio.xls](https://www.aqmd.gov/ceqa/handbook/PM2_5/pm2_5ratio.xls), Profiles ID #117, 118, 120, and 393.
- (2) Existing ISOMAX furnaces will be retrofitted with low-NOx burners, which will decrease NOx emissions, with no change in firing rate and, thus, no changes in CO, SOx, PM10, or PM2.5 emissions are expected.
- (3) Cogeneration Facilities (A, B, C, and D) and Aux. Boiler will be operated under existing permit limits for PM10 with no increase in PM10 or PM2.5 emissions.
- (4) Cooling tower emissions are assumed to be all PM2.5.
- (5) Differences in totals as compared to Appendix C of the May 2008 Final EIR are due to rounding.
- (6) Following certification of the EIR, during the permitting process, emissions offsets for the PM10 emissions were required, which reduced the PM10 emission impacts of the PRO Project.

**TABLE 4**

May 2008 Final EIR Significance Evaluation  
 Stationary Source Operational Emissions Summary  
 (lbs/day)

Sources	CO	VOC	NO <sub>x</sub>	SO <sub>x</sub>	PM10	PM2.5 <sup>(1)</sup>
<b>Significance Determination for Facility-Wide Pollutants</b>						
Project Emissions <sup>(1)</sup>	--	--	-188.9	206.4	--	--
Projected 2010 Emissions	--	--	4,087.7	1890.4	--	--
Total Facility-Wide 2010 Emissions	--	--	3,898.8	2,096.8	--	--
<b>5-Year Average + Significance Threshold<sup>(2)</sup></b>	--	--	<b>5,596</b>	<b>4,964</b>	--	--
<b>Significant?</b>	--	--	<b>NO</b>	<b>NO</b>	--	--
<b>Significance Determination for All Project Non-Facility-Wide Pollutants</b>						
Project Emissions	389.3	206.3	--	--	13.7	13.6
<b>Significance Thresholds</b>	<b>550</b>	<b>55</b>	--	--	<b>150</b>	<b>55</b>
<b>Significant?</b>	<b>NO</b>	<b>YES</b>	--	--	<b>NO</b>	<b>NO</b>
Emissions Following Mitigation	389.3	2.8 <sup>(3)</sup>	--	--	13.7	13.6
<b>Significant Following Mitigation?</b>	<b>NO</b>	<b>NO</b>	--	--	<b>NO</b>	<b>NO</b>

(1) See Table 4-5 of the May 2008 Final EIR.

(2) See Table 4-3 of the May 2008 Final EIR.

(3) Emissions mitigated with emission offsets for stationary sources.

Currently Proposed Modification

The May 2010 Addendum analysis of the addition of the wet gas scrubber, increased firing rate, and the establishment of a “technology transfer” BACT for NO<sub>x</sub> emissions modified the emissions from the TGU. Table 5 presents the TGU emissions reported in the previous CEQA documents prepared for the PRO Project as well as the currently proposed modification.

**TABLE 5**

Summary of TGU Emissions Reported in the PRO Project CEQA Documents

Sources	Emissions (lb/day)					
	CO	VOC	NO <sub>x</sub>	SO <sub>x</sub>	PM10	PM2.5
May 2008 FEIR	304.6	4.1	133.5	139.3	5.7	5.7
May 2010 Addendum	27.1	6.7	18.3	58	7.3	7.3
July 2013 Addendum	NA	NA	NA	NA	NA	NA
Currently Proposed Modification	36.1	7	60.1	68.6	7.5	7.5

Note: NA means not applicable, no modifications to the TGU included.

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As previously discussed, the proposed modification will require no physical changes. The only change in incinerator operation is an increase in air to fuel ratio, which will require an increase in the incinerator firing rate to heat the additional air. The operational emissions associated with the currently proposed modification, the TGU with the wet gas scrubber analyzed in the May 2010 Addendum, and the TGU as analyzed in the May 2008 Final EIR are shown in Table 5. The currently proposed modification along with the addition of the wet gas scrubber analyzed in the May 2010 Addendum will generate fewer emissions of CO, NO<sub>x</sub>, and SO<sub>x</sub> than were analyzed in the May 2008 Final EIR (see Table 5). Emissions of VOC, PM<sub>10</sub>, and PM<sub>2.5</sub> will increase by 2.9, 1.8, and 1.8 lb/day, respectively, from the May 2010 Addendum but are substantially less than the SCAQMD significance thresholds (see Table 6). Further, the emissions increases would not increase the severity of significant adverse air quality impacts or result in new significant adverse air quality impacts beyond those evaluated in the May 2008 Final EIR. The currently proposed modification would not change the significance determination concluded in the May 2008 Final EIR, which is less than significant air quality impacts.

**TABLE 6**  
Operational Emissions Associated with the  
TGU with the Wet Gas Scrubber Project Component  
(lbs/day)

Sources	CO	VOC	NO <sub>x</sub>	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>STATIONARY SOURCES:</b>						
<b>TGU</b>						
<b>Currently Proposed Modified Project Total Peak Daily Emissions</b>	36.1	7.0	60.1	68.6	7.5	7.5
<b>Peak Daily Emissions for the TGU from the May 2008 Final EIR</b>	304.6	4.1	133.5	139.3	5.7	5.7
<b>Change in Peak Daily Emissions</b>	-268.5	2.9	-73.4	-70.7	1.8	1.8
<b>Significance Thresholds</b>	<b>550</b>	<b>55</b>	<b>55</b>	<b>150</b>	<b>150</b>	<b>55</b>
<b>Significant?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>
<b>Total Stationary Source Emissions Presented in the May 2008 Final EIR</b>	379.2	203.5	-235.4	202.5	12.0	12.0
<b>Total Stationary Source Emissions with Currently Proposed Modification</b>	<b>110.7</b>	<b>206.4</b>	<b>-308.8</b>	<b>131.8</b>	<b>13.8</b>	<b>13.8</b>

Note: Negative numbers represent less emissions than were analyzed in the May 2008 Final EIR. Detailed emission calculations are presented in Appendix B.

**Impacts to Ambient Air Quality**

The impacts to ambient air quality as presented in the May 2008 Final EIR were evaluated for only the new combustion sources (i.e., flare, Cogen Train D, and TGU) and the cooling tower from the PRO Project (see May 2008 Final EIR, Appendix C, Ambient Air Quality Report, pages C-41 et. seq.). The emissions for the TGU with the wet gas scrubber and the currently proposed modification have been evaluated and the revised ambient air quality modeling results are presented in Table 7. The revised ambient air quality modeling report is presented in Appendix C.

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The results show the PRO Project with the currently proposed modification change from the May 2008 Final EIR project modeling results, however, the emissions would not increase the severity of significant adverse air quality impacts or result in new significant adverse air quality impacts beyond those evaluated in the May 2008 Final EIR. The currently proposed modification would not change the significance determination concluded in the May 2008 Final EIR, which is less than significant air quality impacts.

**TABLE 7**  
Results of Criteria Pollutants Air Quality Modeling  
TGU Revised with Currently Proposed Modification

Criteria Pollutant	Averaging Time	Significance Threshold	Calculated Conc. from the May 2008 Final EIR	Total Proposed Project <sup>(a)</sup>	Significant?
CO	1-hour	23,000 $\mu\text{g}/\text{m}^3$	4,831.5 $\mu\text{g}/\text{m}^3$	5,920.3 $\mu\text{g}/\text{m}^3$	No
	8-hour	10,000 $\mu\text{g}/\text{m}^3$	3,541.9 $\mu\text{g}/\text{m}^3$	4,754.0 $\mu\text{g}/\text{m}^3$	No
NO <sub>2</sub>	State 1-hour	339 $\mu\text{g}/\text{m}^3$ <sup>(b)(c)</sup>	271.6 $\mu\text{g}/\text{m}^3$	272.4 $\mu\text{g}/\text{m}^3$	No
	Federal 1-hour	188 $\mu\text{g}/\text{m}^3$ <sup>(b)(c)</sup>	NE	159.0 $\mu\text{g}/\text{m}^3$	No
	State AAM	57 $\mu\text{g}/\text{m}^3$ <sup>(b)</sup>	30.7 $\mu\text{g}/\text{m}^3$	26.9 $\mu\text{g}/\text{m}^3$	No
	Federal AAM	100 $\mu\text{g}/\text{m}^3$ <sup>(b)</sup>	30.7 $\mu\text{g}/\text{m}^3$	26.9 $\mu\text{g}/\text{m}^3$	No
PM <sub>10</sub>	24-hour	2.5 $\mu\text{g}/\text{m}^3$ <sup>(b)</sup>	0.70 $\mu\text{g}/\text{m}^3$	0.23 $\mu\text{g}/\text{m}^3$	No
	Annual <sup>(d)</sup>	1 $\mu\text{g}/\text{m}^3$ <sup>(b)</sup>	0.29 $\mu\text{g}/\text{m}^3$	0.21 $\mu\text{g}/\text{m}^3$	No
PM <sub>2.5</sub>	24-hour	2.5 $\mu\text{g}/\text{m}^3$ <sup>(b)</sup>	0.70 $\mu\text{g}/\text{m}^3$	0.23 $\mu\text{g}/\text{m}^3$	No
	Annual <sup>(d)</sup>	1 $\mu\text{g}/\text{m}^3$ <sup>(b)</sup>	0.29 $\mu\text{g}/\text{m}^3$	0.21 $\mu\text{g}/\text{m}^3$	No

NE = No established standard at the time of the 2008 Final EIR.

- (a) Calculated concentrations include the incremental change for the TGU and changes in ambient background concentrations including startup and shutdown emissions. See Appendix C for detailed calculations.
- (b) Most stringent ambient air quality standards from Table 1.
- (c) The state NO<sub>x</sub> 1-hour standard was reduced from 500  $\mu\text{g}/\text{m}^3$  to 339  $\mu\text{g}/\text{m}^3$ .
- (d) Geometric Mean.

**Toxic Air Contaminants**

May 2008 Final EIR

A health risk assessment (HRA) was prepared for the PRO Project to determine if emissions of toxic air contaminants (TAC) generated by the PRO Project would exceed the SCAQMD thresholds of significance for cancer risk. The results of the HRA for the May 2008 Final EIR are summarized in this section. The results of the HRA are shown in Table 8 and indicate that the cancer risk and non-cancer risk did not exceed the applicable significance thresholds (Table 2). Therefore, the health risks associated with the PRO Project were considered less than significant.

Currently Proposed Modification

The currently proposed modification has been incorporated into the HRA to determine the impact of the proposed changes. The change in NOx emission limit did not change the cancer or non-cancer health risk. The results of the HRA for the PRO Project including the currently proposed modification results are shown in Table 8. The results of the HRA for the PRO Project with the currently proposed modification incorporated are summarized in the following paragraphs. Detailed analysis of the impact of the currently proposed modification on the PRO Project HRA is presented in Appendix D.

**TABLE 8**  
Comparison of Health Risk Impacts  
of the PRO Project with the Currently Proposed Modification  
to the May 2008 Final EIR

	<b>Excess Cancer Risk to MEIW (per million)</b>	<b>Excess Cancer Risk to MEIR (per million)</b>	<b>Maximum Acute Hazard Index</b>	<b>Maximum Chronic Hazard Index</b>
<b>PRO Project Analyzed in May 2008 Final EIR</b>	0.218	0.326	0.0307	0.0066
<b>Revised PRO Project with Currently Proposed Modification</b>	0.218	0.324	0.0307	0.0066
<b>Significance Threshold</b>	<b>10</b>	<b>10</b>	<b>1</b>	<b>1</b>
<b>Significant?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

Note: Details are presented in Appendix D.

**Maximum Exposed Individual Worker (MEIW):** Based on the air quality modeling and related assumptions, the cancer risk to the MEIW associated with the PRO Project including the currently proposed modification was calculated to be  $2.18 \times 10^{-7}$  or 0.22 in one million. This result shows the cancer risk to the MEIW remains the same as that presented in the May 2008 Final EIR and does not exceed the cancer risk significance threshold of 10 per million ( $10 \times 10^{-6}$ ) identified in Table 2. The MEIW is based on a 40-year, 49-week per year, five-day per week, eight-hour per day exposure.

**Maximum Exposed Individual Resident (MEIR):** The predicted maximum cancer risk at the MEIR associated with the PRO Project including the currently proposed modification was calculated to be  $3.24 \times 10^{-7}$  or 0.32 per one million. This result shows the cancer risk to the MEIR is slightly less than that presented in the May 2008 Final EIR and does not exceed the cancer risk significance threshold of 10 per million ( $10 \times 10^{-6}$ ) in Table 2. The MEIR is based on a 70-year exposure period.

**Acute Hazard Index:** The highest acute hazard index for the PRO Project including the currently proposed modification will remain the same as that presented in the May 2008 Final EIR and is estimated to be 0.0307. The acute health effects are based on maximum hourly emissions of TAC



that have acute target endpoints. The acute hazard index for the PRO Project including the currently proposed modification does not exceed the acute hazard index significance threshold of 1.0 in Table 2.

**Chronic Hazard Index:** The highest chronic hazard index for the PRO Project including the currently proposed modification will remain the same as that presented in the May 2008 Final EIR and is estimated to be 0.0066. The chronic hazard index for the PRO Project including the currently proposed modification does not exceed the chronic hazard index significance threshold of 1.0 identified in Table 2.

### **Cumulative Air Quality Impacts**

#### Construction Impacts

In the May 2008 Final EIR, it was concluded that the cumulative air quality impacts associated with the construction phase of the PRO Project and other related projects would exceed the CEQA significance thresholds for CO, VOC, NO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>. Therefore, the cumulative air quality construction impacts were considered significant.

The May 2010 Addendum evaluated the peak daily construction emissions for the TGU and wet gas scrubber and concluded that, with the revised schedule, construction emissions were only significant for NO<sub>x</sub> emissions. The construction activities associated with the related projects evaluated in the May 2008 Final EIR were assumed to be concurrent with the revised PRO Project schedule. The El Segundo Power Plant cumulative project was the largest source of construction emissions (i.e., significant for CO, VOC, NO<sub>x</sub>, SO<sub>x</sub>, and PM<sub>10</sub> as a stand-alone project). In the May 2008 Final EIR, the El Segundo Power Plant project was not yet constructed and was on hold, but was included to provide a "worst-case" cumulative analysis. The El Segundo Power Plant project has not yet been constructed. Therefore, the "worst-case" analysis for the May 2010 Addendum still included the emissions from construction of the El Segundo Power Plant project occurring concurrently with the proposed modifications. Therefore, the cumulative air quality impacts were expected to remain significant for NO<sub>x</sub>. This conclusion is not expected to change when considering the currently proposed modification.

#### Operational Impacts

In the May 2008 Final EIR, it was concluded that the cumulative air quality impacts associated with the operational phase of the PRO Project and other cumulative projects would exceed the CEQA significance thresholds for CO, VOC, NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>.

The peak daily incremental change in operational emissions for the proposed modification to the TGU are emissions reductions or minor increases (less than three pounds) in emissions, as shown in Table 6, and are less than the significance thresholds for all pollutants. Therefore, the currently proposed modification will not make a cumulatively considerable contribution to impacts related to CO, VOC, NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub>, or PM<sub>2.5</sub> because the emissions from the currently proposed modification will be less than the SCAQMD CEQA significance thresholds and does not change the significance determination made in the May 2008 Final EIR. Per CEQA Guidelines

§15064(h)(4), the mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable. Therefore, air quality impacts associated with the operation of the currently proposed modification are not cumulatively considerable.

#### Toxic Air Contaminants

The May 2008 Final EIR concluded that the cumulative impacts associated with the PRO Project were below the significance criteria for cancer risk of ten per one million and below the significance criteria for hazard indices of 1.0. Therefore, significant adverse cumulative impacts were not expected from the PRO Project.

The modified PRO Project adjusted the results of the HRA (see Table 8). The health risks for the currently proposed modification are less than significant. In the May 2008 Final EIR, the only other major industrial project in the area that was likely to emit TACs was the El Segundo Power Plant Redevelopment Project. A health risk assessment for this project was completed (CEC, 2002). The cancer risk to the maximum exposed individual was calculated to be 0.94 per one million. The maximum acute and chronic health indices were estimated to be 0.01 and 0.02, respectively. The potential overlap of the El Segundo Power Plant and the modified PRO Project would be well below the significance criteria of ten per one million for carcinogenic risk and 1.0 for the acute and chronic hazard indices. The other cumulative projects are commercial and residential and are not expected to be major contributors to TAC emissions. Cumulative impacts of TAC on health are expected to be less than significant. Therefore, the currently proposed modification will not make a cumulatively considerable contribution to TAC impacts because the emissions from the currently proposed modification will be less than the SCAQMD CEQA significance thresholds. Per CEQA Guideline §15064(h)(4), the mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable. Therefore, health risks associated with exposure to TAC emissions associated with the operation of the proposed modification are not cumulatively considerable.

#### Greenhouse Gas Emissions

The May 2008 Final EIR included an impact evaluation of greenhouse gas (GHG) emissions. The operational phase of the PRO Project was expected to generate 193,910 metric tons per year of GHG emissions of which 42,600 metric tons per year were associated with the TGU. The GHG emissions were considered significant and mitigation was imposed that reduced the GHG impacts to less than significant. The cumulative impacts of GHG emissions associated with the PRO Project following mitigation were considered to be less than significant.

The TGU GHG emissions included in the May 2008 EIR were based on a preliminary engineering material balance, which overstated the potential GHG emissions. The estimated GHG emissions for the currently proposed firing rate of 50.1 mmBtu/hr are expected to be approximately 23,300 metric tons per year. The refined calculations result in a reduction in GHG emissions from those previously presented for the TGU. Therefore, the analysis in the May 2008 Final EIR was conservative and the currently proposed modification GHG emissions are less than evaluated in the May 2008 Final EIR. The GHG emissions are expected to remain less than significant after

mitigation because implementation of the mitigation measure has not changed. Therefore, the currently proposed modification along with the May 2010 Addendum modifications would not change the conclusions or mitigation from the May 2008 Final EIR and the GHG emissions would remain less than significant following mitigation.

### **Mitigation Measures**

Nine mitigation measures were required for the construction emissions and one mitigation measure for operational GHG emissions in the May 2008 Final EIR as they exceeded the SCAQMD CEQA significance thresholds for NO<sub>x</sub> and for GHG emissions. The May 2008 Final EIR construction mitigation measures:

- require development and implementation of a construction management plan,
- minimize the use of diesel-powered equipment through the use of electric or alternative-fueled equipment where available,
- limit truck idling,
- require equipment maintenance,
- use electric welders instead of gas or diesel welders where electricity is available,
- use on-site electricity rather than temporary power generators where electricity is available,
- require diesel particulate filters on cranes greater than 200 horsepower,
- require development and implementation of a fugitive dust emissions management plan, and
- prohibit the use of air pollutant emitting construction equipment on days with a first stage smog alert.

The GHG mitigation involved the purchase of GHG offset credits that reduced the GHG impact to less than significant. The mitigation measures included in the May 2008 Final EIR were implemented for construction of the TGU and no further construction activities are required for the modification to the TGU. The GHG emissions have been shown to be less than originally estimated in the May 2008 Final EIR and therefore, no change to the GHG mitigation measure is required. Construction and GHG emissions remain less than significant, so no additional mitigation is necessary.

### **6.2.2 Energy**

The NOP/IS for the PRO Project determined that the increased natural gas demand associated with the PRO Project would not be significant. No comment letters were received disputing this conclusion. However, the NOP/IS determined that the PRO Project impacts on electricity use was potentially significant and the energy resource impacts with respect to electricity were evaluated in the May 2008 Final EIR.

The impacts on energy resources would be considered significant if the following occurs:

- The project requires new off-site energy supply facilities and distribution infrastructure or capacity enhancing alterations to existing facilities.

### **May 2008 Final EIR**

The May 2008 Final EIR estimated the energy demand for the PRO Project new equipment including the new FCCU main air blower and new pumps, new pumps in the ISOMAX Unit, new compressors in the VRDS and hydrogen compression facilities, and the new equipment associated with the sulfur processing facilities would be 29.9 megawatts (MW). The PRO Project also included expansion of the cogeneration facilities at the refinery by the addition of a 49.9 MW cogeneration unit (Cogen Train D). The energy impacts from the PRO Project were considered less than significant.

### **Currently Proposed Modification**

The currently proposed modification does not require additional electricity to modify operational changes to the TGU to meet BACT standards. The May 2010 Addendum included an incremental increase of 0.052 MW of electricity to power the wet gas scrubber. The incremental increase in electricity was less than 0.2 percent of the 29.9 MW PRO Project electrical demand. The incremental increase of 0.052 MW was within the daily operating electrical fluctuations that occur at the Refinery. Additionally, the inclusion of the 49.9 MW Cogen D is capable of supplying the incremental increase of the currently proposed modification, if any should occur. No new off-site energy supply facilities and distribution infrastructure were required to supply the incremental increase in electricity. The combined May 2008 Final EIR and May 2010 Addendum electrical demand was considered less than significant. Therefore, the currently proposed modification, which does not change electrical demand will not result in a significant increase in electrical demand or make a significant impact substantially worse.

### **6.2.3 Hazards and Hazardous Materials**

The NOP/IS for the PRO Project determined that the project at the Refinery has the potential to generate significant adverse hazards and hazardous materials impacts. The hazards and hazardous material impacts from the PRO Project are discussed in this section.

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 policies and procedures concerning the design, construction, security, leak detection, spill containment or fire protection.

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- Greater exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Response Planning Guideline (ERPG) 2 levels.
- Greater exposure to radiant heat exposures in excess of 1,600 British Thermal Units (Btu)/(hr-ft<sup>2</sup>) (the level that creates second degree burns on unprotected skin).
- Greater overpressure exposure that exceeds one pound per square inch (gauge) (psig) (the level that would result in partial demolition of houses).
- Flash fire hazard zones that exceed the lower flammable limit (LFL) (the level that would result in a flash fire in the event a flammable vapor cloud was ignited).

These are the same hazards significance criteria used in the May 2008 Final EIR.

**May 2008 Final EIR**

The May 2008 Final EIR included an evaluation of potential hazards and risk of upset scenarios, and the potential impacts on the community and environment if an upset were to occur. No significant hazard impacts were identified during construction. During operation, several upset scenarios were evaluated based on “worst-case” conditions, and feasible mitigation measures were included. The existing sulfur processing facilities were determined to have the ability to create a H<sub>2</sub>S concentration in excess of 30 parts per million for a maximum distance of 4,390 feet from the facilities. The hazard impacts are analyzed by assessing the distances at which the hazardous chemical concentrations, thermal radiant heat exposures, overpressure exposures, or flash fire hazard zones would extend and if they would create greater impacts than are already present. The maximum hazard distance of the tanks and sulfur processing facilities were equal to or less than the already existing similar hazards at the Refinery. Therefore, the May 2008 Final EIR concluded that no new or modified units had the ability to create a hazard that could extend further off-site and the potential hazards impacts were considered less than significant.

The May 2008 Final EIR concluded that the PRO Project would comply with all applicable design codes and regulations, conform to the National Fire Protection Association standards, and conform to policies and procedures concerning leak detection, containment, and fire protection. Therefore, no significant adverse compliance impacts were expected.

The May 2008 Final EIR also concluded that because of the containment system at the Refinery, spills are not expected to migrate from the facility and potential adverse risk of upset hazard impacts were considered to be less than significant.

The May 2008 Final EIR concluded that transport of hazardous materials to the Refinery would be reduced by two trucks per day and no hazardous materials not already transported to the Refinery would be needed. Therefore, no increase in transportation hazards was expected from the PRO Project.

Overall, no significant hazard or hazardous materials impacts were expected from the PRO Project.

### **Currently Proposed Modification**

The currently proposed modification does not introduce new hazards to the Refinery. The hazards associated with the SRU and TGU were analyzed in the May 2008 Final EIR. No physical changes to the TGU are currently proposed. The addition of the wet gas scrubber was analyzed in the May 2010 Addendum. The wet gas scrubber, which has been installed and is operational, was not considered to have potential for new hazards at the Refinery. Therefore, no change in the maximum hazard impacts from the sulfur processing facilities (i.e., a release of H<sub>2</sub>S) evaluated in the May 2008 Final EIR were expected and the significance determination remains less than significant. The currently proposed modification would not change the potential hazards associated with the SRU or TGU. Therefore, no new potential adverse significant hazards from the currently proposed modification along with the modifications analyzed in the May 2010 Addendum are expected and the currently proposed modification will not change the May 2008 Final EIR significance determination, which will remain less than significant.

#### **6.2.4 Hydrology and Water Quality**

The NOP/IS for the PRO Project determined that the hydrology and water quality impacts of the PRO Project at the Refinery were potentially significant for wastewater treatment facilities and water supply facilities. The potential adverse impacts of the currently proposed modification on wastewater treatment facilities and water supply facilities will be evaluated in this section.

The proposed project impacts on hydrology and water quality would be considered significant if the following occurs:

##### **Water Demand:**

- The project would exceed the capacity of the existing potable water supply to meet the increased demands of the project; or
- The project increases demand for potable water by more than five million gallons per day.

##### **Water Quality:**

- The project will cause degradation or depletion of ground water substantially affecting current or future uses;
- The project will cause the degradation of surface water substantially affecting current or future uses;
- The project would result in a violation of NPDES permit requirements; or
- The project would exceed the capacities of existing or proposed wastewater treatment facilities and the sanitary sewer system.

### **May 2008 Final EIR**

The May 2008 Final EIR concluded that the PRO Project was expected to increase water use by about 748,800 gallons per day (gpd). The impact to water supply was considered not significant because the Refinery would use reclaimed water.

The May 2008 Final EIR also concluded that the PRO Project was expected to generate approximately 223,200 gpd of wastewater and the onsite treatment facilities were permitted to accept the increased wastewater discharge. The potential impact to wastewater was considered less than significant.

### **Currently Proposed Modification**

The currently proposed modification will not change the water demand of the TGU as evaluated in the May 2008 FEIR, so no new impacts to water resources are expected. The currently proposed modification also does not alter the modifications made in the May 2010 Addendum. In the May 2010 Addendum, a wet gas scrubber was added to reduce SO<sub>x</sub> emissions from the TGU. As analyzed May 2010 Addendum, the addition of the wet gas scrubber incrementally increased reclaimed wastewater usage by approximately 18,000 gpd. The use of reclaimed wastewater did not have an impact on water supply, because there was no increase in demand for potable water. Reclaimed wastewater for the wet gas scrubber is supplied by the West Basin Municipal Water District. Therefore, no significant impact to water resources was expected from the addition of the wet gas scrubber. Therefore, the currently proposed modification along with modification analyzed in the May 2010 Addendum will not change the May 2008 Final EIR significance determination, which will remain less than significant.

The currently proposed modification is not expected to increase wastewater discharge. The addition of the wet gas scrubber in the May 2010 Addendum identified spent caustic solution from the scrubber which is used in the other sulfur processing plants already in use at the Refinery. The existing sulfur processing plants use a different technology and can accept the spent caustic from the new sulfur processing facility as makeup solution to the SO<sub>x</sub> scrubber. Therefore, no significant impact associated with wastewater discharge was expected from the addition of the wet gas scrubber and no change is expected from the currently proposed modification. The currently proposed modification along with the modifications analyzed in the May 2010 Addendum will not change the May 2008 Final EIR significance determination, which will remain less than significant.

## **6.2.5 Solid and Hazardous Waste**

### **May 2008 Final EIR**

The May 2008 Final EIR evaluated construction impacts from solid waste, construction impacts from hazardous waste, and operational impacts of the PRO Project. Significance was based on the available capacity of the respective waste disposal facilities.

### Construction Impacts from Solid Waste

The May 2008 Final EIR concluded that there would be an increase in the generation of non-hazardous wastes as a result of the demolition of existing structures, grading to provide foundations for new structures, and installing new structures. Based on the amounts of non-hazardous waste generated during construction for previous Refinery modification projects, Chevron estimated that, during the construction of the PRO Project at the Refinery, approximately 1,075 tons of municipal (non-hazardous) solid waste would be generated over a 26-month period. This waste would include approximately 300 tons of non-asbestos insulation, 660 tons of broken concrete, and 115 tons of clean trash and debris. The landfills in Los Angeles County had the capacity to accept the waste produced during the construction phase of the proposed project on a one-time basis.

Construction activities could uncover hydrocarbon-contaminated soils, given the heavily industrialized nature of the Refinery facilities and the fact that refining activities have been conducted at the site for a number of years. If contaminated soils were encountered during the excavation phase of the project, the soils would be removed for proper decontamination and disposal in accordance with SCAQMD's Rule 1166 – Volatile Organic Compound Emissions from Decontamination of Soil, and in accordance with a source-specific Clean Up and Abatement Order from the RWQCB for the Refinery. Contaminated soil could be considered either non-hazardous or hazardous waste, depending on the nature and levels of contaminants in the soil. A total of approximately 43,350 cubic yards of soil, with a weight of approximately 52,000 tons, was estimated to be excavated over a total of eighteen months as a result of construction activities for the PRO Project. Chevron estimated that a total of approximately 5,900 tons of contaminated soil may be excavated, based on preliminary soil borings. If the entire amount of contaminated soil were considered to be a non-hazardous waste, an additional 5,900 tons of non-hazardous waste would be generated during construction for the PRO Project. As a result, the total amount of solid waste generated would be approximately 6,975 tons, which includes the contaminated soil and the municipal solid waste. The generation of up to 6,975 tons of solid was considered less than significant.

### Construction Impacts from Hazardous Waste

The May 2008 Final EIR concluded that construction of the PRO Project was anticipated to generate approximately 1,200 tons of hazardous waste, including approximately 730 tons of contaminated trash and debris, 400 tons of sand blasting residue, 60 tons of contaminated metal, and approximately three tons each of paints/solvents and asbestos. Chevron estimated that a maximum of approximately one ton per day of hazardous waste would be generated during the peak construction period.

Additionally, as discussed previously, Chevron estimated that a total of approximately 5,900 tons of contaminated soil may be excavated during construction of the PRO Project. If all of the contaminated soil were classified as a hazardous waste, an additional 5,900 tons of hazardous waste would be generated, and the total amount generated would be approximately 7,100 tons of hazardous waste (0.06 percent of permitted capacity). There was adequate capacity at the two Class I landfills in California approved to accept hazardous waste from the PRO Project. Together, the two hazardous waste landfills in California had 10.8 million cubic yards of permitted available



capacity, which will accommodate the waste generated by the PRO Project during the construction phase. In addition, other hazardous waste facilities are located out-of-state. Therefore, the generation of 1,200 to 7,100 tons of potentially hazardous waste was not considered a significant impact.

#### Operational Impacts

The May 2008 Final EIR concluded that as with the current operations at the Refinery, wastes generated by the operation of the PRO Project would also be managed and/or disposed of in compliance with applicable federal, state, and local statutes and regulations. The proposed new and modified equipment associated with the PRO Project would perform the similar functions as the existing equipment. The PRO Project was expected to require increased amounts of catalyst and generate increased amounts of catalyst waste (e.g., associated with the proposed modifications to the ISOMAX Unit, Cogen Train D, and SRU/TGU). As with the current procedures at the Refinery, the additional amounts of recovered catalyst would be transported for recycling offsite, so no increase in waste disposal of catalyst is expected. Therefore, the PRO Project was not expected to result in significant impacts on solid/hazardous waste during project operations.

#### **Currently Proposed Modification**

The construction of the currently proposed modification and the addition of the wet gas scrubber analyzed in the May 2010 Addendum do not generate additional solid or hazardous waste as no demolition of existing equipment would occur, so no debris would be accumulated. For the addition of the wet gas scrubber, the soil excavation necessary for foundation work was essentially the same as that discussed in the May 2008 Final EIR. The scrubber required a very small concrete pad (12-foot by 12-foot or approximately 2 tons of soil). No hazardous waste was expected to be generated from the addition of the wet gas scrubber. The currently proposed modification does not involve construction and as such will not generate solid or hazardous waste. Therefore, the currently proposed modification is not expected to change the conclusions made in the May 2008 Final EIR, which would remain less than significant.

The currently proposed modification includes utilizing the SRU and TGU to its maximum capacity which will generate additional waste from the operation of the scrubber at the TGU over what has been generated to date. However, the spent caustic from the scrubber is expected to be reused at the existing SRUs at the Refinery. The existing SRUs are a different technology than the PRO Project SRU and, as such, will be capable of using the spent caustic from the scrubber as a replacement for virgin caustic. Therefore, no off-site shipment of waste is expected from the currently proposed modification.

Therefore, the currently proposed modification along with the modifications analyzed in the May 2010 Addendum are not expected to have significant impact associated with solid/hazardous waste. The currently proposed modification along with the modifications analyzed in the May 2010 Addendum will not change the May 2008 Final EIR significance determination, which will remain less than significant.

### **6.2.6 Transportation and Traffic**

The NOP/IS for the PRO Project determined that the project at the Refinery had the potential to generate significant adverse transportation and traffic impacts. The traffic impacts associated with the construction and operational phases of the PRO Project were potentially significant and the impacts of the currently proposed modification on the transportation system are evaluated in this section.

The proposed project will occur at the Chevron Refinery. The project impacts on transportation and traffic would be considered significant if the following occurs:

- Peak period levels on major arterials within the vicinity of the proposed project sites are disrupted to a point where intersections with a LOS of C or worse are reduced to the next lower LOS, as a result of the projects 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 D, E or F for more than one month.
- A major roadway is closed to all through traffic, and no alternate route is available.
- 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.
- Substantial alterations to current circulation or movement patterns of people and goods are induced.
- Water borne, rail car or air traffic is substantially altered.
- Traffic hazards to motor vehicles, bicyclists or pedestrians are substantially increased.

### **May 2008 Final EIR**

The traffic analysis in the May 2008 Final EIR determined that during the construction phase of the PRO Project one intersection (Aviation Boulevard and El Segundo Boulevard) during the Winter and Summer Scenarios could potentially be significantly impacted. Peak construction activities would require about 1,000 construction workers on a peak day. In addition, traffic impacts were determined to be potentially significant for the southbound lanes of the I-405 between Rosecrans Avenue and El Segundo Boulevard and the northbound lanes of the I-405 between El Segundo Boulevard and I-105 interchange. Therefore, the construction activities associated with the PRO Project were determined to result in significant adverse traffic impacts during the construction phase.

The PRO Project was expected to require an additional 12 workers during the operational phase and reduce truck traffic to the Refinery by about two trucks per day. The operational impacts on traffic were expected to be less than significant.

### **Currently Proposed Modification**

The currently proposed modification does not require construction activities and would not change the number of employees or the shipment of materials and wastes during operation of the TGU. The May 2010 Addendum evaluated the delay of construction of the TGU and the addition of the wet gas scrubber and determined that the traffic associated with peak construction periods and the related traffic impacts would be reduced by about 50 percent from the levels evaluated in the May 2008 Final EIR. Therefore, the modifications in the May 2010 Addendum reduced construction traffic impacts and did not make a significant traffic impact substantially worse.

The May 2010 Addendum also evaluated the impact of the addition of the wet gas scrubber on operational traffic and concluded that an increase of one truck trip per day was not a significant change to truck traffic from the Refinery. Further, in the May 2008 Final EIR operational truck traffic was expected to be reduced by about two trucks per day. Therefore, with the addition of the wet gas scrubber, there would be a reduction of one truck per day (instead of two trucks per day) and no significant adverse impacts on traffic would be expected. The currently proposed modification does not change the analysis in the May 2010 Addendum and therefore, will not change or significantly worsen the May 2008 Final EIR significance determination, which will remain less than significant.

## **7.0 TOPIC AREAS FOUND NOT TO BE POTENTIALLY SIGNIFICANT**

This section discusses the remaining 11 environmental topic areas found not to be potentially significant in the May 2008 Final EIR or the May 2010 Addendum and the one environmental topic that was not impacted by the May 2010 Addendum or the currently proposed modification. The effect of the currently proposed modification on the conclusions of each environmental topic is discussed in the following sections.

### **7.1 Aesthetics**

#### **7.1.1 May 2008 Final EIR**

As detailed in Appendix A (the NOP/IS) of the May 2008 Final EIR, the PRO Project was within existing industrial facilities (i.e., the Refinery, and the West Basin Municipal Water District (WBMWD) located east and north of the Refinery). The PRO Project structures were expected to be visually similar to or not discernible from existing structures and would not change any scenic vistas. No scenic resources are present within the Refinery. Therefore, the PRO Project would not have substantial adverse effects on scenic vistas or scenic resources.

No significant light or glare was anticipated from the PRO Project. Therefore, the PRO Project was not expected to have significant aesthetics impacts.

### **7.1.2 Currently Proposed Modification**

The May 2010 Addendum evaluated the addition of the wet gas scrubber, which is centrally located in the Refinery where surrounding structures are up to 240 feet tall. Given the location and similar nature of the wet gas scrubber, it was determined the wet gas scrubber would not impact any scenic vistas. Therefore, the addition of the wet gas scrubber was not considered to have a substantial adverse effect on scenic vistas or scenic resources and did not alter the conclusions from the August 2007 NOP/IS.

The currently proposed modification does not add any new structures and there is no change to the aesthetic impact evaluation from the May 2010 Addendum. Therefore, the currently proposed modification along with the modifications analyzed in the May 2010 Addendum do not change the conclusions in the May 2008 Final EIR.

Since the currently proposed modification along with the modifications analyzed in the May 2010 Addendum will not change the conclusions in the May 2008 Final EIR, the currently proposed modification will not cause significant adverse impacts to aesthetics.

## **7.2 Agricultural Resources**

### **7.2.1 May 2008 Final EIR**

As detailed in Appendix A of the May 2008 Final EIR, there are no agricultural resources, i.e., food crops grown for commercial purposes, located in or near the vicinity of the Refinery. The PRO Project is located within the boundaries of the existing Refinery. Therefore, no farmland would be converted to non-agricultural use and the PRO Project would not conflict with agricultural land uses, or Williamson Act contracts. Therefore, no significant impacts on agricultural resources were expected from the PRO Project.

### **7.2.2 Currently Proposed Modification**

The currently proposed modification does not involve any construction, so no agricultural resources will be affected. The May 2010 Addendum evaluated the addition of the wet gas scrubber, which was located within the boundary of the Refinery and no agricultural resources are located with the Refinery. No existing agricultural land was or will be converted to non-agricultural land uses. Further, the project will not conflict with a Williamson Act contract. Therefore, the addition of the wet gas scrubber and the currently proposed modification will have no significant adverse impacts on agricultural resources.

Since the currently proposed modification along with the modifications analyzed in the May 2010 Addendum will not alter the conclusions from the May 2008 Final EIR, the currently proposed modification will not cause significant adverse impacts to agricultural resources.

## **7.3 Biological Resources**

### **7.3.1 May 2008 Final EIR**

As detailed in Appendix A of the May 2008 Final EIR, the PRO Project is located within the existing boundaries of the Refinery, which is zoned and has been used for heavy industrial purposes since 1911, and has already been graded and developed. There are three special-status species that have been reported in the immediate vicinity of the Refinery: two animal species (the El Segundo Blue Butterfly and the Pacific pocket mouse) and one plant species (the beach spectaclepod).

The El Segundo Blue Butterfly (*Euphilotes battoides allyni*) is a small (wing span of less than one inch), brightly colored butterfly that historically has been found in the El Segundo sand dunes of Los Angeles County. Because of extensive habitat loss, degradation, and fragmentation due to urban development, the butterfly's habitat has been reduced to two areas: sand dunes near the Los Angeles International Airport (LAX), which contain the largest population of the butterfly; and two acres at the butterfly sanctuary that was created within the property of the Chevron El Segundo Refinery in the northwest corner of the property. The El Segundo Blue Butterfly was listed as an endangered species by the federal government in 1976. The butterfly was discovered on an undeveloped portion of the Refinery property in 1975, and, shortly thereafter, the area where the butterfly was found in the northwest portion of the Refinery property was voluntarily fenced by Chevron to protect the butterfly's habitat and the coastal buckwheat plant (*Eriogonum parvifolium*), upon which the butterfly feeds during all stages of its life cycle.

Because the buckwheat plant at the Refinery's butterfly sanctuary has been threatened by various invasive species and annual grasses (e.g., tumbleweeds, rye grass, and ice plant), efforts have been made on an ongoing basis since the early 1980s to inhibit weed growth and stimulate buckwheat growth. Approximately 5,000 buckwheat plants have been transplanted at the Refinery since 1983 (Chevron, 2008a). In the mid 1980s, there were only about 400 of these butterflies at the Chevron butterfly sanctuary; subsequently there are approximately 10,000 butterflies (Chevron, 2009b). The butterfly population on LAX property also has increased, from a population of approximately 500 in 1985 to between 40,000 and 50,000 in 2001 (City of Los Angeles, 2001).

The population of the federally endangered El Segundo Blue Butterfly has increased substantially over the past 20 years, due to the existence of and habitat improvements at the Refinery butterfly sanctuary. These increases in the El Segundo Blue Butterfly population have occurred while Refinery operations have continued nearby. The distance between the project construction site and the Blue Butterfly Sanctuary was a minimum of approximately 1,900 feet, with other existing Refinery equipment located in closer proximity. The PRO Project would not be expected to have significant adverse impacts on the El Segundo Blue Butterfly, since it does not occur in the habitat area.

The Pacific pocket mouse (*Perognathus longimembris pacificus*) is a small brownish rodent that lives in fine-grained sandy areas (coastal strand, coastal dunes, coastal sage scrub, and river alluvium) in the immediate vicinity of the Pacific Ocean in southwestern California. Historically, the mouse's range extended from Los Angeles County south to the Mexican border, including

portions of the Chevron Refinery property. Only a few known populations remain, and they are in Orange County (Dana Point) and San Diego County (Camp Pendleton). The Pacific pocket mouse was last reported in the area of the Chevron Refinery in 1938, and, thus, is not expected to exist at the Refinery at present because habitat that could be used by the Pacific pocket mouse is no longer present at the Refinery. (CBD, 2008)

The beach spectaclepod (*Dithyrea maritime*) is a small low-growing perennial herb. The species is native to California and occurs in foredunes, active sand, and dune scrub from San Luis Obispo south to Baja California. The beach spectaclepod is considered extremely rare by the California Native Plant Society; it is listed as threatened by the State of California and as a Species of Concern by the federal government. The only reported occurrence for this plant at the Refinery site was in 1884, and the species is not expected to exist at the Refinery at present because the Refinery site has been continuously cleared of all vegetation since 1911 for safety reasons (SCAQMD, 2001).

The PRO Project activities are located within an existing Refinery, whose active areas have been highly disturbed and contain no significant biological resources. No impacts were expected to special status species. The Pacific pocket mouse and beach spectaclepod have not been sighted at the Refinery in decades (since 1938 for the mouse and since the late 19<sup>th</sup> century for the spectaclepod).

The NOP/IS concluded that the PRO Project was not expected to adversely affect special-status animal and plant species or other biological resources (riparian habitats, wetlands, or migratory corridors); or conflict with ordinances or conservation plans.

### **7.3.2 Currently Proposed Modification**

The currently proposed modification is operational changes only and does not require any physical changes at the Refinery. The addition of the wet gas scrubber was evaluated in the May 2010 Addendum and found to have no significant adverse impacts on wetlands, plant or animal resources, locally designated species, natural communities, wetland habitats, or animal migration corridor. Therefore, the addition of the wet gas scrubber and the currently proposed modification do not alter the conclusions from the May 2008 Final EIR, which concluded the PRO Project will not cause significant adverse impacts to biological resources.

## **7.4 Cultural Resources**

### **7.4.1 May 2008 Final EIR**

As detailed in Appendix A of the May 2008 Final EIR, there is only one historical site, the details of which are confidential to protect the resource, within a 0.5-mile radius of the Refinery and it is outside the boundary of the Refinery. It was concluded that the PRO Project would not cause an adverse change in the significance of a resource listed in the California Register of Historical Resources or in a local register of historical resources. Additionally, the PRO Project did not affect potentially eligible resources for listing in the California Register of Historical Resources.

Prior archaeological investigations had been performed within a 0.5-mile radius of the Refinery, which found no prehistoric sites or Native American sacred lands. No paleontological resources or unique geological features are known to exist at the facility. The Refinery had been in operation over 90 years and has had extensive ground disturbance associated with construction and operation of facilities and equipment. While the likelihood of encountering previously unknown archaeological or paleontological resources has been reduced, it was determined that the possibility existed. Project construction incorporated standard protective measures during earth-disturbing activities to minimize risk of adverse impacts including:

- If cultural resources are exposed, a professional archaeologist and a Gabrielino/Tongva representative will be retained to monitor the subsurface work;
- The archaeological monitor will have the authority to temporarily halt or redirect earth disturbance work in the vicinity of the exposed cultural resources, so the find can be evaluated and mitigated as appropriate; and
- As required by State law, if human remains are unearthed, no further disturbance will occur until the County Coroner has made the necessary findings concerning the origin and disposition of these remains. The Native American Heritage Commission will be notified if the remains are determined to be of Native American descent.

Therefore, the NOP/IS concluded that the PRO Project was not expected to adversely affect historic or prehistoric cultural resources or paleontological resources.

#### **7.4.2 Currently Proposed Modification**

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 including the following:

- A) Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage;
- B) Is associated with the lives of persons important in our past;
- C) 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;
- D) Has yielded or may be likely to yield information important in prehistory or history (CEQA Guidelines §15064.5).

Generally, resources (buildings, structures, equipment) that are less than 50 years old are excluded from listing in the National Register of Historic Places unless they can be shown to be exceptionally important. The currently proposed modification does not involve the removal of any existing structures or installation of new structures. The addition of the wet gas scrubber did not

involve the removal of any existing structures and was located entirely within the confines of the Refinery, which has been in operation since 1911. Therefore, no significant impacts to historic cultural resources were expected as a result of the addition of the wet gas scrubber as evaluated the May 2010 Addendum. Implementing the currently proposed modification would not change the significance determination of the May 2010 Addendum, which concluded no significant impacts would occur.

There are no known prehistoric or historic structures or objects within the Refinery. No known human remains or burial sites have been identified at the Refinery during previous construction activities. No significant adverse impacts to cultural resources are expected. Cultural resources were not encountered unexpectedly during ground disturbance associated with construction of the TGU, so the standard protective measures included in the May 2008 Final EIR were not employed. Further, the Refinery does not contain known paleontological resources and thus the PRO Project, including the currently proposed modification, is not expected to impact any sites of paleontological value. No significant adverse impacts to cultural resources are expected.

Since the currently proposed modification along with the addition of the wet gas scrubber analyzed in the May 2010 Addendum will not alter the conclusions from the May 2008 Final EIR, the currently proposed modification will not cause significant adverse impacts to cultural resources.

## **7.5 Geology and Soils**

### **7.5.1 May 2008 Final EIR**

As detailed in Appendix A of the May 2008 Final EIR, the PRO Project would be constructed in an area of known seismic activity. Although within a seismically active area, according to the Alquist-Priolo Earthquake Fault Zoning Maps and Fault Map of California (1994), the Refinery is not located on a fault trace that would define the site as a special seismic study zone under the Alquist-Priolo Act (CGS, 2007). Thus, the risk of earthquake-induced ground rupture was considered less than significant.

No significant adverse impacts from seismic hazards were expected since the PRO Project would be required to comply with the California Building Codes. No significant adverse impacts due to landslides or mudflows were expected since the Refinery is flat and not subject to landslide or mudflow.

The Refinery site has not been identified as an area where liquefaction is considered a significant potential risk (CDMG, 1999). The site was not considered to be an area with the potential for permanent ground displacement due to earthquake-induced landslides or due to heavy precipitation events (CDMG, 1999).

Due to limited grading and excavation, the PRO Project was not expected to cause unstable earth conditions, loss of top soil, changes in topography, or changes in geologic substructures. The PRO Project was not expected to generate significant adverse impacts on soils from alternative wastewater disposal systems since no septic tanks were included in the PRO Project.



The August 2007 NOP/IS concluded that no significant impacts on geology and soils were expected from the PRO Project.

### **7.5.2 Currently Proposed Modification**

The currently proposed modification requires no physical changes at the Refinery, and thus would not result in any changes to geology and soils impacts that were evaluated in the May 2008 Final EIR. The addition of the wet gas scrubber analyzed in the May 2010 Addendum was still located within the existing boundaries of the Refinery. The addition of the wet gas scrubber to the TGU did not change the amount of grading as it is located adjacent to the proposed TGU. The currently proposed modification does not involve any grading activities and will not alter the conclusion from the May 2008 Final EIR. Therefore, the currently proposed modification along with the modifications analyzed in the May 2010 Addendum will not cause significant adverse impacts to geology and soils.

Since the currently proposed modification along with the modifications analyzed in the May 2010 Addendum will not alter the conclusions from the May 2008 Final EIR, no significant adverse impacts to geology and soils are expected.

## **7.6 Land Use and Planning**

### **7.6.1 May 2008 Final EIR**

As detailed in Appendix A of the May 2008 Final EIR, the PRO Project included improvements and modifications within an existing industrial facility that is zoned for heavy manufacturing. No established communities are located on the Refinery property, and consequently, the PRO Project would not physically divide an established community.

The PRO Project is located in an industrial property zoned for such activity. The overall activities and products produced at the Refinery remain the same. The PRO Project did not conflict with the City of El Segundo General Plan land use designation for the Refinery nor did it conflict with the Downtown Specific Plan for the area north of the Refinery site. The PRO Project would not require zoning or land use changes.

Therefore, the PRO Project was not expected to have significant adverse land use impacts.

### **7.6.2 Currently Proposed Modification**

The addition of the wet gas scrubber analyzed in the May 2010 Addendum and the currently proposed modification occur within the boundary of the Refinery and do not divide an established community. The currently proposed modification, which is operational only and requires no physical change to the Refinery, is consistent with the activities currently ongoing at the Refinery and would not require a zoning or land use change. As such, the currently proposed modification along with the modifications analyzed in the May 2010 Addendum are not expected to have significant adverse impacts on land use.

Since the currently proposed modification along with the modifications analyzed in the May 2010 Addendum will not alter the conclusions from the May 2008 Final EIR, no significant adverse impacts to land use are expected.

## **7.7 Mineral Resources**

### **7.7.1 May 2008 Final EIR**

As detailed in Appendix A of the May 2008 Final EIR, the PRO Project was constructed on land within an existing industrial site. There are no known mineral resources on the Refinery site. The extraction of the crude oil takes place off-site and any potential loss of mineral resources from extraction would continue regardless of the PRO Project. Similarly, there are no known mineral resources on the project site and the project would not 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. Therefore, the PRO Project was not expected to cause significant adverse impacts to mineral resources.

### **7.7.2 Currently Proposed Modification**

The addition of the wet gas scrubber analyzed in the May 2010 Addendum and the implementation of the currently proposed modification will occur entirely within the boundaries of the Refinery. There are no known mineral resources currently on the project site. Therefore, the modified proposed project will not be located on a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. Furthermore, because the current modification does not involve any known mineral resources, the modified proposed project will not 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. No significant adverse impacts from the currently proposed modification on mineral resources are expected.

Since the currently proposed modification along with the modifications analyzed in the May 2010 Addendum will not alter the conclusions from the May 2008 Final EIR, no significant adverse impacts to mineral resources are expected.

## **7.8 Noise**

### **7.8.1 May 2008 Final EIR**

The May 2008 Final EIR evaluated PRO Project construction and operational noise impacts.

#### **Construction Impacts**

The noise levels from construction equipment at the Refinery were expected to be within the allowable noise levels established by the City of El Segundo noise ordinance, i.e., the PRO Project was not expected to increase the noise levels in commercial/industrial areas by eight dBA or the noise levels in residential areas by five dBA. The noise levels during the construction phase were

generally expected to be similar to the current noise levels and no significant (audible) increase in noise levels were expected. No significant impacts related to project construction were expected.

Workers exposed to noise sources in excess of 90 dBA for an eight-hour period were required to wear hearing protection devices. Since the maximum noise levels during construction activities were expected to be 85 decibels or less, no significant impact to workers during construction activities was expected.

### **Operational Impacts**

Additional noise sources were added to the existing Refinery as part of the PRO Project. A three-dimensional noise model of the PRO Project was performed to evaluate the potential noise impacts. Based on the noise model, noise generated by the PRO Project equipment would increase the overall noise levels at the Refinery by a maximum of about 1.3 dBA (when compared to baseline conditions), which is below the SCAQMD operational significance noise threshold of three decibels. Therefore, no significant noise impacts related to the operation of the PRO Project were expected. However, as part of ongoing community relations, Chevron applied noise attenuation (e.g., noise barriers and mufflers) for some newly installed equipment to minimize the potential increase in noise as part to the PRO Project.

### **7.8.2 Currently Proposed Modification**

#### **Construction Impacts**

The currently proposed modification does not involve construction activities as no structure or equipment is being installed or removed. The addition of the wet gas scrubber analyzed in the May 2010 Addendum was determined to have less construction equipment operating concurrently than was analyzed in the May 2008 Final EIR, since the construction schedule is extended from 24 months to 48 months. As such, the construction activity noise level was expected to be equal to or less than that evaluated in the May 2008 Final EIR. The currently proposed modification would not change the conclusions of the May 2008 Final EIR.

#### **Operational Impacts**

The operation of the sulfur processing facilities including the TGU were included in the evaluation in the May 2008 Final EIR. The addition of the wet gas scrubber analyzed in the May 2010 Addendum was not expected to change the noise profile of the TGU evaluated in the May 2008 Final EIR because the circulation pump for the scrubber is much smaller than the pumps associated with new sulfur processing facilities, which were previously evaluated. Therefore, the operational noise levels were expected to remain the same as evaluated in the May 2008 Final EIR. The currently proposed modification is operational changes only and does not involve the installation of any new noise generating equipment. Therefore, the currently proposed modification is not expected to change the noise analysis or conclusions from the May 2008 Final EIR.

Since the currently proposed modification along with the modifications analyzed in the May 2010 Addendum will not alter the conclusions from the May 2008 Final EIR, no significant adverse impacts to noise are expected.

## **7.9 Population and Housing**

### **7.9.1 May 2008 Final EIR**

As detailed in Appendix A of the May 2008 Final EIR, the PRO Project was expected to be constructed over a period of approximately 24 months at an existing Refinery located in a highly urbanized and populous area of southern California. The peak construction workforce was expected to be about 1,000 temporary workers from the existing local labor pool. Once constructed, 12 additional staff members were expected for long-term operation of the PRO Project. No housing was expected to be required or displaced and no housing growth was expected to occur as a result of the PRO Project. Therefore, no significant adverse population or housing impacts were expected to result from the PRO Project.

### **7.9.2 Currently Proposed Modification**

The currently proposed modification does not include construction activities and does not require the need for additional operators of the TGU beyond what was previously analyzed. The May 2010 Addendum evaluated revising the PRO Project schedule from 24 to 48 months. As a result, the peak construction activities at the Refinery were expected to be less as fewer of the project components would overlap. A maximum of about 450 construction workers were expected to be required under the revised construction schedule in the May 2010 Addendum versus about 1,000 workers evaluated in the May 2008 Final EIR. The construction activities did not involve the relocation of individuals, impact housing or commercial facilities, or change the distribution of the population because the currently proposed modification would occur completely within the boundaries of the existing Refinery. The construction work force, which is temporary, came from the existing labor pool in the southern California area. Additionally, once the wet gas scrubber was completed, operational activities did not require new permanent employees at the Refinery above the levels estimated in the May 2008 Final EIR (staff of 12 workers at the Refinery). No displacement of existing housing or people occurred because the addition of the wet gas scrubber and the currently proposed modification will occur within the confines of the existing Refinery. Therefore, the May 2010 Addendum concluded the addition of the wet gas scrubber was not expected to have a significant adverse impact on population, population distribution, or housing and the currently proposed modification would not change that conclusion.

Since the currently proposed modification along with the modifications analyzed in the May 2010 Addendum will not alter the conclusions from the May 2008 Final EIR, no significant adverse impacts to population and housing are expected.

## **7.10 Public Services**

### **7.10.1 May 2008 Final EIR**

As detailed in Appendix A of the May 2008 Final EIR, the PRO Project would not substantially change the load on the Refinery's firefighting and emergency response resources and would not be expected to create the need for additional fire protection services or resources by Chevron or the City of El Segundo. The PRO Project involved the installation of new vessels and storage facilities at the Refinery and new fire hazards would be added to the Refinery. However, the Refinery will continue to operate the existing on-site fire department with continued close coordination with local fire departments and emergency services. No significant adverse impacts on fire protection were expected.

The Refinery is an existing facility with a 24-hour security force for people and property currently in place. The Refinery is fenced and access provided by security-controlled gates. Because the PRO Project would not significantly change Refinery staffing or substantially expand the existing facilities within the Refinery, there was expected to be no increased need for new or expanded police protection.

The local workforce was determined to be more than adequate to fill the short-term construction positions required for the PRO Project. Therefore, there would be no increase in the local population and, thus, no new impacts were expected to schools, parks, or other public facilities.

No significant adverse impacts to public services were expected to occur as a result of the PRO Project.

### **7.10.2 Currently Proposed Modification**

To respond to emergency situations, the currently proposed modification will not alter the existing on-site emergency response capabilities. The currently proposed modification will not increase the requirements for additional or altered fire protection. The May 2010 Addendum concluded the addition of the wet gas scrubber is located in an area of the Refinery where firefighting response capabilities already exist. Therefore, no additional fire response capabilities were expected as a result of the addition of the wet gas scrubber or are expected for the currently proposed modification.

The currently proposed modification and the addition of the wet gas scrubber analyzed in the May 2010 Addendum occur within the boundaries of the Refinery, which is already equipped with 24-hour security, fencing, and controlled access. Thus, no additional or altered police protection was required for the addition of the wet gas scrubber or will be required for the currently proposed modification.

The operation of the TGU including the currently proposed modification is not expected to increase the number of long-term staff at the Refinery. Therefore, no impacts are expected to schools, parks, or other public facilities, such as government services, as a result of implementing the currently proposed modification.

No significant adverse impacts from the currently proposed modification on public services are expected. Since the currently proposed modification will not alter the conclusions from the May 2008 Final EIR, no significant adverse impacts to public services are expected.

## **7.11 Recreation**

### **7.11.1 May 2008 Final EIR**

As detailed in Appendix A of the May 2008 Final EIR and summarized in Section 7.8 – Population and Housing of this document, the PRO Project was expected to draw from the existing construction labor pool and existing housing for the operational staff. Therefore, implementation of the PRO Project was not expected to increase the demand for neighborhood or regional parks or other recreational facilities and it would not adversely affect existing recreational facilities.

Additionally, the PRO Project did not include new recreational facilities or require expansion of existing recreational facilities and, thus, would not have an adverse physical effect on the environment.

### **7.11.2 Currently Proposed Modification**

As discussed in Population and Housing (Section 7.9), the existing labor pool in southern California was sufficient to fulfill the labor requirements for the construction of the wet gas scrubber analyzed in the May 2010 Addendum and no construction is required for the currently proposed modification. The operation of the currently proposed modification will not require additional workers above the levels estimated in the May 2008 Final EIR (administrative staff of 12 workers at the Refinery). Therefore, there would be no significant changes in population densities resulting from the currently proposed modification and addition of the wet gas scrubber analyzed in the May 2010 Addendum, and thus, no increase in the use of existing neighborhood and regional parks or other recreational facilities.

The currently proposed modification along with the modifications analyzed in the May 2010 Addendum do not include recreational facilities or require the construction or expansion of existing recreational facilities. No significant adverse impacts to recreational facilities are expected. Since the currently proposed modification along with the modifications analyzed in the May 2010 Addendum will not alter the conclusions from the May 2008 Final EIR, the proposed project will not cause significant adverse impacts to recreation.

## **8.0 CONCLUSIONS**

As shown in Sections 6.0 and 7.0, the analysis of the currently proposed modification combined with the addition of the wet gas scrubber analyzed in the May 2010 Addendum indicated that no new significant adverse impacts would be created for any environmental areas analyzed in the May 2008 Final EIR or make substantially worse any existing significant adverse impacts. Based on the environmental analysis prepared for the currently proposed modification, the SCAQMD has quantitatively and qualitatively demonstrated that the currently proposed modification qualifies for an Addendum to the previously certified May 2008 Final EIR.

## **9.0 REFERENCES**

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- SCAQMD, 2008b. Final Environmental Impact Report, Chevron Products Company El Segundo Refinery, Product Reliability and Optimization Project, May 2008.
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## **APPENDIX A**

### **MAY 2008 FINAL EIR - CHAPTER 1 - INTRODUCTION AND EXECUTIVE SUMMARY**

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## **CHAPTER 1**

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### **INTRODUCTION AND EXECUTIVE SUMMARY**

Introduction

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## **1.0 INTRODUCTION AND EXECUTIVE SUMMARY**

### **1.1 INTRODUCTION**

Chevron Products Company is proposing the Product Reliability and Optimization (PRO) Project at its existing El Segundo Refinery (Refinery). The proposed project includes modifications to the No. 2 Crude Unit, No. 2 Residuum Stripper Unit (RSU), Minalk/Merox Unit, Waste Gas Compressors, Fluidized Catalytic Cracking Unit (FCCU), Alkylation Unit, Vacuum Residuum Desulfurization Unit (VRDS), ISOMAX Unit, Cogeneration (Cogen) Facilities, and the Railcar Loading/Unloading Rack. New process units include sulfur processing facilities (i.e., Sour Water Stripper (SWS), Sulfur Recovery Unit (SRU), and Tail Gas Unit (TGU)), Vapor Recovery and Safety Flare System, Water Treatment Facilities (i.e., reverse osmosis units and nitrogen removal units), and additional storage capacity. The purpose of these modifications and additions is to increase the reliability, energy efficiency, and capacity of specific existing Refinery processing equipment; allow the processing of a wider range of crude oils; and voluntarily reduce potential atmospheric emissions from existing pressure relief devices (PRDs). The proposed project will not increase or decrease the overall refinery crude throughput capabilities.

### **1.2 PURPOSE/LEGAL REQUIREMENTS**

In accordance with §15121(a) of the California Environmental Quality Act (CEQA) Guidelines (California Administrative Code, Title 14, Division 6, Chapter 3), the purpose of an Environmental Impact Report (EIR) is to serve as an informational document that: “will inform public agency decision-makers and the public generally of the significant environmental effect of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project.” The proposed project requires discretionary approval from the South Coast Air Quality Management District (SCAQMD) and, therefore, it is subject to the requirements of CEQA (Public Resources Code, §21000 et seq.).

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 of these projects be identified and implemented. 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). The proposed project requires discretionary approval from the SCAQMD for air quality permits for modifications to existing stationary source equipment and installation of new stationary source equipment. Therefore, the SCAQMD has the primary responsibility for supervising or approving the entire project as a whole and is the most appropriate public agency to act as lead agency (CEQA Guidelines §15051(b)).

To fulfill the purpose and intent of CEQA, as the lead agency for this project the SCAQMD prepared and released for a 30-day public review and comment period, a Notice of Preparation and Initial Study (NOP/IS) to identify potentially significant environmental impacts, and providing a preliminary analysis associated with the Chevron Products Company's PRO Project (see Appendix A).

### **1.3 SCOPE AND CONTENT**

The NOP/IS was circulated for a 30-day comment period beginning on August 10, 2007 through September 11, 2007. The NOP/IS was circulated in El Segundo and to neighboring jurisdictions, responsible agencies, other public agencies, and interested individuals in order to solicit input on the scope of the environmental analysis to be included in the EIR. Five comment letters were received on the NOP/IS during the public comment period. Responses to those comments are provided in Appendix A. The NOP/IS formed the basis for and focus of the technical analyses in this ~~Draft~~ *Final* EIR. The following environmental issues were identified in the NOP/IS as potentially significant and are further addressed in this document:

- Air Quality,
- Energy,
- Hazards and Hazardous Materials,
- Hydrology/Water Quality,
- Noise,
- Solid/Hazardous Waste, and
- Transportation/Traffic.

The NOP/IS concluded that the proposed project would not create significant adverse environmental impacts to the following areas: aesthetics, agricultural resources, biological resources, cultural resources, geology and soils, land use and planning, mineral resources, population and housing, public services, and recreation. No comments were received disputing this conclusion.

A discussion of potential cumulative impacts is also provided. The alternatives in Chapter 6 of this ~~Draft~~ *Final* EIR were prepared in accordance with §15126.6 of the CEQA Guidelines. Chapter 6 describes a range of reasonable alternatives that could feasibly attain the basic objectives of the proposed project as a means of eliminating or reducing some of the significant adverse environmental effects associated with the proposed project.

### **1.4 RESPONSIBLE AND OTHER AGENCIES**

CEQA Guidelines §15381 defines a “responsible agency” as: “a public agency which proposes to carry out or approve a project, for which a Lead Agency is preparing or has prepared an EIR or Negative Declaration. For purposes of CEQA, responsible agencies

include all public agencies other than the lead agency that have discretionary approval authority over the project.”

The following agencies may have ministerial permitting authority for aspects of modifications at the Refinery, and have been given an opportunity to review and comment on the NOP/IS and EIR; however, no new discretionary permits or permit modifications are expected to be required from these agencies for the proposed project:

- State Water Resources Control Board (SWRCB),
- Los Angeles Regional Water Quality Control Board (RWQCB), and
- City of El Segundo.

For convenience, all the above agencies will be referred to generally as Responsible Agencies in this EIR. For the record, none of the above agencies submitted a comment letter on the NOP/IS.

No trustee agencies as defined by CEQA Guidelines §15386 have been identified with respect to the proposed project. However, notice of the proposed project has been sent to the Office of Planning and Research pursuant to Public Resources Code §21080.4 for distribution in the event trustee or other responsible agencies are identified for the proposed project.

## **1.5 INTENDED USES OF THE EIR**

The EIR is intended to be a decision-making tool that provides full disclosure of the environmental consequences associated with implementing the proposed project. Additionally, CEQA Guidelines §15124(d)(1) requires a public agency to identify the following specific types of intended uses:

- A list of the agencies that are expected to use the EIR in their decision-making;
- A list of permits and other approvals required to implement the project; and,
- A list of related environmental review and consultation requirements required by federal, state, or local laws, regulations, or policies.

To the extent that local public agencies, such as cities, county planning commissions, etc., are responsible for making land use and planning decisions related to the proposed project, they could possibly rely on this EIR during their decision-making process. See the preceding section for a list of public agencies’ whose approval may be required and who may also be expected to use this EIR in their decision-making process.

## **1.6 AREAS OF CONTROVERSY**

In accordance with CEQA Guidelines §15123(b)(2), the areas of controversy known to the lead agency, including issues raised by agencies and the public, shall be identified in

the CEQA document. After public notification and review of the NOP/IS, the SCAQMD received five comment letters. Issues raised in the comment letters are related specifically to potential impacts from the proposed project and were addressed in the EIR and responses to those comment letters are provided in Appendix A. “Controversy” is defined as a difference in opinion or a dispute. No such issues have been raised regarding the Chevron proposed project. Consequently, there are no areas of controversy known to the lead agency.

## **1.7 EXECUTIVE SUMMARY – CHAPTER 2: PROJECT DESCRIPTION**

### **1.7.1 INTRODUCTION**

Chevron Products Company is proposing a project at the Refinery to increase the reliability, energy efficiency, flexibility and capacity of specific Refinery equipment. The PRO Project includes modifications to existing specific process units, new process units, and also new infrastructure that supports and links these units to other processes, units or facilities throughout the Refinery. The proposed project will involve physical changes and additions to multiple process units and operations as well as operational and functional improvements primarily within the confines of the Refinery.

### **1.7.2 PROJECT OBJECTIVES**

The objectives of the proposed project at the Refinery are to:

1. Improve the energy efficiency, performance, and reliability of process units;
2. Allow the Refinery to efficiently and reliably process a wider range of crude oils, including higher sulfur-containing crude oils;
3. Produce lower sulfur fuel products and increase production of commercial grade elemental sulfur;
4. Improve the management of blending components of California Air Resources Board (CARB) fuels; and,
5. Reduce the potential for atmospheric releases and related emissions from PRDs in the No. 2 Crude Unit, No. 2 Residuum Unit, and the Minalk/Merox Unit.

The proposed project will not increase or decrease the overall Refinery crude throughput capabilities.



### **1.7.3 PROJECT LOCATION**

The proposed project will occur primarily within the confines of the Refinery, except for improvements at the West Basin Municipal Water District (WBMWD), which is located just east and also just north of the Refinery. Additional utility improvements will be required to Southern California Edison (SCE) facilities. The Refinery, which was constructed over 90 years ago, is located at 324 West El Segundo Boulevard in the City of El Segundo, within the southern California region.

### **1.7.4 LAND USE AND ZONING**

The Refinery is bounded by El Segundo Boulevard to the north, Sepulveda Boulevard to the east, Rosecrans Avenue to the south, and Vista Del Mar to the west. The Chevron Refinery is located in an area of mixed land uses, with industrial, recreation, residential, and commercially zoned areas nearby. Land use to the north of the Chevron Refinery is primarily residential, with a mix of commercial and light industrial zoning mixed in. The predominant adjacent land uses west of the Refinery are nearly all heavy industrial, or open space, which includes: Dockweiler State Beach, Manhattan Beach, and the El Segundo Generating Station, although a small parcel of land at the southwest corner of the Chevron property is made up of commercial and multiple-family residential.

Directly south of the Refinery, there is a single-family residential area bordering the entire length of the Refinery separated by Rosecrans Avenue. The corridor immediately east of the Refinery is comprised of a golf course at the corner of Sepulveda Boulevard and El Segundo Boulevard, with light commercial and heavy industrial zoning for the rest of the tract. The Refinery is located in the City of El Segundo within Los Angeles County in an urbanized area that includes a substantial amount of industrial development, due to the proximity of Los Angeles International Airport (LAX).

### **1.7.5 EXISTING REFINERY CONFIGURATION AND OPERATION**

Crude oil, used to produce gasoline and other refinery products, is delivered by ship to the marine terminal and pumped to the Refinery by existing pipelines or received via pipeline directly to the Refinery. The crude oil is then processed in the crude units where it is heated and distilled into multiple feedstock components that are later processed elsewhere in the Refinery. The heavy residual oil leaving the crude units is further distilled in the vacuum units to yield additional, lighter hydrocarbon products and vacuum residuum. The vacuum residuum is processed in the Coker Unit and the lighter hydrocarbon components from the crude units and vacuum units are fed to other Refinery units for further processing. Some of the major downstream processes are cracking in the FCCU and ISOMAX Unit, processing to recover sulfur in the hydrotreating units including the VRDS Unit, synthesizing in the Alkylation Unit, and reforming in the CCR Unit.

Auxiliary systems are also needed to support Refinery operations including hydrogen plants (to produce hydrogen needed for certain refinery reactions), boilers to produce

steam, cogeneration plants to produce electricity and steam, and wastewater treatment systems.

## **1.7.6. PROPOSED PROCESS UNIT MODIFICATIONS**

### **1.7.6.1. No. 2 Crude Unit**

The No. 2 Crude Unit provides the initial separation of crude oil by distillation. The various distillates are then further refined in other processing units in the Refinery. The proposed modifications to the No. 2 Crude Unit include rerouting atmospheric PRDs to the proposed new Vapor Recovery and Safety Flare System. In addition, two knock-out drums will be added to the unit to collect, for recovery purposes, any liquids released from the PRDs in the No. 2 Crude Unit, the No. 2 RSU, and the Minalk/Merox Unit. The purpose of this modification is to voluntarily reduce potential emissions from PRDs that currently vent to atmosphere in the event of a process upset.

### **1.7.6.2 No. 2 Residuum Stripper Unit**

The No. 2 RSU processes the heavy hydrocarbons from the bottom of the No. 2 Crude Unit using vacuum distillation to produce various weight gas oils. The proposed modifications to the No. 2 RSU are limited to rerouting PRDs to the proposed new Vapor Recovery and Safety Flare System via the two new knock-out drums in the No. 2 Crude Unit. The purpose of this modification is to voluntarily reduce potential emissions from PRDs that currently vent to atmosphere in the event of a process upset.

### **1.7.6.3 Minalk/Merox Unit**

The Minalk/Merox Unit converts sulfur compounds (mercaptans) to disulfides using a catalyst. The proposed modifications to the Minalk/Merox Unit are limited to rerouting PRDs to the proposed new Vapor Recovery and Safety Flare System via a new knock-out drum in the No. 2 Crude Unit. The purpose of this modification is to voluntarily reduce potential emissions from PRDs that currently vent to atmosphere in the event of a process upset.

### **1.7.6.4 Waste Gas Compressors**

The Waste Gas Compressors (WGCs) at the No. 2 Crude Unit are currently connected to the Low Sulfur Fuel Oil (LSFO) vapor recovery system and safety flare. As part of connecting PRDs to the New Safety Flare, the WGCs will be rerouted to the New Vapor Recovery and Safety Flare System. The purpose of this modification is to align all PRDs from the No. 2 Crude Unit, No. 2 RSU, Minalk/Merox Unit, and the WGCs to a common vapor recovery and safety flare system.

#### **1.7.6.5 Fluidized Catalytic Cracking Unit**

The purposes of the modifications to the FCCU are to increase reliability, consolidate existing equipment, more efficiently separate intermediate streams, increase production of CARB gasoline components, and to improve energy efficiency. The modifications and equipment additions include: installing a new motorized main air blower replacing the existing steam turbine driven main air blower (the existing equipment will be idled and removed from the existing permit); installing a new depropanizer column replacing three smaller existing distillation columns; installing a new deethanizer column; installing new pumps; and, installing new heat exchangers.

#### **1.7.6.6 Alkylation Unit**

The Alkylation Unit combines light olefins (propylene, butylene and pentenes) with isobutane to produce an alkylate product for use as a gasoline blending component. The proposed modifications to the Alkylation Unit include supplemental cooling that will be supplied by a new cooling tower and additional heat exchangers. The depropanizer, located in the older section of the Alkylation area, will be removed. This column is one of the three depropanizer columns being removed as part of FCCU upgrades. The purpose of the modifications is to improve reliability through more efficient cooling (i.e., heat removal) and improve product separation in the Unit.

#### **1.7.6.7 Vacuum Residuum Desulfurization Unit**

The VRDS Unit desulfurizes and denitrifies gas oil feedstock for the FCCU. The purpose of the modification to the VRDS Unit is to allow taking one of the parallel reactor trains out of service to replace the catalyst while the other train remains in service. The unit modifications and additions include: installing valve manifolds to separate the reactor trains; installing a new, parallel high pressure separator; re-piping of the existing Recycle Hydrogen Heat Exchangers and Recycle Hydrogen Air Coolers to split them between the two trains; and, installing new facilities to allow sulfiding of fresh catalyst in one reactor train with the other train in operation. This includes installation of two new separator vessels, a new sulfiding recycle hydrogen compressor, and a new recycle hydrogen air cooler. In addition, the existing VRDS Product Coolers will be re-piped so they can be used in the catalyst sulfiding loop.

#### **1.7.6.8 ISOMAX Unit**

The ISOMAX Unit converts light and intermediate gas oils into jet fuel, motor gasoline, and Liquefied Petroleum Gas (LPG). The unit will be modified to increase the feed capacity by approximately 10,000 barrels per day (BPD), and to produce two additional products, Ultra Low Sulfur Diesel (ULSD) fuel and desulfurized FCCU feed. The purpose of the modifications is to accommodate gas oil production and optimize output from the Unit. Modifications will be made to the Century Type ISOMAX Catalyst for deNitrification (CKN) and distillation sections. A Pressure Swing Absorption (PSA) Unit will be installed to recover hydrogen for reuse in existing Refinery hydrocracking

and hydrotreating processes. Heaters in the ISOMAX Unit will be retrofitted with low nitrogen oxides (NO<sub>x</sub>) burners to reduce NO<sub>x</sub> emissions. Firing rates for the heaters will operate within existing permit limits.

#### **1.7.6.9 Cogeneration Facilities**

The Refinery currently operates a multi-train cogeneration plant to supply most of the electricity and steam used by processing equipment. To supplement electrical needs, electricity is purchased from offsite sources (e.g., SCE). The existing cogeneration facility will be expanded by an additional 49.9 megawatts (MW). The new 49.9 MW Cogen Train D includes a natural gas and refinery gas-fired turbine electric generator, a new steam-driven turbine electrical generator, feed gas compressors, knockout and surge pots, waste heat boilers (including duct burners) to generate steam, a carbon monoxide (CO) oxidation catalyst unit, and a Selective Catalytic Reduction (SCR) unit to control emissions. Expansion of this facility will decrease the Refinery's need for offsite sources of electricity.

#### **1.7.6.10 Railcar Loading/Unloading Rack**

The Refinery currently ships and receives LPG by trucks and rail cars. As part of the PRO Project, the LPG Loading/Unloading Rack will be expanded by the addition of four new loading/unloading positions for added flexibility that will increase the ability to optimize CARB-gasoline blending.

#### **1.7.6.11 Utility Improvements**

SCE and the WBMWD will improve systems to service the proposed project. SCE improvements expected to be made include adding new 66 kilovolt (kV) circuit breakers in their existing Chevmain Power Substation, new transformers at their existing ISOMAX Power Substation, about 500 feet of overhead or underground cables between the Chevmain Power Substation and the ISOMAX Power Substation, and a new transformer at their Chevgen Power Substation. WBMWD currently provides boiler feed and cooling tower water from secondary-treated effluent from the Hyperion Wastewater Treatment Plant that has been further processed by filtration, chlorination, demineralization by reverse osmosis, and/or denitrification. Improvements as part of the PRO Project at WBMWD, include increasing reverse osmosis and denitrification water production facilities.

### **1.7.7 PROPOSED NEW PROCESS UNITS**

#### **1.7.7.1 Sulfur Recovery Facilities**

##### **Sour Water Stripper**

A new SWS with a capacity of 300 gallons per minute (gpm) will be constructed to supplement the existing plants. This stripper will allow for increased processing of sour

water and production of commercial grade sulfur. The overhead stream from the stripper, containing hydrogen sulfide (H<sub>2</sub>S), ammonia and water vapor, will be fed to a new SRU.

### **Sulfur Recovery Unit**

A new SRU with a capacity of 175 long tons per day will be installed to process increased amounts of H<sub>2</sub>S to commercial grade, molten sulfur for sale. Ammonia in the feed stream to the SRU will be converted to atmospheric nitrogen and water and exhausted through the TGU to the atmosphere.

### **Tail Gas Unit**

The exhaust from the SRU will be vented to a new TGU for further processing before discharging to the atmosphere. The TGU will include a new incinerator.

#### **1.7.7.2 Vapor Recovery and Safety Flare System**

A new closed relief system, including vapor recovery compressors and an elevated safety flare, will be installed that is designed to be capable to handle emergency releases from the equipment that is connected to it. The PRDs on the No. 2 Crude Unit, the No. 2 RSU, and the Minalk/Merox Unit that currently may vent to atmosphere under upset conditions will be routed to this new Vapor Recovery and Safety Flare System. The existing WGCs currently routed to the LSFO vapor recovery system will be re-routed to this new Vapor Recovery and Safety Flare System. In addition, PRDs from the new SWS, SRU and TGU will be routed to this new Vapor Recovery and Safety Flare System. The recovered gases will be treated prior to being added to the existing refinery fuel gas system.

#### **1.7.7.3 Additional Storage Capacity**

The proposed project will require additional segregation and storage of intermediate hydrocarbon streams and products. A new LPG sphere (Tank 722), two new FCCU light gasoline tanks (Tanks 302 and 303), and a new ISOMAX diesel tank (Tank 447) with the flexibility to store other products will be added. In addition, new pumps will be added to transfer materials to and from the new tanks.

#### **1.7.7.4 Cooling Tower**

A new cooling tower with a water circulation rate of approximately 12,000 gpm will be constructed to support cooling needs at the existing Alkylation Unit, new SRU, new SWS, and new TGU.

#### **1.7.7.5 Hydrogen Compression and Transfer Facilities**

Hydrogen is currently produced onsite at the Refinery. Additional hydrogen compression and transfer facilities will be installed to supply Refinery units with hydrogen at the required pressures.

#### **1.7.8 CONSTRUCTION OF THE PROPOSED PROJECT**

Construction activities for the Chevron Products Company PRO Project are expected to begin in the second quarter of 2008 and be completed in 2010. The construction activities for most of the components are expected to overlap from the second quarter of 2008 until the fourth quarter of 2009. Construction work shifts are expected to last about ten hours per day during most portions of the construction schedule. However, during certain Refinery unit shutdown periods (e.g., March and October 2009), two construction shifts are expected to take advantage of the disruption in operation.

#### **1.7.9 OPERATION OF THE PROPOSED PROJECT**

The permanent work force at the Refinery is expected to increase by approximately 12 additional workers as a result of the proposed project. The proposed project is expected to incrementally reduce truck traffic by about two trucks per day associated with the transport of additional materials to and from the Refinery including among other things, catalyst deliveries and offsite shipments of commercial sulfur and ammonia products. In addition, a maximum of about 12 additional railcars per day could travel to and from the Refinery as a result of the proposed project.

### **1.8 EXECUTIVE SUMMARY – CHAPTER 3: EXISTING ENVIRONMENTAL SETTING**

This chapter presents the existing environmental setting for the proposed project and compares it to the potential impacts of the proposed project that have been previously evaluated. This EIR is focused only on the environmental topics identified in the NOP/IS (see Appendix A) that could be significantly adversely affected by the proposed project. The environmental topics identified in Chapter 3 include both a regional and local setting.

#### **1.8.1 AIR QUALITY**

The Chevron Products Company Refinery is located within the SCAQMD's jurisdiction. Over the last decade and a half, air quality has substantially improved within the district. Nevertheless, several air quality standards continue to be frequently exceeded by a wide margin. For example, of the National Ambient Air Quality Standards (NAAQS) established for six criteria pollutants, the district is in attainment for four (sulfur oxide, (SO<sub>x</sub>), NO<sub>x</sub>, CO and lead). VOC, a precursor to ozone and particulate matter (PM) are in non-attainment with the standards.

Chapter 3 discusses the effects of meteorological conditions, temperature and rainfall, and wind flow patterns on the existing air quality conditions in the South Coast Air Basin (Basin). Existing air quality will be examined regarding criteria pollutants, regional air quality, local air quality, the Refinery's criteria pollutant emissions, toxic air contaminants (TACs), as well as the regulatory setting.

### **1.8.2 ENERGY**

The major sources of energy in California come from intrastate, interstate and foreign sources. Power plants in California provided approximately 78 percent of the in-state electricity demand in 2006. Hydroelectric power from the Pacific Northwest provides another 7 percent, and power plants in the Southwestern U.S. provide another 15 percent. California is currently ranked fourth in the nation among oil producing states, behind Louisiana, Texas, and Alaska, respectively. Crude oil production in California averaged 731,150 BPD in 2004, a decline of 4.7 percent from 2003. Statewide oil production has declined to levels not seen since 1943. In 2005, the total receipts to refineries of roughly 674 million barrels came from in-state oil production (39.4 percent), combined with oil from Alaska (20.1 percent), and foreign sources (40.4 percent) (CEC, 2006b).

Chapter 3 discusses the existing setting regarding demand, supply and distribution of energy resources on a state and local basis, with electricity and liquid petroleum fuels providing the main topics.

### **1.8.3 HAZARDS AND HAZARDOUS MATERIALS**

The Refinery handles hazardous materials with the potential to cause harm to people, property, or the environment. An accidental release of hazardous materials at a facility can occur due to natural events, such as earthquakes, and non-natural events, such as mechanical failure or human error. Potential existing hazards from the Refinery are those associated with accidental releases of toxic/flammable gas, toxic/flammable liquefied gas, and flammable liquids. Typical hazards at a refinery include toxic gas clouds, fires, vapor cloud explosions, thermal radiation, and overpressure. State and federal laws require detailed planning to ensure that hazardous materials are properly handled, used, stored, and disposed of to prevent or mitigate injury to human health or the environment in the event that such materials are accidentally released.

### **1.8.4 HYDROLOGY/WATER QUALITY**

Water issues in the Los Angeles Basin are complex and affect supply, demand, and quality of water for domestic, commercial, industrial, and agricultural use. Since 1900, extensive water development has been carried out in the Los Angeles Basin. The Refinery currently consumes approximately 10 million gallons of water per day.

The Chevron Refinery is located adjacent to the Santa Monica Bay on the Pacific Ocean. The Bay is recognized by the United States Environmental Protection Agency (U.S. EPA) and the State as a natural resource of national significance. Effluent Limitations

and Performance Goals are established in Chevron's National Pollutant Discharge Elimination System (NPDES) Permit (No. CA0000337) for the protection of marine aquatic life and human health. Under its NPDES Permit, the Chevron Refinery is authorized to discharge up to 8.8 million gallons per day (gpd) of treated wastewater during dry weather and up to 23 million gpd during wet weather to the Santa Monica Bay, near Dockweiler State Beach in El Segundo.

Refinery wastewater is currently collected and treated in two separate drain and treatment systems: a segregated system and an unsegregated system. The unsegregated system is normally used for non-process wastewater, including cooling tower blowdown, steam condensate, a portion of the water pumped from groundwater recovery wells, and other wastewater streams containing free oil recovered with primary (physical) treatment only. The unsegregated system is also used to collect and treat stormwater.

The segregated system is normally used to treat process wastewater containing emulsified oil, organic chemicals, and a portion of the water pumped from groundwater recovery wells. This system consists of gravity separators, a dissolved air flotation (DAF) unit, and activated sludge units for secondary (biological) treatment. The biosolids from the biological treatment are disposed to the sanitary sewer for treatment by the Hyperion Treatment Plant under an Industrial Waste Discharge Permit.

Two auxiliary effluent diversion tanks are available for handling wastewater from either of the two systems and excess storm-water runoff. During severe rainstorms, excess runoff is collected and pumped into the diversion tanks, which have a holding capacity of about 13.8 million gallons. From the tanks, water can be routed to either system for treatment prior to discharge.

The wastewater is discharged through an outfall that is located approximately 3,500 feet offshore. Currently, the Refinery discharges approximately seven million gpd of treated wastewater during dry weather, and 21.5 million gpd during wet weather, both within the authorized discharge permitted. The Refinery is authorized to discharge up to 8.8 million gpd of treated wastewater during dry weather and up to 23 million gpd during wet weather.

### **1.8.5 NOISE**

Land use in the vicinity of the Refinery is generally designated commercial and residential to the north; industrial, open, and public land to the east; residential to the south; and industrial to the west. The ambient noise environment in the project vicinity is composed of the contributions from equipment and operations within these commercial and industrial areas, and from the traffic on roadways along or near each of its property boundaries.

The nearest sensitive noise receptors south of the Refinery are residences located in the City of Manhattan Beach, approximately 200 to 400 feet south of the Refinery along Rosecrans Avenue. The nearest sensitive noise receptors north of the Refinery are



commercial receptors along El Segundo Boulevard and residences along Lomita Avenue and Grand Avenue approximately one-eighth mile north of the Refinery.

Based on a recent noise survey performed on October 5 through October 9, 2007 to determine the existing ambient noise levels in the vicinity of the Refinery, the Community Noise Equivalent Level (CNEL) ranges between 63 A-weighted noise level measurement is decibels (dBA) and 69 dBA.

### **1.8.6 SOLID/HAZARDOUS WASTE**

As of January 2006, the total remaining permitted Class III landfill capacity in Los Angeles County is about 104 million tons for non-hazardous solid waste. The Los Angeles County Department of Public Works (LACDPW) anticipates that landfill capacity in the county could be exceeded in approximately 10.8 years. The Los Angeles County Sanitation Districts (LACSD) is currently exploring out-of-county disposal options in addition to continuing negotiations to extend current operating permits, as well as implementing waste management plans of source reduction and recycling.

The total remaining permitted inert waste capacity in Los Angeles County is estimated at approximately 46 million tons. There are currently two waste-to-energy facilities (i.e., incinerators) in Los Angeles County with a combined permitted daily capacity of 1,800 tons (six-day week). It is expected that these two facilities will operate at their current permitted daily capacity until the equipment life of the waste-to-energy facilities (incinerators) is exhausted (LACDPW, 2007).

Two hazardous waste landfill facilities are located in California, Chemical Waste Management Inc. (CWMI) Kettleman Hills facility in King's County, and the Clean Harbors (formerly Safety-Kleen) facility in Buttonwillow (Kern County). Kettleman Hills receives an average of 2,700 tons per day (tpd) and has an estimated two million cubic yard capacity. Buttonwillow receives approximately 960 tons of hazardous waste per day and has an approximate remaining capacity of approximately 8.8 million cubic yards. The expectant life of the Buttonwillow Landfill is approximately 40 years. Hazardous waste also can be transported to permitted facilities outside of California.

### **1.8.7 TRANSPORTATION AND TRAFFIC**

The operating characteristics of an intersection are defined in terms of the Level of Service (LOS), which describes the quality of traffic flow based on variations in traffic volume and other variables such as the number of signal phases. Intersections rated at LOS A to C operate well. Level D typically is the level for which a metropolitan area street system is designed. Level E represents volumes at or near the capacity of the highway, which will result in possible stoppages of momentary duration and fairly unstable traffic flow. Level F occurs when a facility is overloaded and is characterized by stop-and-go (forced flow) traffic with stoppages of long duration.

Peak hour LOS analyses were developed for intersections in the vicinity of the Refinery. The LOS analysis indicates typical urban traffic conditions in the area surrounding the Refinery, with all intersections, except one, currently operating at Levels A to D during morning peak hours (7 am – 9 am). One intersection currently operates at LOS E during morning peak hours, Sepulveda/El Segundo Boulevard. The evening peak hour conditions (4 pm – 6 pm) show overloaded conditions (LOS F) at two intersections, operating near capacity (LOS E) at one intersection, operating at LOS C at one intersection, operating at LOS D at one intersection, and the remainder of the intersections currently operating at LOS A to B.

## **1.9 EXECUTIVE SUMMARY – CHAPTER 4: ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

Chapter 4 assesses the potential environmental impacts of the construction and operation of the Chevron Products Company El Segundo Refinery PRO Project. Chapter 4 evaluates those impacts that are considered potentially significant under the requirements of CEQA, as determined by the NOP/IS (see Appendix A). Specifically, an impact is considered significant under CEQA if it leads to a “substantial, or potentially substantial, adverse change in the environment.” Table 1-1 (located at the end of this chapter) summarizes the impacts of the proposed project.

### **1.9.1 AIR QUALITY**

#### **1.9.1.1 Environmental Impacts**

Project-specific adverse air quality impacts associated with increased emissions of air contaminants (both criteria air pollutants and TACs) during the construction and operation phases of the proposed project are discussed in Chapter 4, as well as impacts to sensitive receptors.

Construction activities vary for the different portions of the proposed project, but construction activities overlap for a number of portions of the project. Therefore, emission calculations evaluated in Chapter 4 were based on the schedule presented in Chapter 2. Peak construction emissions for all pollutants except particulate matter less than 10 microns in diameter (PM10) and particulate matter less than 2.5 microns in diameter (PM2.5) are expected to occur in January 2009, with peak PM10 and PM2.5 emissions expected to occur in August 2008. The construction emissions are expected to be significant for CO, volatile organic compounds (VOCs), NOx, PM10, and PM2.5 following mitigation. Construction emissions are expected to be less than significant for SOx.

The peak construction emissions were modeled to determine the potential impacts on ambient air quality. Based on the Industrial Source Complex – Short Term (ISCST3) model, the ground level concentrations of the criteria pollutants of concern will be below

the significant change in air quality concentration. Therefore, no significant change in the local concentrations of criteria pollutants is expected.

Traffic impacts were analyzed to determine if significant traffic impacts could generate a significant increase in CO emissions. The intersection of Aviation Boulevard and El Segundo Boulevard has a potential to have significant traffic impacts during the construction phase. A CO Hotspots Analysis was completed to assess the impacts of the traffic on CO ambient air quality. Based on the analysis, it was determined that no significant change in the ambient CO air quality is expected as a result of the proposed project. Therefore, the proposed project is not expected to cause CO hotspots and no significant adverse impact on ambient air quality.

The proposed project operational emissions are also evaluated in Chapter 4. The primary sources of emissions are from new units including sulfur processing facilities, a Vapor Recovery and Safety Flare System, and from modifications to existing Refinery units. The operational impacts of the proposed project are expected to have significant VOC impacts. The proposed project is not expected to have significant impacts to CO, NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub>, or PM<sub>2.5</sub> during operation. VOC emissions will be offset for stationary sources, which will mitigate the VOC emissions to less than significant.

Based on the air quality modeling and related assumptions, the cancer risks to the Maximum Exposed Individual Worker (MEIW), the Maximum Exposed Individual Resident (MEIR) and the nearest sensitive receptor associated with the proposed project at the Refinery were calculated to be  $0.22 \times 10^{-6}$ ,  $0.33 \times 10^{-6}$ , and  $0.16 \times 10^{-6}$  respectively, or less than one in a million. This result does not exceed the cancer risk significance threshold of 10 per million.

The highest acute hazard index for the proposed project is estimated to be 0.0307 for the central nervous system, while the highest chronic hazard index for the proposed project is estimated to be 0.0066 for the reproductive system. The acute and chronic hazard indices for the proposed project do not exceed the relevant significance threshold of 1.0, therefore, no significant adverse acute or chronic health impacts are expected.

### **1.9.1.2 Mitigation Measures**

Mitigation measures will be imposed on the project to reduce emissions associated with construction activities from heavy construction equipment and worker travel. The appropriate mitigation measures are discussed in Chapter 4.

No mitigation measures are required for the operation phase of the project because all emissions were determined to be less than significant, except for VOC emissions that require offsets for stationary sources. Once offset, the VOC emissions will be less than significant. Operational VOC emissions from mobile source emissions (2.8 lbs/day) do not require offsets, and are less than significant so no further mitigation is required.

### **1.9.1.3 Level of Significance after Mitigation**

Construction emissions for the proposed project for CO, VOCs, NO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> are expected to remain significant following mitigation. The construction emissions associated with SO<sub>x</sub> are expected to remain less than significant following mitigation. Construction emissions are expected to be short-term and they will be eliminated following completion of the construction phase.

Localized significant impacts from construction activities were analyzed and determined that no significant change in local ambient air quality for nitrogen dioxide (NO<sub>2</sub>), CO, or PM<sub>10</sub> is expected for the proposed project. Therefore, the proposed project is not expected to cause a significant adverse impact on ambient air quality.

Traffic impacts were analyzed for potential impact to CO ambient air quality and determined that no significant change in the ambient CO air quality is expected as a result of the proposed project. Therefore, the proposed project is not expected to cause CO hotspots and no significant adverse impact on ambient air quality. Therefore, no mitigation would be required.

The operational impacts of the proposed project are expected to have significant VOC impacts. The proposed project is not expected to have significant impacts to CO, NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub>, or PM<sub>2.5</sub> during operation. VOC emissions will be offset, which will mitigate VOC emissions to less than significant.

The proposed project was analyzed for health impacts and determined to be less than significant. Therefore, the project is not expected to cause a potentially significant adverse impact on air quality.

## **1.9.2 ENERGY**

### **1.9.2.1 Environmental Impacts**

The proposed project includes new equipment that will require additional electricity. The proposed project also includes new cogen equipment that will produce additional electricity. The estimated increase in electricity demand from new equipment is about 29.9 MW. The proposed expansion to the existing multi-train Cogen Facility would increase the Refinery's electrical production by an additional 49.9 MW. The expansion of the Cogen Facility will allow the Refinery to produce all of the electricity required to operate the Refinery in the long-term, thus, reducing electricity purchases from SCE. Therefore, the project impacts on the electricity supply are considered to be beneficial.

### **1.9.2.2 Mitigation Measures**

No significant impacts associated with energy resources are expected from the proposed project during construction or operational phases, so no mitigation measures are required.

### **1.9.2.3 Level of Significance after Mitigation**

The proposed project is expected to generate sufficient electricity so that no significant energy impacts are expected.

## **1.9.3 HAZARDS AND HAZARDOUS MATERIALS**

### **1.9.3.1 Environmental Impacts**

The potential hazards (fires, explosion overpressure, thermal radiation, or release of H<sub>2</sub>S) from the new or modified units associated with the proposed project and the results of the modeling for these hazards are discussed in Chapter 4. The hazards analysis can be found in Appendix D. For each potential release, the distance to the significance threshold level was determined before and after the proposed project modifications (where applicable). None of the existing or modified units have the ability to create a hazard that could extend further off-site. Therefore, the potential hazard impacts associated with the proposed project are considered to be less than significant because significance thresholds would not be exceeded. Operation of the proposed project will not involve the use of flammable substances or hazardous materials that are not currently used at the Refinery nor will it involve the use of flammable substances in locations where they are not currently used.

### **1.9.3.2 Mitigation Measures**

No significant hazard or hazardous materials impacts are expected from the proposed project, so no mitigation measures are required.

### **1.9.3.3 Level of Significance Following Mitigation**

The proposed project impacts on hazards and hazardous materials are expected to be less than significant.

## **1.9.4 HYDROLOGY/WATER QUALITY**

### **1.9.4.1 Environmental Impacts**

Regarding water supply, the proposed project is expected to require about 400 gpm (about 576,000 gpd) of water for cooling purposes and about 120 gpm (about 172,800 gpd) of boiler feed water. Therefore, the proposed project will increase the water demand at the Refinery by about 520 gpm or about 748,800 gpd. The increase in water demand is expected to be met by existing sources of water supplied by WBMWD.

The proposed PRO Project includes modifications to the WBMWD utilities to allow the increased production of recycled water that will be used for cooling tower purposes and boiler feed water. All of the increased water use associated with the proposed project (about 748,800 gpd) will be reclaimed water supplied by the WBMWD. Therefore, the

proposed project will not result in an increase in the use of potable water, but will only result in an increase in the use of recycled water.

With respect to wastewater, the Refinery currently discharges approximately seven million gpd of treated wastewater to the Santa Monica Bay. It is expected that the proposed project will increase the wastewater discharge by about 223,200 gpd. The wastewater treatment system at the Refinery has sufficient capacity to treat the incremental increase in wastewater produced from the proposed project. Therefore, the proposed project is not expected to change the quality of wastewater produced by the Refinery.

Under its NPDES Permit, the Chevron Refinery is authorized to discharge up to 8.8 million gpd of treated wastewater during dry weather, and up to 23 million gpd during wet weather to the Santa Monica Bay, near Dockweiler State Beach in El Segundo. Following project completion, the total volume of wastewater generated would be about 7,223,200 gpd, which is within the capacity of the existing permit.

#### **1.9.4.2 Mitigation Measures**

No significant impacts associated with water demand and wastewater discharge are expected from the proposed project, so no mitigation measures are required.

#### **1.9.4.3 Level of Significance after Mitigation**

The proposed project impacts on hydrology and water quality are expected to be less than significant.

### **1.9.5 NOISE**

#### **1.9.5.1 Environmental Impacts**

The highest noise impacts from construction activities will be during installation of new and modified process units. Noise sources for the proposed project include heavy construction equipment which will be a source of noise over the approximately two and a half year construction period. The estimated noise level during installation of new and modified process units at the Refinery is expected to average about 85 decibels (dBA) at 50 feet from the center of construction activity for each unit.

The noise levels from the construction equipment at the Refinery are expected to be within the allowable levels established by the City of El Segundo noise ordinance, and increases during construction activities are not expected to exceed 1.2 dBA. The noise levels during the construction phase are generally expected to be similar to current noise levels and no significant (audible) increase in noise levels is expected.

The proposed project will also add equipment to the existing Refinery resulting in additional noise sources from operational activities. Additional noise sources associated

with the proposed project generally include process equipment components such as valves, flanges, ejectors, heat exchangers, vents, pumps, and compressors. Noise impacts associated with the proposed project were evaluated using noise modeling (see Appendix E). Noise generated by project equipment would increase the overall noise levels at the Refinery by a maximum of about 1.3 dBA (when compared to baseline conditions), which is below the significant impact level of an increase of three decibels. The noise levels in the area following completion of the proposed project are expected to be about the same as the current levels.

### **1.9.5.2 Mitigation Measures**

No significant impacts associated with noise are expected from the proposed project during construction or operational phases, so no mitigation measures are required.

### **1.9.5.3 Level of Significance Following Mitigation**

The proposed project is expected to be less than significant, so no significant impacts on noise are expected.

## **1.9.6 SOLID/HAZARDOUS WASTE**

### **1.9.6.1 Environmental Impacts**

Due to construction activities associated with the proposed project, an increase is expected in the generation of non-hazardous wastes resulting from demolition of existing structures, grading to provide foundations for new structures, and the installation new structures. Approximately 1,075 tons of municipal (non-hazardous) solid waste would be generated from the proposed project. The landfills in Los Angeles County have the capacity to accept the waste produced during the construction phase of the proposed project on a one-time basis.

Construction of the proposed project is also anticipated to generate approximately 1,200 tons of hazardous waste. Additionally, Chevron estimates that a total of approximately 5,900 tons of contaminated soil may be excavated during construction of the proposed project. There is adequate capacity at the two Class I landfills in California approved to accept hazardous waste.

The operation of the proposed project is expected to require increased amounts of catalyst and generate increased amounts of catalyst waste. As with the current procedures at the Refinery, the additional amounts of recovered catalyst will be transported for recycling offsite, so no increase in waste disposal of catalyst is expected.

### **1.9.6.2 Mitigation Measures**

No significant impacts associated with solid and hazardous waste are expected from the proposed project during construction or operational phases, so no mitigation measures are required.

### **1.9.6.3 Level of Significance after Mitigation**

The impacts of the proposed project on solid/hazardous waste facilities are expected to be less than significant.

## **1.9.7 TRAFFIC AND TRANSPORTATION**

### **1.9.7.1 Environmental Impacts**

Construction of the proposed project will generate additional traffic from construction personnel commuting to and from the site, as well as the transportation of construction materials and equipment to the Refinery. Because the daytime construction shift starts at 6:30 a.m., worker traffic attributable to project construction will not affect the morning peak hour (7:00 am to 9:00 am). The evening peak period is 4:00 p.m. to 6:00 p.m.; therefore, construction related traffic will be leaving and arriving during the evening peak hour and potentially impacting traffic during the evening peak hour.

The construction phase of the proposed project could result in potentially significant traffic impacts at one intersection (Aviation Boulevard and El Segundo Boulevard). In addition, traffic impacts are also potentially significant for the southbound lanes of the San Diego Freeway (I-405) between Rosecrans Avenue and El Segundo Boulevard and the northbound lanes of I-405 between El Segundo Boulevard and Alen M. Anderson Freeway (I-105) interchange. Sufficient parking for the peak estimate of 900 workers is not available at the Chevron Refinery. Therefore off-site parking areas will be used and workers will be transported to and from the Refinery.

Operational impacts from the proposed project are expected to require 12 additional permanent workers at the Refinery, generating 24 additional trips per day. The proposed project will result in increases in truck trips to provide supplies and materials, as well as to deliver products and wastes. The proposed project is also expected to reduce the production and sales of anhydrous ammonia from the Refinery, thus reducing overall truck trips from the Refinery by about two per day.

### **1.9.7.2 Mitigation Measures**

Because of the temporary nature of the construction traffic, feasible mitigation measures are limited. Chevron is using off-site parking structures and transporting workers to the Refinery during peak construction activities to minimize traffic impacts at intersections adjacent to the Refinery. In addition, the construction work shift is scheduled to begin at 6:30 am so that traffic impacts during the morning peak hour will be avoided. Chevron



will encourage ridesharing to reduce single occupancy vehicle trips and encourage ridesharing and transit use. Preferential parking for rideshare vehicles will be provided for construction workers. The traffic analysis assumes that no ridesharing will occur and provides a worst-case estimate of project impacts. However, ridesharing during construction activities is common and will help decrease traffic impacts. The amount of ridesharing that will occur cannot be predicted so traffic impacts are assumed to remain significant.

### **1.9.7.3 Level of Significance after Mitigation**

Mitigation measures have been included as part of the proposed project that are expected to reduce traffic impacts during the construction phase. However, construction traffic impacts are expected to remain significant. The construction traffic impacts will cease following completion of the construction phase. The operational impacts of the project on transportation/traffic are less than significant.

## **1.10 EXECUTIVE SUMMARY – CHAPTER 5: SUMMARY OF CUMULATIVE IMPACTS**

CEQA Guideline §15130(a) requires an EIR to discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable, as defined in §15065(a)(3). There are a number of projects proposed for development in the vicinity of the Refinery, which may contribute cumulative impacts to those generated by the proposed PRO Project. The discussion in Chapter 5 lists projects which are reasonably expected to proceed in the foreseeable future, i.e., project information has been submitted to a public agency.

### **1.10.1 AIR QUALITY**

#### **1.10.1.1 Environmental Impacts**

**Construction Impacts:** Construction activities for some of the projects described in Chapter 5 have the potential to overlap with the proposed Chevron project and result in short-term significant impacts on air quality. On a cumulative basis, construction emissions would exceed SCAQMD CEQA thresholds for CO, VOC, NO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>. Therefore, the air quality impacts associated with construction activities are considered significant. Mitigation measures to reduce air emissions associated with cumulative construction activities are necessary primarily to control emissions from heavy construction equipment and worker travel.

**Operational Impacts:** During operation, some of the projects are expected to reduce overall air pollutant emissions. However, there are localized increases for certain air pollutants. Direct stationary emission sources are generally subject to regulation. The operation of the Chevron project will not exceed the SCAQMD thresholds, after

mitigation, so no significant, project-specific air quality impacts are expected from the proposed project.

However, cumulative air quality impacts are expected to exceed the SCAQMD mass emission thresholds for CO, VOC, NO<sub>x</sub>, SO<sub>x</sub>, and PM<sub>10</sub>. Therefore, the cumulative air quality impacts for CO, VOC, NO<sub>x</sub>, SO<sub>x</sub>, and PM<sub>10</sub> are expected to be significant.

**Toxic Air Contaminants:** The proposed project impacts on health effects associated with exposure to TACs is expected to be below the CEQA significance thresholds and, therefore, less than significant. Therefore, the proposed project impacts are not expected to contribute to cumulative impacts and are not considered to be cumulatively considerable. The impacts from TACs are localized impacts. The only other major industrial project in the area is the El Segundo Power Plant Redevelopment Project. The potential overlap of the El Segundo Power Plant and the Chevron PRO Project would be well below the significance criteria of 10 per million for carcinogenic risk and 1.0 for the acute and chronic hazard indices. Cumulative impacts of TACs on health are expected to be less than significant.

**Green House Gases:** Global climate change refers to changes in average climatic conditions on earth as a whole, including temperature, wind patterns, precipitation and storms. Global warming, a related concept, is the observed increase in average temperature of the earth's surface and atmosphere. One identified cause of global warming is an increase of greenhouse gases (GHGs) in the atmosphere. Some studies indicate that the potential effects of global climate change may include rising surface temperatures, loss in snow pack, sea level rise, more extreme heat days per year, and more drought years. Events and activities, such as the industrial revolution and the increased consumption of fossil fuels (e.g., gasoline, diesel, coal, etc.), have heavily contributed to the increase in atmospheric levels of GHGs. As reported by the California Energy Commission (CEC), California contributes 1.4 percent of the global and 6.2 percent of the national GHGs emissions.

In response to growing scientific and political concern regarding global climate change, California has recently adopted a series of laws to reduce both the level of GHGs in the atmosphere and to reduce emissions of GHGs from commercial and private activities within the State.

Chevron has reported its GHG emissions to the California Climate Action Registry for the years 2004-2006, which were approximately 13.1 million metric tons per year for all sources in California. The total statewide net GHG emissions in 2004 were approximately 480 million metric tons per year for carbon dioxide (CO<sub>2</sub>) equivalent (CO<sub>2</sub>e) emissions. Global emissions of GHGs in 1990 were estimated by the Intergovernmental Powers on Climate Change to be 32,100 million metric tons for CO<sub>2</sub>e emissions. The two-year average GHG emissions from the Chevron El Segundo Refinery for 2005-2006 were calculated to be 3.588 million metric tons. The major source of emissions is combustion of fuel in heaters and boilers.

The new and modified equipment built as part of the Chevron PRO Project has been evaluated for all GHG emission sources, including both energy supplied via purchased conventional power generation and with energy supplied by the installation of more energy efficient cogeneration power (combined power and steam generation). The PRO Project as proposed is estimated to result in an increase of 0.194 million metric tons/year of GHGs with GHG emission increases generated from Cogen Train D, the tail gas treating unit, and the pilots on the new flare.

Chevron evaluated the electrical needs of the PRO Project and determined that the proposed project would require about 29.9 MW of electricity plus additional steam to operate the proposed new and modified units. The business-as-usual approach would be to purchase the additional electricity from the local provider (SCE). If the Refinery were to continue to rely on SCE for electricity, a new 330 mmBtu/hr boiler would be required to generate additional steam needed for the PRO Project and other Refinery activities. The GHG emissions that would be generated under the business-as-usual approach are estimated to be about 0.281 million metric tons per year.

Instead of business-as-usual, Chevron is proposing to install a new 49.9 MW cogeneration unit to supply the additional electricity and steam, and to reduce the amount of electricity purchased from the local provider. The steam required by the proposed project and other refinery activities can be generated by the Cogen Train D so that no new boiler is required. Although the operation of the new Cogen Train D will result in an increase in GHG emissions at the Refinery, the new Cogen Train D will eliminate the purchase of electricity from less energy efficient sources. It is estimated that the PRO Project with the Cogen Train D would generate about 0.089 million metric tons/yr (0.281 – 0.192) less GHG emissions than the PRO Project with a new boiler plus SCE supplied power, i.e, business-as-usual.

The major contributor of greenhouse gases in the PRO Project, the new Cogen Train D, is, in itself, one of the preeminent technologies for minimizing GHG emissions. Cogeneration is far more efficient (in both energy and GHG emissions), than separate generation of electricity and steam. Installing Cogen Train D as part of the PRO Project is consistent with the California Air Pollution Control Officer's Association's (CAPCOA's) Green List of Projects and, thus, the goals of AB32.

The California Public Utility Commission (CPUC) and CEC have established emissions performance standards for the generation of electricity. In order to evaluate compliance with the standard, the thermal output of Cogen Train D was calculated and compared to the emissions performance standard. The efficiency of the Cogen Train D is estimated to be 591 lbs of CO<sub>2</sub>e per MW-hr which is well below the emissions performance standard of 1,100 pounds of CO<sub>2</sub> per MW-hr. Therefore, the proposed Cogen Train D will be more energy efficient than required by CPUC and CEC standards, generating lower CO<sub>2</sub> emissions per MW-hr than required by CPUC and CEC standards.

For comparison purposes and consistency with the goals of AB32, the GHG emissions from the Chevron El Segundo Refinery have also been evaluated for the 1990 operating

conditions using historical operating data. The 1990 GHG emissions for the Refinery are estimated to be about 3.9 million metric tons of GHGs per year as compared to the 2010 GHG emission estimates of 3.588 million metric tons. In the years since 1990, the Refinery has implemented a number of projects to improve energy efficiency (thereby reducing GHG emissions) and, in one case, to directly reduce CO<sub>2</sub> emissions from the Steam Naphtha Reformer. GHG emissions from the Refinery will be less than the Refinery 1990 baseline - outpacing AB32's goal of reducing to 1990 emission levels by 2020. Through the use of a highly energy efficient cogeneration system, the PRO Project exhibits a highly favorable level of carbon intensity compared to traditional technologies.

In spite of all the past projects undertaken by Chevron and a proactive approach to reducing GHG emissions from the proposed project through the installation of a cogeneration unit, rather than taking a business-as-usual approach (i.e., installing a new boiler and increasing demand for electricity from SCE), the cumulative increase in GHG emissions from the proposed project of 0.194 million metric tons per year is concluded to be significant. Given the position of the legislature on AB32, which states that global warming poses serious threats to the environment, and the requirements of CEQA for the lead agency to determine whether a project will have a significant impact, the overall effect of 0.194 million metric tons per year of GHG emissions is considered cumulatively considerable. Thus, the cumulative greenhouse gas impacts from the proposed project are considered significant. This determination is based on the lack of clear scientific or other criteria for determining the level of significance of the project's contribution to global warming and adverse changes in climate conditions.

To offset GHG emissions from the PRO Project with the new Cogen Train D at the Refinery, Chevron shall offset the GHG emissions resulting from the proposed PRO Project through the purchase of CO<sub>2</sub> emission reduction credits. Chevron will make a contribution to the SoCal Climate Solutions Exchange of \$1,500,000 to produce verifiable and quantifiable permanent GHG emission reductions under District SoCal Climate Solutions Exchange and thus offset the net increase in the PRO Project GHG emissions (see Section 5.2.4.4 for further details on the GHG mitigation measures). Through implementation of these mitigation measures, the cumulative impacts of GHG emissions associated with the proposed PRO Project would be less than significant.

#### **1.10.1.2 Mitigation Measures**

For the construction period, the mitigation measures developed as part of the proposed Chevron project will be imposed on other related projects, if the SCAQMD is the lead agency and project-specific impacts are concluded to be significant. The mitigation measures to minimize emissions associated with operation of stationary sources of the related projects include the use of BACT for all new emission sources and modifications to existing sources. BACT would be required for stationary sources regardless of whether the SCAQMD is the lead agency or is a responsible agency. The use of BACT would control localized emissions. A BACT review will be completed during the SCAQMD permit approval process for all new/modified sources.

### **1.10.1.3 Level of Significance Following Mitigation**

The cumulative adverse air quality impacts due to construction activities are expected to exceed the SCAQMD significance thresholds for all criteria pollutants except SO<sub>x</sub> and are considered to be cumulatively considerable, even after mitigation. The cumulative air quality impacts due to operational activities are expected to exceed the SCAQMD significance thresholds for all pollutants and are considered to be cumulatively considerable. The project-specific TAC health impacts would not be significant, and are not considered to be cumulatively considerable. GHG emission impacts are expected to be less than significant after mitigation, through the use of GHG emission offsets.

## **1.10.2 ENERGY**

The project's contribution to energy impacts is not cumulative considerable and, thus, not significant because the environmental conditions would essentially be the same whether or not the proposed project is implemented (CEQA Guidelines §15130).

### **1.10.2.1 Environmental Impacts from Construction and Operations**

The Chevron PRO Project and other projects will consume additional electricity. The new office and commercial buildings are expected to consume additional electricity, while other projects at the Chevron Refinery (e.g., new Chevron administration building, No. 2 Cutpoint Project, LPG Rack Segregation, new jet tank and remodeling of the purchasing building) are not expected to require additional electricity. The PRO Project and the El Segundo Power Plant project will produce additional electricity, 49.9 MW and 280 MW, respectively. As a result, the cumulative projects are not expected to result in significant increases in electrical demand and will produce electricity. No significant cumulative energy impacts are expected.

### **1.10.2.2 Mitigation Measures**

New development will be required to comply with Uniform Building Code requirements which establish energy conservation standards for new construction. These standards are related to insulation requirements, glazing, lighting, shading, window requirements, and water and space heating systems. Implementation of the energy conservation requirements is expected to minimize cumulative energy impacts.

### **1.10.2.3 Level of Significance After Mitigation**

The impacts of the various projects on energy are not expected to be cumulatively considerable, as some of the projects will generate additional electricity, which will compensate for demand.

### **1.10.3 HAZARDS/HAZARDOUS MATERIALS**

The project’s contribution to hazards and hazardous materials impacts is not cumulative considerable and thus not significant because the environmental conditions would essentially be the same whether or not the proposed project is implemented (CEQA Guidelines §15130).

#### **1.10.3.1 Environmental Impacts from Construction and Operations**

Although other industrial facilities exist in the general vicinity of the Refinery, the cumulative impacts, from and between the onsite operation of the other industrial projects, are not expected to be significant because it is extremely unlikely that upset conditions would occur at more than one facility at a time. Further, hazard impacts at industrial facilities are not expected to overlap because of the distance between facilities. It also is extremely unlikely that an upset condition at one facility would create an upset at another nearby industrial facility because of the distance between facilities. The new project-related explosion or fire hazard impacts associated with the proposed project are expected to stay within the confines of the existing Refinery or travel no further than existing hazards. Therefore, explosion or fire hazards are not expected to reach or overlap with hazard impacts from other industrial projects, so hazard impacts are not expected to be cumulatively considerable.

#### **1.10.3.2 Mitigation Measures**

The proposed project impacts on hazards are considered to be less than significant. A number of existing rules and regulations apply to the Refinery and other industrial facilities that handle, transport or store hazardous materials. Compliance with these rules and regulations is expected to minimize industry-related hazards. Compliance with these rules and regulations should also minimize the hazards at other industrial facilities. Site-specific mitigation measures for hazards may be required for other projects.

#### **1.10.3.3 Level of Significance After Mitigation**

The impacts of the various projects on hazards are not expected to be cumulatively considerable as hazards at or within one project area are not expected to impact or lead to hazards at other facilities.

### **1.10.4 HYDROLOGY/WATER QUALITY**

The PRO Project’s contribution to hydrology/water quality impacts is not cumulative considerable and thus not significant because the environmental conditions would essentially be the same whether or not the proposed project is implemented (CEQA Guidelines §15130).

#### 1.10.4.1 Environmental Impacts from Construction and Operations

**Water Supply/Demand:** The Chevron PRO Project includes modifications to allow the increase production and use of recycled water that will be used for cooling tower purposes and boiler feed water. All of the increased water use associated with the proposed project (about 748,800 one million gallons per day) will be reclaimed water.

In addition to the proposed Chevron project, the El Segundo Power Plant is expected to require about 207,000 gpd of additional water. Water demand impacts from the power plant are expected to be mitigated by the use of recycled water for some purposes. The other related projects are limited to office buildings, commercial buildings, and some residential buildings, which are not expected to be major users of water. The cumulative increase in water use is expected to be less than the SCAQMD's significance threshold of five million gpd. Therefore, the proposed project and the cumulative projects are not expected to produce significant adverse cumulative impacts to water demand.

**Wastewater:** The proposed project is anticipated to increase wastewater discharge from the Chevron Refinery by about 223,200 gpd. Wastewater generated by Chevron is treated on-site prior to discharge. No significant impacts associated with wastewater discharge is expected from the Chevron PRO Project.

The total sewage generated by the other cumulative projects in the El Segundo area is estimated to be about one million gpd (see Table 5-10) and most of these facilities are expected to discharge to the LACSD sewage system which is treated by the Joint Water Pollution Control Plant (JWPCP). The JWPCP has a design capacity of about 385 million gpd and currently process an average flow of 323 million gpd. Therefore, JWPCP has sufficient sewage treatment capacity to accommodate the sewage from the cumulative projects. Therefore, impacts to sewage service would not be cumulatively considerable.

#### 1.10.4.2 Mitigation Measures

The proposed project impacts on hydrology/water quality were less than significant. Since no cumulative impacts were identified, no mitigation measures are required.

#### 1.10.4.3 Level of Significance After Mitigation

The cumulative impacts on hydrology/water quality are considered to be less than significant.

#### 1.10.5 NOISE

The Chevron PRO Project's contribution to noise impacts is not cumulative considerable and thus not significant because the environmental conditions would essentially be the same whether or not the proposed project is implemented (CEQA Guidelines §15130).

#### **1.10.5.1 Environmental Impacts from Construction**

Construction phases of each of the related projects are expected to generate localized, short-term noise impacts, some of which may be significant during construction. Construction activities associated with the industrial projects are located in industrial areas where limited sensitive receptors are located. The use of muffling devices, restriction of most construction work hours to daytime hours, etc., are expected to mitigate the increase in noise at most of the construction sites.

The cumulative construction impacts associated with the related industrial projects are not expected to be significant or exceed noise ordinances. The Refinery and other industrial projects are generally a sufficient distance apart that the noise levels are not expected to overlap. Some of the commercial/office buildings on-site are located close to residential and other sensitive receptors and may create noise impacts in residential areas. Construction activities are expected to be limited to daytime hours, which reduce the potential for impacts on sensitive receptors.

#### **1.10.5.2 Environmental Impacts from Operations**

The operational noise impacts of the industrial projects are not expected to be significant. The noise impacts at the Chevron Refinery are not expected to result in a noticeable change to the surrounding community. The mitigated operational noise at the southern boundary of the El Segundo Power Plant project is predicted to be no greater than 52 dBA. This noise level is less than the SCAQMD's significance threshold of 90 dBA at the property boundary. Therefore, the noise due to the new generators is not expected to have a significant noise effect and the noise would not overlap with other existing or new noise sources at the Chevron Refinery. In addition, existing traffic noise levels are significant in the Vista Del Mar Boulevard corridor which runs between the power plant and the Refinery, generating a large portion of the community noise levels.

Most of the noise associated with other cumulative projects (e.g., commercial and office buildings) is expected to be primarily associated with traffic. Sufficient distance separates the Refinery from most of the other projects, thus, it is unlikely that noise impacts will overlap.

#### **1.10.5.3 Mitigation Measures**

Since noise impacts from the Refinery proposed project are not considered to be cumulatively considerable, they do not contribute to significant adverse cumulative worse impacts. As a result, no mitigation measures are required.

#### **1.10.5.4 Level of Significance After Mitigation**

The noise impacts associated with the cumulative projects are not expected to be significant or contribute to significant adverse cumulative noise impacts during construction or operation.



### 1.10.6 SOLID/HAZARDOUS WASTE

The Chevron PRO Project's contribution to solid and hazardous waste impacts is not cumulative considerable and thus not significant because the environmental conditions would essentially be the same whether or not the proposed project is implemented (CEQA Guidelines §15130).

#### 1.10.6.1 Environmental Impacts from Construction and Operations

**Hazardous Waste:** The Chevron Refinery and El Segundo Power Plant projects are the main industrial developments in the area that have the potential to generate hazardous waste either through remediation activities or through the discovery of contaminated soils. The total amount of hazardous waste generated by contaminated soil is uncertain but maximum estimates are about 6,975 tons will be generated at the Chevron site and about 4,000 tons at the El Segundo Power Plant. The impacts would be considered adverse but not significant since the existing hazardous waste facilities likely have sufficient capacity to handle the one-time deposition of hazardous wastes that would likely be generated, e.g., contaminated soils. However, the additional waste streams may impact the dwindling capacity of certain landfills. Together, the landfills in California have 10.8 million cubic yards permitted capacity, which will accommodate the waste generated by the proposed project during the construction phase. In addition, other hazardous waste facilities are located out-of-state. Therefore, the cumulative impact of the generation hazardous waste is not considered a significant impact.

Most of the hazardous waste generated during the operational phase of the industrial projects include used oil and spent catalysts, which are expected to be recycled for their economic value. The office, commercial, and residential projects are not expected to generate substantial quantities of hazardous waste. Therefore, no significant cumulative impacts on hazardous waste facilities are expected.

**Solid Waste:** Non-hazardous solid wastes are usually generated in offices, commercial buildings, and residential units. The estimates of solid waste generated by cumulative projects are about one million tons per year. Because the proposed project's contribution to solid and hazardous waste impacts is not cumulatively considerable, the cumulative impacts on solid/hazardous waste are not significant because the environmental conditions would essentially be the same whether or not the proposed project is implemented (CEQA Guidelines §15130).

#### 1.10.6.2 Mitigation Measures

No mitigation measures are required for the Chevron PRO Project because the impacts are less than significant. Chevron will continue to implement a source reduction and recycling program to minimize solid wastes generated at the Refinery. New development must comply with all applicable city, county, and state requirements regulating solid waste disposal. Cumulative impact mitigation is the responsibility of local regional and

state agencies and feasible mitigation measures are expected to be limited to source reduction and recycling measures.

### **1.10.6.3 Level of Significance After Mitigation**

Individual project impacts on hazardous and solid waste from the Chevron PRO Project are less than significant and, therefore, not cumulatively considerable. Cumulative impacts on hazardous waste landfill facilities are expected to be less than significant because the industrial projects are expected to generate hazardous waste that can be recycled. Because the proposed project's contribution to solid and hazardous waste impacts is not cumulatively considerable, the cumulative impacts on solid/hazardous waste are not significant because the environmental conditions would essentially be the same whether or not the proposed project is implemented (CEQA Guidelines §15130).

### **1.10.7 TRANSPORTATION/TRAFFIC**

The potential significant adverse traffic impacts are expected to occur during the construction phase due to the temporary increase in construction workers at the Refinery. Following completion of construction, the increase in permanent workers is expected to be about 12 employees; therefore, the proposed project impacts on traffic during the operational phase are less than significant. Therefore the project's contribution to transportation and traffic impacts during project operation is not cumulative considerable and thus not significant because the environmental conditions would essentially be the same whether or not the proposed project is implemented (CEQA Guidelines §15130).

#### **1.10.7.1 Environmental Impacts from Construction**

Traffic impacts associated with the construction of the Chevron proposed project are expected to be potentially significant during the evening peak hour at one intersection, Aviation Boulevard/El Segundo Boulevard and on portions of the I-105 and I-405 Freeways. Therefore, the proposed project may have cumulative traffic impacts with other projects in the area. The proposed project's contribution to cumulative impacts on traffic during the construction phase would be considered cumulatively considerable.

There could be cumulative construction traffic impacts associated with other industrial construction projects in the area that do not avoid peak traffic hours. However, the Chevron PRO Project is expected to provide the major portion of the traffic related to construction activities so cumulative construction impacts on traffic from these projects are considered significant.

#### **1.10.7.2 Environmental Impacts from Operations**

The cumulative traffic analysis for operations assumed that the ambient traffic growth rate in the city is 0.50 percent per year from year 2008 to year 2020 and no changes in existing intersection geometrics. On a cumulative basis, general growth in the area may result in significant traffic impacts at the intersections of: (1) Sepulveda Boulevard

(SR1) and El Segundo Boulevard; (2) Sepulveda (SR1) Boulevard and Rosecrans Avenue; (3) Aviation Boulevard and El Segundo Boulevard; and (4) Aviation Boulevard and Rosecrans Avenue.

The increase in traffic is unrelated to the proposed project but is related to general population growth in the area so mitigation measures will need to be developed as new projects that generate traffic are proposed and as part of the City of El Segundo's and Manhattan Beach's General Plan process.

**1.10.7.3 Mitigation Measures**

Chevron will encourage ride-sharing by construction workers to minimize construction impacts. In addition, different parking areas will be used with construction workers being bussed onto the Refinery so that traffic impacts will be spread throughout the area.

**1.10.7.4 Level of Significance After Mitigation**

The proposed project is expected to result in significant traffic impacts during the construction phase. However, the construction activities are expected to cease following completion of the proposed project so no long term significant traffic impacts are expected. Because the proposed project's contribution to transportation and traffic impacts during operation is not cumulatively considerable, the cumulative impacts on transportation and traffic are not significant because the environmental conditions would essentially be the same whether or not the proposed project is implemented (CEQA Guidelines §15130).

**1.11 EXECUTIVE SUMMARY – CHAPTER 6: SUMMARY OF ALTERNATIVES**

This EIR identifies and compares the relative merits of a range of reasonable alternatives to the proposed project as required by the CEQA guidelines. According to the CEQA Guidelines, alternatives should include realistic measures to attain the basic objectives of the proposed project and provide a means for evaluating the comparative merits of each alternative. In addition, though the range of alternatives must be sufficient to permit a reasoned choice, they need not include every conceivable project alternative (CEQA Guidelines, §15126.6(a)). The key issue is whether the selection and discussion of alternatives fosters informed decision making and public participation.

**1.11.1 Description of Alternatives**

Alternatives to the proposed project included Alternative 1 - No Project Alternative; Alternative 2 – No Additional Sulfur Recovery Facilities; Alternative 3 – Eliminate Vapor Recovery and Safety Flare System; Alternative 4 - Eliminate FCCU and Alkylation Unit Modifications; and Alternative 5 - Purchase Additional Electricity.

CEQA Guidelines §15126.6 (e) requires evaluation of a “No Project Alternative” which is Alternative 1 in Chapter 6. Under the “No Project Alternative,” no Refinery modifications would occur. The proposed modifications to the No. 2 Crude Unit, No. 2 RSU, Minalk/Merox Unit, FCCU, Alkylation Unit, VRDS, ISOMAX Unit, Cogen Train D, Railcar Loading/Unloading Rack, and utility improvements would not occur. In addition, the proposed new SRU, SWS, TGU, vapor recovery and safety flare system, storage tanks, cooling tower, and hydrogen compression and transfer facilities would not be built and the Refinery would continue to operate under its current configuration.

Under Alternative 2, the Sulfur Recovery facilities, including the SWS, SRU, and TGU, would not be constructed. All other portions of the proposed project would still be constructed including the proposed modifications to the No. 2 Crude Unit, No. 2 RSU, Minalk/Merox Unit, FCCU, Alkylation Unit, VRDS, ISOMAX Unit, Cogen Train D, Railcar Loading/Unloading Rack, and utility improvements. In addition, the proposed vapor recovery and safety flare system, storage tanks, cooling tower, and hydrogen compression and transfer facilities would be built.

Under Alternative 3, the project as described in Chapter 2 would be constructed with the exception of the Vapor Recovery and Safety Flare System. This is a voluntary Refinery modification that is proposed to eliminate the potential for venting of PRDs to the atmosphere, thus minimizing VOC emissions at the Refinery.

Under Alternative 4, the modifications to the FCCU and Alkylation Unit would not occur and the related increase in the recovery of additional LPG from the fuel gas system will not occur. All other portions of the proposed project would still occur.

Under Alternative 5, the new Cogen Unit would not be constructed meaning the required additional electricity demand would be supplied by the local utility company. Under Alternative 5, a new auxiliary boiler or an increase in fired heat duty of an existing boiler would be required to supply the necessary stream demand of the proposed new and modified units. All other portions of the project would still occur.

### **1.11.2 Environmental Impacts of Alternatives**

Based on the analyses in Chapter 6, no feasible alternatives were identified that would reduce or eliminate the potentially significant air quality or traffic impacts during construction activities related to the proposed project and achieve the objectives of the proposed project.

The No Project Alternative (Alternative 1) would prevent Chevron from achieving all of the project objectives. However, the No Project Alternative would eliminate the potentially significant impacts related to air quality and traffic impacts during construction activities, making it an environmentally superior alternative .

Alternative 2 would result in significant impacts to air quality and traffic during construction, but would reduce the emissions and related traffic since the Sulfur

Recovery facilities would not be built. Therefore, in addition to the No Project Alternative, Alternative 2 would be considered the environmentally superior alternative as it would reduce project environmental impacts as compared to the proposed project, but would not reduce potentially significant impacts to less than significant. However, Alternative 2 would not allow the Refinery to meet all the project objectives of: (1) producing low-sulfur fuel products and increase production of commercial grade elemental sulfur; and (2) allowing the Refinery to efficiently and reliably process a wider range of crude oils, including higher sulfur-containing crude oils.

Alternative 3 and 4 would have similar impacts on air quality, energy, hazards/hazardous materials, noise and traffic, as the proposed project. Alternatives 3 and 4 would result in significant impacts to air quality and traffic during construction, but would reduce the construction and operational emissions and related traffic since fewer units would be built. Alternative 3 would not allow the Refinery to control the potential atmospheric releases and related emissions from PRDs in specified units. Alternative 4 would not include the energy efficiency modifications proposed for the FCCU and Alkylation Unit. Alternatives 3 and 4 would reduce project construction-related air quality and traffic impacts, but would not reduce potentially significant impacts to less than significant.

Alternative 5 would reduce project construction-related air quality and traffic impacts, but would not reduce potentially significant impacts to less than significant. Alternative 5 could result in significant impacts on energy because the Cogen Train D would not be constructed. Greenhouse gas emissions would be greater under Alternative 5. Therefore, the proposed project is preferred because it would attain all project objectives.

## **1.12 EXECUTIVE SUMMARY – CHAPTER 7 AND 8: REFERENCES, ACRONYMS AND GLOSSARY**

Information on references cited (including organizations and persons consulted) and the acronyms and glossary are presented in Chapters 7 and 8, respectively.

TABLE 1-1

Summary of Environmental Impacts, Mitigation Measures and Residual Impacts

IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
<p><b>Air Quality</b></p> <p>The construction emissions for CO, VOC, NOx, PM10, and PM2.5 will exceed the SCAQMD CEQA significance thresholds and are significant.</p>	<p>Develop a Construction Emission Management Plan for the proposed project; prohibiting truck idling in excess of five minutes, use electricity or alternate fuels for on-site equipment, where feasible, maintain construction equipment tuned up, use electric welders and electric generators where electricity is available; retrofit cranes of 200 hp or greater with diesel particulate filters; suspend construction activities during first stage smog alerts; develop a fugitive dust emission control plan.</p> <p>None required.</p>	<p>Construction emissions are expected to remain significant for CO, VOC, NOx, PM10 and PM2.5.</p>
<p>The construction emissions of SOx will not exceed SCAQMD CEQA significant thresholds and are less than significant.</p>	<p>None required.</p>	<p>Construction emissions are expected to be less than significant for SOx.</p>
<p>Construction impacts for NO<sub>2</sub>, CO, PM10 and PM2.5 would not exceed applicable local significance thresholds.</p>	<p>None required.</p>	<p>Concentrations of NO<sub>2</sub>, CO, PM10 and PM2.5 are less than significant.</p>
<p>Traffic impacts from the proposed project are not expected to cause CO hotspots and no significant adverse impact on ambient air quality is expected.</p>	<p>None required.</p>	<p>Concentration of CO from traffic is less than significant.</p>
<p>Operational emissions of CO, NOx, SOx, PM10 and PM2.5 are less than significant.</p>	<p>None required. Project emissions are controlled through use of BACT.</p>	<p>Mass daily emissions of CO, NOx, SOx, PM10 and PM2.5 from stationary and fugitive sources are expected to be less than significant.</p>
<p>Operational emissions of criteria pollutants are significant for VOC.</p>	<p>VOC emissions from stationary sources will be offset.</p>	<p>The VOC offsets will reduce the proposed project to less than significant.</p>

TABLE 1-1 (continued)

Summary of Environmental Impacts, Mitigation Measures and Residual Impacts

IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
<p><b>Air Quality (continued)</b>                      Ambient air quality modeling indicates that the project emissions on NO<sub>2</sub>, CO, PM10, and PM2.5 will be below ambient air quality standards and are less than significant.</p>	<p>None required.</p>	<p>Project emissions of NO<sub>2</sub>, CO, PM10, and PM2.5 will be below ambient air quality standards and are less than significant.</p>
<p>The cancer risk due to the operation of the proposed project is expected to be less than the significance criterion of 10 per million, so that project impacts are less than significant.</p>	<p>None required.</p>	<p>Cancer risk impacts are less than significant.</p>
<p>The proposed project's impacts associated with exposure to non-carcinogenic compounds are expected to be less than significant. The chronic hazard index and the acute hazard index are both below 1.0.</p>	<p>None required.</p>	<p>No significant non-carcinogenic health impacts are expected.</p>
<p><b>Energy</b>                      No significant energy resource impacts are expected from the construction or operation of the proposed project, as the project includes Cogen Train D which will provide additional electricity to the Refinery.</p>	<p>None required.</p>	<p>Energy resources impacts are less than significant.</p>
<p><b>Hazards and Hazardous Materials</b>                      None of the new or modified units will create a hazard that could extend further off-site so no significant adverse hazards and hazardous material impacts are expected from the construction or operation of the proposed project.</p>	<p>None required.</p>	<p>Hazards and hazardous material impacts are less than significant.</p>

TABLE 1-1 (continued)

Summary of Environmental Impacts, Mitigation Measures and Residual Impacts

IMPACT	MITIGATION MEASURES	RESIDUAL IMPACT
<p><b>Hydrology and Water Quality</b> The increase in water demand associated with the project will be provided through the use of reclaimed water so no significant adverse impacts on water demand are expected.</p>	None required.	Water demand impacts are less than significant.
<p>The increase wastewater generated by the proposed project is within the capacity of the wastewater treatment plant and the facility's NPDES permit.</p>	None required.	Wastewater impacts are less than significant.
<p><b>Noise</b> Construction noise increases are expected to be less than 1.2 decibels and less than significant.</p>	None required.	Construction noise impacts are less than significant.
<p>Operational noise increases are expected to be less than 1.3 decibel so no audible change in noise levels is expected and noise impacts are less than significant.</p>	None required.	Operational noise impacts are less than significant.
<p><b>Solid and Hazardous Waste</b> No significant adverse solid and hazardous waste impacts are expected from the construction or operational phases of the proposed project.</p>	None required.	Solid and hazardous waste impacts are less than significant.
<p><b>Transportation and Traffic</b> The demand for parking facilities due to construction workers will exceed the spaces available at the Refinery.</p>	The proposed project includes the use of satellite parking lots and transporting workers to the Refinery via bus.	Parking impacts during construction are less than significant.



**TABLE 1-1 (concluded)**  
**Summary of Environmental Impacts, Mitigation Measures and Residual Impacts**

<b>IMPACT</b>	<b>MITIGATION MEASURES</b>	<b>RESIDUAL IMPACT</b>
<p><b>Transportation and Traffic (continued)</b></p> <p>During the peak construction period, evening peak traffic at the intersection of Aviation Boulevard/El Segundo Boulevard is expected to change the LOS from E to F, creating a significant traffic impact. The construction work shift is schedule to begin at 6:30 a.m. which will avoid the morning peak traffic period.</p>	<p>Ridesharing of construction will be encouraged but cannot be guaranteed.</p>	<p>Construction traffic impacts during the evening peak hour are expected to remain significant.</p>
<p>During the peak construction period, two freeway segments will be impacted during the evening peak hour, including the southbound lanes of I-405 between Rosecrans Ave. and El Segundo Blvd. and the northbound lanes of I-405 between El Segundo Blvd. and the I-105 interchange.</p>	<p>Ridesharing of construction will be encouraged but cannot be guaranteed.</p>	<p>Construction traffic impacts during the evening peak hour are expected to remain significant.</p>
<p>The proposed project is expected to generate an additional 24 trips per day during the operational phase and a reduction of truck trips of about 2 per day. No significant adverse traffic impacts are expected.</p>	<p>None required.</p>	<p>Transportation and traffic impacts associated with operation of the proposed project are less than significant.</p>

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## **APPENDIX B**

### **EMISSIONS CALCULATIONS**

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**TABLE OF CONTENTS**  
**CHEVRON EL SEGUNDO REFINERY**  
**PRODUCT RELIABILITY AND OPTIMIZATION PROJECT**  
**WITH CURRENTLY PROPOSED MODIFICATIONS**

**APPENDIX B**  
**EMISSION CALCULATIONS**

<b>Table No.</b>		<b>Page No.</b>
B-1	TGU Emissions from the 2008 Final EIR .....	B-1
B-2	TGU Emissions from the Currently Proposed Modifications .....	B-2
B-3	Greenhouse Gas Emissions .....	B-3

**TABLE B-1  
CHEVRON PRODUCTS COMPANY  
EL SEGUNDO REFINERY  
TAIL GAS UNIT  
EMISSIONS FROM THE 2008 FINAL EIR**

<b>Pollutant</b>	<b>Units</b>	<b>CO</b>	<b>VOC</b>	<b>NO<sub>x</sub></b>	<b>SO<sub>x</sub></b>	<b>PM<sub>10</sub></b>
Permit Limit	ppmv, dry, 0% O <sub>2</sub>	150		40	30	
Stack Flow	lb mols/hr, dry, 0% O <sub>2</sub>	3022		3022	3022	
Pollutant Flow	lb mols/hr	0.4533		0.1209	0.0907	
Pollutant MW	lb/lb-mol	28		46	64	
Pollutant Flow	lb/hr	12.69		5.56	5.80	
Burner Duty	mmBTU/hr		32.7			32.7
Fuel Heating Value	BTU/scf (HHV)		1050			1050
Fuel Flow	scf/hr		31,143			31,143
Fuel Flow	mmscf/day		0.747			0.747
Emission Factor	lb/mmscf		5.5			7.6
<b>Pollutant Flow</b>	<b>lb/day</b>	<b>304.6</b>	<b>4.1</b>	<b>133.5</b>	<b>139.3</b>	<b>5.7</b>

Note:

Calculation of mass emission limits for criteria pollutants from anticipated permit limits

VOC and PM<sub>10</sub> emission factors from SCAQMD General Instruction Book for 2006-2007 AER, Appendix A Table 1.

**TABLE B-2  
CHEVRON PRODUCTS COMPANY  
EL SEGUNDO REFINERY  
TAIL GAS UNIT  
EMISSIONS FROM THE CURRENTLY PROPOSED MODIFICATIONS**

<b>Pollutant</b>	<b>Units</b>	<b>CO</b>	<b>VOC</b>	<b>NO<sub>x</sub></b>	<b>SO<sub>x</sub></b>	<b>PM<sub>10</sub></b>
Permit Limit	ppmv, dry, 0% O <sub>2</sub>				12	
Stack Flow	dscfm				23500	
Pollutant Flow	lb mols/hr					
Pollutant MW	lb/lb-mol				64.067	
Pollutant Flow	lb/hr				2.86	
Burner Duty	mmBTU/hr	50.1		50.1		
Fuel Heating Value	BTU/scf (HHV)					
Fuel Flow	scf/hr					
Fuel Flow	mmscf/day					
Emission Factor	lb/mmBTU	0.03		0.05		
Emission Factor	lb/mmscf					
<b>Pollutant Flow</b>	<b>lb/day</b>	<b>36.1</b>	<b>7.0</b>	<b>60.1</b>	<b>68.6</b>	<b>7.5</b>

Note:

Assumes normal operating conditions.

CO, VOC, SO<sub>x</sub>, and PM<sub>10</sub> emission factors based on SCAQMD permit limits.

NO<sub>x</sub> emission based on 0.05 lb/mmBTU.

**TABLE B-3  
CHEVRON PRODUCTS COMPANY  
EL SEGUNDO REFINERY  
TAIL GAS UNIT  
GREENHOUSE GAS EMISSIONS**

**GHG Emissions - Normal Operation @ 50.1 mmbtu/hr**

<b>Pollutant</b>	<b>NG, mmscf/yr</b>	<b>Convert, MT/kg</b>	<b>HHV, mmbtu/m mscf</b>	<b>EF, kg/mmbtu</b>	<b>MT/yr</b>	<b>CO2e MT/yr</b>
CO2	432.816568	0.001	1014	53.02	23269.20552	23269.21
CH4	432.816568	0.001	1014	0.001	0.438876	9.22
N2O	432.816568	0.001	1014	0.0001	0.0438876	13.61
					Total, CO2e-MT	23292.03

MT = Metric Tons



## **APPENDIX C**

### **AMBIENT AIR QUALITY ANALYSIS**

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**APPENDIX C**  
**CHEVRON PRODUCTS COMPANY**  
**EL SEGUNDO REFINERY**  
**TAIL GAS UNIT**  
**AMBIENT AIR QUALITY ANALYSIS**  
**( $\mu\text{g}/\text{m}^3$ )**

Criteria Pollutant	Averaging Period	May 2008 EIR	May 2008 TGU <sup>(1)</sup>	Proposed TGU	Ambient Background <sup>(2)</sup>	Total
CO	1-hour	233.9	232.4	65.9	5852.9	5920.3
	8-hour	93.7	92.9	33.2	4720.1	4754.1
NOx	1-hour (State)	101.7	96.3	47.65	184.3	237.35
	1-hour(Federal)	NE	NE	47.65	111.4	159.05
PM10/PM2.5	Annual	5.1	3.6	0.1	25.3	26.9
	24-hour	0.7	0.5	0.03	NA	0.23
	Annual	0.3	0.1	0.01	NA	0.21

NE = No established standard in 2008.

NA = Not applicable.

(1) All values from the permit applications submitted for the TGU in 2008.

(2) Peak value at Station 820 from 2011-2013.

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**Chevron El Segundo Refinery  
Revised SCAQMD Rule 1303 Analysis  
Tail Gas Unit Modification**

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**August 7, 2015**

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Prepared for: Chevron El Segundo Refinery  
Prepared by: Environmental Audit, Inc.  
1000 Ortega Way, Suite A  
Placentia, CA 92780  
714-632-8521

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## **FACILITY DESCRIPTION**

The Chevron Products Company (Chevron) El Segundo Refinery (Refinery) is located at 324 West El Segundo Boulevard in the City of El Segundo, California, as shown in Figure 1. The El Segundo Refinery occupies an irregularly shaped parcel of land, between Vista Del Mar on the west, El Segundo Boulevard on the north, Sepulveda Boulevard on the east, and Rosecrans Avenue on the south. The South Coast Air Quality Management District (SCAQMD) identification number for the facility is 800030.

## **INTRODUCTION**

Chevron is proposing to modify the existing Tail Gas Unit (TGU) incinerator to increase the fired duty from 41.9 million British thermal units per hour (mmbtu/hr) to 50.1 mmbtu/hr (based on high heating value (HHV) of 1,014 btu per standard cubic feet). The modification will not require a physical change in incinerator, only a change in operating conditions of the fuel to air ratio. This SCAQMD Rules 1303 analysis for the TGU incorporates all changes to CO, NO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> emission rates from the proposed modification.

## **EMISSION ESTIMATES**

The emissions estimates associated with TGU incinerator are based on 50.1 mmbtu/hr fired duty. NO<sub>x</sub> emission rates are based on 0.05 lb/mmbtu, which is a change of condition from the previous analysis at 0.02 lb/mmbtu at 41.9 mmbtu/hr. Startup, shutdown, and dry-out peak hourly NO<sub>x</sub> emission rates are based on the peak daily maximum permitted emission rate of 132 pounds occurring in one hour to creating a worst-case scenario for this evaluation. The TGU is estimated to operate 5,076 hours under normal conditions in addition to 12 startups (175 hours at 1,056 pounds of NO<sub>x</sub> per cycle), 12 shutdowns (120 hours at 660 pounds of NO<sub>x</sub> per cycle), and 3 dry-outs (48 hours at 264 pounds of NO<sub>x</sub> per cycle) per year. PM<sub>10</sub> and PM<sub>2.5</sub> emissions are based on the previous permit condition of 7.5 pounds per day. CO emission rates during all startup, shutdown, and dry-out events are assumed to be 2000 ppm (182.5 lb of CO/hr). The calculated emissions are presented in Table 1.

## **CRITERIA POLLUTANT IMPACT MODELING**

In order to determine the groundlevel concentrations, the U.S. EPA AERMOD air dispersion model was used to calculate the annual average, maximum 1-hour, and 24-hour concentrations. The location of the source was identified based on data provided by Chevron and the Venice USGS Quadrangle (see attached Figures 1 and 2). Unitized emissions rates were used in the AERMOD model. Per SCAQMD guidelines, the AERMOD model was run using each individual meteorological year in the data set. The meteorological data was representative of the area surrounding the Los Angeles International Airport. The AERMOD model used all regulatory default settings.

AERMOD includes algorithms to model the effects of building downwash on emissions from nearby or adjacent point sources. The model makes use of direction-specific information for all

building downwash cases. Terrain elevations were also taken into account, though the Refinery and the vicinity are in a relatively flat region (see Figure 2).

For most combustion sources, only a fraction of the NO<sub>x</sub> emission coming from the stack is actually NO<sub>2</sub>. NO<sub>2</sub> forms as nitrogen oxide (NO) interacts with the ozone in the atmosphere. The longer NO is exposed to ozone, the higher the conversion rate to NO<sub>2</sub>. As such, NO<sub>x</sub> to NO<sub>2</sub> conversion becomes a function of distance from the stack and ambient ozone concentration. The most conservative method to account for NO<sub>2</sub> concentration is the EPA Tier 1 analysis outlined in the *Guideline on Air Quality Models* (40 CFR Part 51, Appendix W), which assumes 100 percent conversion of NO<sub>x</sub> to NO<sub>2</sub>. In order to simplify the model, the most conservative method was used for this analysis.

The AERMOD model is run using a receptor grid of 100 meters, and extends at least 1,000 meters in every cardinal direction from the boundaries of the Refinery (see Figure 2).

The maximum impact location for a receptor is determined from the applicable averaging periods from the AERMOD model output (see Appendix A). The maximum groundlevel concentration and the Universal Transverse Mercator (NAD 83) coordinates for each maximum impacted receptor are presented in Table 2. An electronic copy of the model is presented in available at the SCAQMD.

## **CRITERIA POLLUTANT IMPACT ANALYSIS**

The TGU maximum groundlevel concentrations are compared to the significance thresholds established in Rules 1303 to demonstrate that the project will not cause a violation of any state or federal ambient air quality standard. The ambient air quality data for Southwest Los Angeles County Coastal (Station No. 820) is used to establish background levels of CO, NO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>. Federal NO<sub>2</sub> ambient background concentrations are based on the 98<sup>th</sup> percentile of the last 3 years of data. Table 3 identifies the ambient background concentrations of these pollutants at Station No. 820 for the last three published years (2011, 2012, and 2013), as well as federal NO<sub>2</sub> ambient background concentration data published by SCAQMD.

The NO<sub>2</sub> 1-hour and annual average concentrations are combined with the ambient background concentrations and compared to the Most Stringent Air Quality Standard. The PM<sub>10</sub> and PM<sub>2.5</sub> 24-hour, and PM<sub>10</sub> and PM<sub>2.5</sub> annual average concentrations are compared to the Significant Change in Air Quality Concentration thresholds.

### **State Standards**

The maximum CO impact concentration for 1-hour and 8-hour averages are 5,918.80 and 4,753.21 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ), respectively. The maximum NO<sub>2</sub> impact concentrations for 1-hour and annual averages are 231.92 and 25.41  $\mu\text{g}/\text{m}^3$ , respectively. The maximum PM<sub>10</sub> impact concentrations for 24-hour and annual averages are 0.03 and 0.01  $\mu\text{g}/\text{m}^3$ , respectively. The maximum PM<sub>2.5</sub> impact concentrations for 24-hour and annual averages are 0.03 and 0.01  $\mu\text{g}/\text{m}^3$ , respectively. Therefore, the TGU modification modeling results are below all state criteria pollutant significance thresholds. The results are presented in Table 4.



## **Federal Standards**

The maximum CO impact concentrations for 1-hour and 8-hour averages are 5,918.80 and 4,753.21  $\mu\text{g}/\text{m}^3$ , respectively. The maximum NO<sub>2</sub> impact concentrations for 1-hour and annual averages are 159.04 and 25.41  $\mu\text{g}/\text{m}^3$ , respectively. The maximum PM<sub>10</sub> impact concentrations for 24-hour and annual averages are 0.03 and 0.01  $\mu\text{g}/\text{m}^3$ , respectively. The maximum PM<sub>2.5</sub> impact concentrations for 24-hour and annual averages are 0.03 and 0.01  $\mu\text{g}/\text{m}^3$ , respectively. Therefore, the TGU modification modeling results are below all federal criteria pollutant significance thresholds. The results are presented in Table 5.

## **CONCLUSIONS**

The Rules 1303 analysis for the TGU modification results in no significant changes in air quality and no exceedances of any state or federal air quality standards for CO, NO<sub>2</sub>, PM<sub>10</sub>, or PM<sub>2.5</sub>.

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Attachments

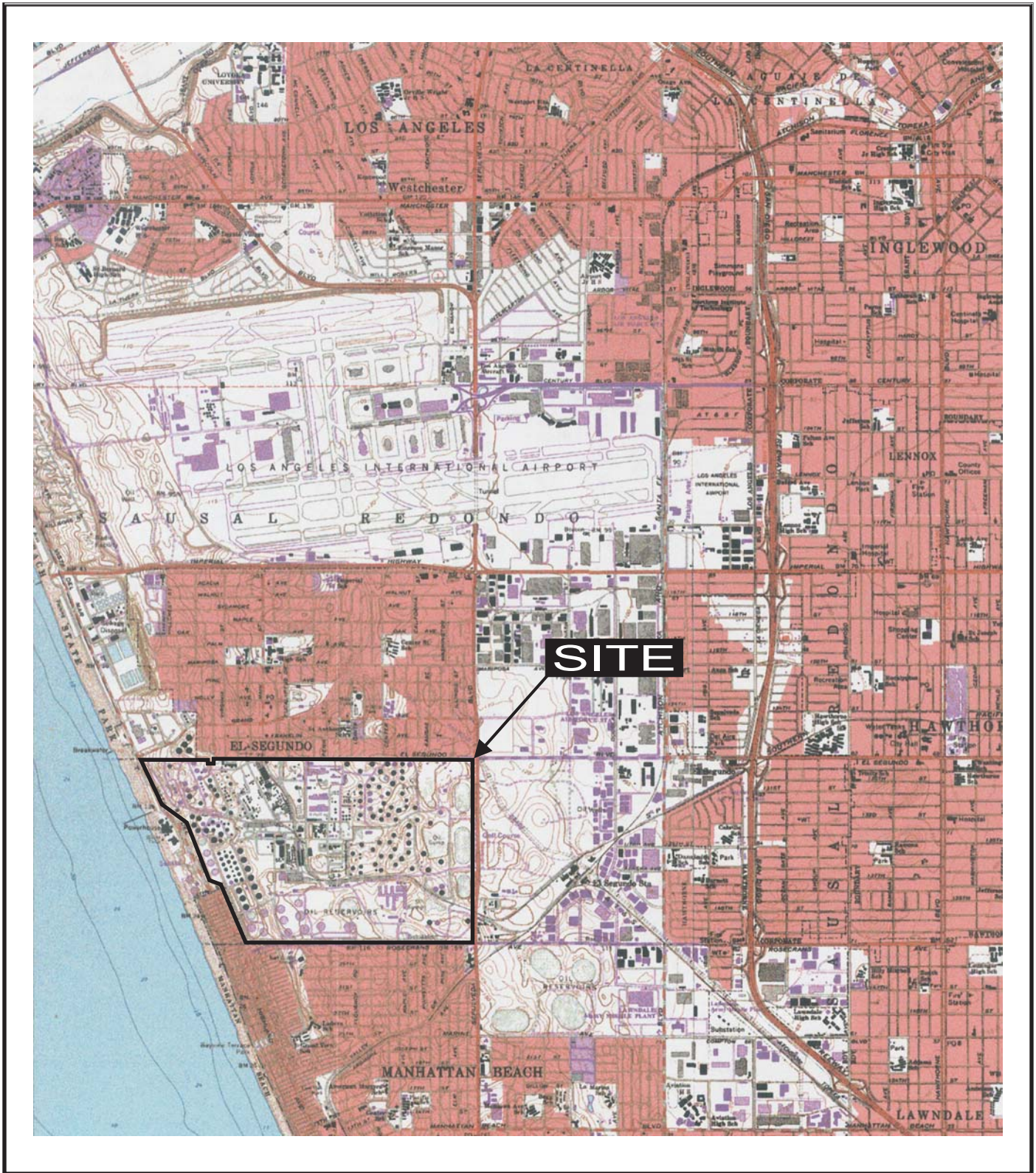
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**FIGURES**

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**SITE LOCATION MAP**  
324 West El Segundo Boulevard  
El Segundo, California





SOURCE LOCATION AND RECEPTOR MAP  
CHEVRON EL SEGUNDO REFINERY  
TAIL GAS UNIT



**TABLES**

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**TABLE 1**  
**Chevron El Segundo Refinery - Tail Gas Stack**  
**Source Parameters and Criteria Pollutant Emission Rates**

Source	UTME	UTMN	Height (ft)	Temperature (F)	Diameter (ft)	Velocity (ft/s)
TGU - 50.1 MMBtu/hr	369755.65	3752999.43	151	326.5	3.5	36.3

CO Max. Hourly Emission Rates	Duration	Emission Rate
	hr	lb/hr
CO - Startup	175	182.53
CO - Shutdown	120	182.53
CO - Dryout	48	182.53

Nox Max. Emission Rates	Duration	Emission Rate	Emission Rate
	hr	lb/day	lb/event
NOx - Startup	175	132.00	1056.00
NOx - Shutdown	120	132.00	660.00
NOx - Dryout	48	132.00	264.00

Time Weight Average Emissions	NOx (lb/hr)	PM10 (lb/hr)	CO (lb/hr)
	Annual average	3.80	0.31
Maximum 1 hour	132.00	NA	182.53
Maximum 8 hour	NA	NA	182.53
Maximum 24 hour	NA	0.31	NA

CO emission rates based on 2000 ppm @ 20966.6 dscm. EPA Method 2.

Annual average NOx emission rate includes 12 startups, 12 shutdowns, and 3 dry-out.

1-hour NOx emission rates based on actual peak uncontrolled emission rate.

PM10 emission rates based on previously permit limits.

Appendix C  
**TABLE 2**

**Chevron El Segundo Refinery - Tail Gas Stack  
 Criteria Pollutant Groundlevel  
 Concentration Calculations**

Criteria Pollutant	Averaging Period	Peak Model Year	Unitized GLC ( $\mu\text{g}/\text{m}^3$ )	Calculated GLC ( $\mu\text{g}/\text{m}^3$ )	UTM Coordinates	
					Easting	Northing
CO	1-hr	2009	0.3610	65.8881	369750	3752100
	8-hr	2010	0.1815	33.1229	370550	3753800
NO <sub>2</sub>	1-hr	2009	0.3610	47.6494	368850	3753800
	Annual	2011	0.0295	0.1122	370550	3753800
PM10	24-hr	2011	0.1086	0.0339	369750	3752100
	Annual	2011	0.0295	0.0092	370550	3753800
PM2.5	24-hr	2011	0.1086	0.0339	369750	3752100
	Annual	2011	0.0295	0.0092	370550	3753800

GLC = Groundlevel Concentration

PM2.5 = PM10

Appendix C  
**TABLE 3**

**Chevron El Segundo Refinery - Tail Gas Stack  
Criteria Pollutant Ambient  
Concentration Calculations**

Criteria Pollutant	Averaging Period	Concentration (ppm)			Max Conc.		Federal 1-hr Conc.	
		2011	2012	2013	(ppm)	( $\mu\text{g}/\text{m}^3$ )	(ppm)	( $\mu\text{g}/\text{m}^3$ )
CO	1-hr	2.3	2.8	3.1	3.1	5852.91		
	8-hr	1.8	2.5	2.5	2.5	4720.09		
NO <sub>2</sub>	1-hr	0.0976	0.0617	0.0778	0.0976	184.27	0.06	111.39
	AAM	0.0134	0.0104	0.0118	0.0134	25.30		
		<b>Concentration (<math>\mu\text{g}/\text{m}^3</math>)</b>						
PM10	24-hr	41	31	38		41.00		
	AAM	21.7	19.8	20.8		21.70		
PM2.5	24-hr	41	31	38		41.00		
	AAM	21.7	19.8	20.8		21.70		

Data from Source No. 3 Southwest Coastal LA County Station number 820

AAM = Annual Arithmetic Mean

PM2.5 emissions unavailable for station 820. PM10 emissions used in place of PM2.5.

1-hr CO data from Shoreh Cohanim at the AQMD.

Appendix C  
**TABLE 4**

**Chevron El Segundo Refinery - Tail Gas Stack  
 State Significance Threshold Evaluation**

Criteria Pollutant	Averaging Period	Ambient Background Conc. ( $\mu\text{g}/\text{m}^3$ )	Calculated Conc. ( $\mu\text{g}/\text{m}^3$ )	Total Conc. ( $\mu\text{g}/\text{m}^3$ )	Most Stringent Air Quality Standard ( $\mu\text{g}/\text{m}^3$ )	Significant Change in Air Quality Conc. ( $\mu\text{g}/\text{m}^3$ )	Below Threshold? Yes/No
CO	1-hr	5852.91	65.89	<b>5918.80</b>	<b>23000</b>	1100	Yes
	8-hr	4720.09	33.12	<b>4753.21</b>	<b>10000</b>	500	Yes
NO <sub>2</sub>	1-hr	184.27	47.65	<b>231.92</b>	<b>339</b>	20	Yes
	AAM	25.30	0.11	<b>25.41</b>	<b>57</b>	1	Yes
PM10	24-hr	41.00	<b>0.03</b>	41.03	50	<b>2.5</b>	Yes
	AAM	21.70	<b>0.01</b>	21.71	20	<b>1</b>	Yes
PM2.5	24-hr	41.00	<b>0.03</b>	41.03	35	<b>2.5</b>	Yes
	AAM	21.70	<b>0.01</b>	21.71	12	<b>1</b>	Yes

Evaluation Criteria **Bolded**

Appendix C  
**TABLE 5**

**Chevron El Segundo Refinery - Tail Gas Stack  
 Federal Significance Threshold Evaluation**

Criteria Pollutant	Averaging Period	Ambient Background Conc. ( $\mu\text{g}/\text{m}^3$ )	Calculated Conc. ( $\mu\text{g}/\text{m}^3$ )	Total Conc. ( $\mu\text{g}/\text{m}^3$ )	Most Stringent Air Quality Standard ( $\mu\text{g}/\text{m}^3$ )	Significant Change in Air Quality Conc. ( $\mu\text{g}/\text{m}^3$ )	Below Threshold? Yes/No
CO	1-hr	5852.91	65.89	<b>5918.80</b>	<b>23000</b>	1100	Yes
	8-hr	4720.09	33.12	<b>4753.21</b>	<b>10000</b>	500	Yes
NO <sub>2</sub>	1-hr	111.39	47.65	<b>159.04</b>	<b>188</b>	20	Yes
	AAM	25.30	0.11	<b>25.41</b>	<b>100</b>	1	Yes
PM10	24-hr	41.00	<b>0.03</b>	41.03	150	<b>2.5</b>	Yes
	AAM	21.70	<b>0.01</b>	21.71	NA	<b>1</b>	Yes
PM2.5	24-hr	41.00	<b>0.03</b>	41.03	35	<b>2.5</b>	Yes
	AAM	21.70	<b>0.01</b>	21.71	15	<b>1</b>	Yes

Evaluation Criteria **Bolded**

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**APPENDIX A**  
**AERMOD Model Output Summary Tables**

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 \*\*\* 06/26/15  
 \*\*\* AERMET - VERSION 14134 \*\*\* \*\* 2007  
 \*\*\* 14:12:49

PAGE 212

\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS \*\*\*

\*\* CONC OF AAQ IN MICROGRAMS/M\*\*3 \*\*

NETWORK GROUP ID GRID-ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE
TGU	1ST HIGHEST VALUE IS 0.02595 AT ( 370950.00, 3753600.00, 32.31, 32.31, 0.00) DC		
	2ND HIGHEST VALUE IS 0.02551 AT ( 370950.00, 3753700.00, 33.98, 33.98, 0.00) DC		
	3RD HIGHEST VALUE IS 0.02547 AT ( 370650.00, 3753800.00, 29.01, 29.01, 0.00) DC		
	4TH HIGHEST VALUE IS 0.02522 AT ( 370550.00, 3753800.00, 28.87, 28.87, 0.00) DC		
	5TH HIGHEST VALUE IS 0.02511 AT ( 370950.00, 3753500.00, 29.49, 29.49, 0.00) DC		
	6TH HIGHEST VALUE IS 0.02509 AT ( 370750.00, 3753800.00, 27.52, 27.52, 0.00) DC		
	7TH HIGHEST VALUE IS 0.02493 AT ( 370850.00, 3753800.00, 29.99, 29.99, 0.00) DC		
	8TH HIGHEST VALUE IS 0.02471 AT ( 370949.65, 3753774.43, 33.86, 33.86, 0.00) DC		
	9TH HIGHEST VALUE IS 0.02446 AT ( 370450.00, 3753800.00, 35.78, 35.78, 0.00) DC		
	10TH HIGHEST VALUE IS 0.02437 AT ( 370950.00, 3753800.00, 33.50, 33.50, 0.00) DC		
ALL	1ST HIGHEST VALUE IS 0.02595 AT ( 370950.00, 3753600.00, 32.31, 32.31, 0.00) DC		
	2ND HIGHEST VALUE IS 0.02551 AT ( 370950.00, 3753700.00, 33.98, 33.98, 0.00) DC		
	3RD HIGHEST VALUE IS 0.02547 AT ( 370650.00, 3753800.00, 29.01, 29.01, 0.00) DC		
	4TH HIGHEST VALUE IS 0.02522 AT ( 370550.00, 3753800.00, 28.87, 28.87, 0.00) DC		
	5TH HIGHEST VALUE IS 0.02511 AT ( 370950.00, 3753500.00, 29.49, 29.49, 0.00) DC		
	6TH HIGHEST VALUE IS 0.02509 AT ( 370750.00, 3753800.00, 27.52, 27.52, 0.00) DC		
	7TH HIGHEST VALUE IS 0.02493 AT ( 370850.00, 3753800.00, 29.99, 29.99, 0.00) DC		
	8TH HIGHEST VALUE IS 0.02471 AT ( 370949.65, 3753774.43, 33.86, 33.86, 0.00) DC		

File: C:\Users\Michael\AFRMOD\2505BTGU\CO\2007CO\2007CO.ADO 6/26/2015, 2:13:24PM

9TH HIGHEST VALUE IS	0.02446 AT (	370450.00,	3753800.00,	35.78,	35.78,	0.00)	DC
10TH HIGHEST VALUE IS	0.02437 AT (	370950.00,	3753800.00,	33.50,	33.50,	0.00)	DC

\*\*\* RECEPTOR TYPES: GC = GRIDCART  
GP = GRIDPOLR  
DC = DISCCART  
DP = DISCPOLR

File: C:\Users\Michael\AERMOD\2505BTGU\CO\2007CO\2007CO.ADO 6/26/2015, 2:13:24PM

\*\*\* AERMOD - VERSION 14134 \*\*\* \*\* C:\Documents and Settings\Micheal\My Documents\My Projects\2505Chev\  
\*\*\* 06/26/15  
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\*\*\* 14:12:49

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\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* THE SUMMARY OF HIGHEST 1-HR RESULTS \*\*\*

\*\* CONC OF AAQ IN MICROGRAMS/M\*\*3 \*\*

NETWORK GROUP ID ZFLAG)	OF TYPE	GRID-ID	AVERAGE CONC (YYMMDDHH)	RECEPTOR	(XR, YR, ZELEV, ZHILL,
DATE					
TGU	HIGH	1ST HIGH VALUE IS	0.34425	ON 07121816: AT (	369950.00, 3753800.00, 42.92,
42.92,	0.00)	DC			
ALL	HIGH	1ST HIGH VALUE IS	0.34425	ON 07121816: AT (	369950.00, 3753800.00, 42.92,
42.92,	0.00)	DC			

\*\*\* RECEPTOR TYPES: GC = GRIDCART  
GP = GRIDPOLR  
DC = DISCCART  
DP = DISCPOLR

File: C:\Users\Michael\AERMOD\2505BTGU\CO\2007CO\2007CO.ADO 6/26/2015, 2:13:24PM

\*\*\* AERMOD - VERSION 14134 \*\*\* \*\* C:\Documents and Settings\Micheal\My Documents\My Projects\2505Chev\  
\*\*\* 06/26/15  
\*\*\* AERMET - VERSION 14134 \*\*\* \*\* 2007  
\*\*\* 14:12:49

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\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* THE SUMMARY OF HIGHEST 8-HR RESULTS \*\*\*

\*\* CONC OF AAQ IN MICROGRAMS/M\*\*3 \*\*

NETWORK GROUP ID ZFLAG)	OF TYPE	GRID-ID	AVERAGE CONC (YYMMDDHH)	RECEPTOR	(XR, YR, ZELEV, ZHILL,
DATE					
TGU	HIGH	1ST HIGH VALUE IS	0.15770	ON 07121816: AT (	369750.00, 3753800.00, 35.24,
35.24,	0.00)	DC			
ALL	HIGH	1ST HIGH VALUE IS	0.15770	ON 07121816: AT (	369750.00, 3753800.00, 35.24,
35.24,	0.00)	DC			

\*\*\* RECEPTOR TYPES: GC = GRIDCART  
GP = GRIDPOLR  
DC = DISCCART  
DP = DISCPOLR

File: C:\Users\Michael\AERMOD\2505BTGU\CO\2007CO\2007CO.ADO 6/26/2015, 2:13:24PM

\*\*\* AERMOD - VERSION 14134 \*\*\* \*\* C:\Documents and Settings\Micheal\My Documents\My Projects\2505Chev\  
\*\*\* 06/26/15  
\*\*\* AERMET - VERSION 14134 \*\*\* \*\* 2007  
\*\*\* 14:12:49

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\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* THE SUMMARY OF HIGHEST 24-HR RESULTS \*\*\*

\*\* CONC OF AAQ IN MICROGRAMS/M\*\*3 \*\*

NETWORK GROUP ID ZFLAG)	OF TYPE	GRID-ID	AVERAGE CONC (YYMMDDHH)	RECEPTOR	(XR, YR, ZELEV, ZHILL,
DATE					
TGU	HIGH	1ST HIGH VALUE IS	0.09317m ON 07081424: AT (	369750.00,	3752100.00,
33.44,	0.00)	DC			33.44,
ALL	HIGH	1ST HIGH VALUE IS	0.09317m ON 07081424: AT (	369750.00,	3752100.00,
33.44,	0.00)	DC			33.44,

\*\*\* RECEPTOR TYPES: GC = GRIDCART  
GP = GRIDPOLR  
DC = DISCCART  
DP = DISCPOLR

File: C:\Users\Michael\AERMOD\2505BTGU\CO\2007CO\2007CO.ADO 6/26/2015, 2:13:24PM

\*\*\* AERMOD - VERSION 14134 \*\*\* \*\* C:\Documents and Settings\Micheal\My Documents\My Projects\2505Chev\  
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\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* Message Summary : AERMOD Model Execution \*\*\*

----- Summary of Total Messages -----

A Total of 0 Fatal Error Message(s)  
A Total of 0 Warning Message(s)  
A Total of 53 Informational Message(s)  
A Total of 8760 Hours Were Processed  
A Total of 0 Calm Hours Identified  
A Total of 53 Missing Hours Identified ( 0.61 Percent)

\*\*\*\*\* FATAL ERROR MESSAGES \*\*\*\*\*  
\*\*\* NONE \*\*\*

\*\*\*\*\* WARNING MESSAGES \*\*\*\*\*  
\*\*\* NONE \*\*\*

\*\*\*\*\*  
\*\*\* AERMOD Finishes Successfully \*\*\*  
\*\*\*\*\*

File: C:\Users\Michael\AERMOD\2505BTGU\CO\2008CO\2008CO.ADO 6/26/2015, 2:20:25PM

\*\*\* AERMOD - VERSION 14134 \*\*\* \*\* C:\Documents and Settings\Micheal\My Documents\My Projects\2505Chev\  
 \*\*\* 06/26/15  
 \*\*\* AERMET - VERSION 14134 \*\*\* \*\* 2008  
 \*\*\* 14:19:49

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\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS \*\*\*

\*\* CONC OF AAQ IN MICROGRAMS/M\*\*3 \*\*

NETWORK GROUP ID GRID-ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE
TGU	1ST HIGHEST VALUE IS 0.02723 AT ( 370650.00, 3753800.00, 29.01, 29.01, 0.00) DC		
	2ND HIGHEST VALUE IS 0.02694 AT ( 370550.00, 3753800.00, 28.87, 28.87, 0.00) DC		
	3RD HIGHEST VALUE IS 0.02675 AT ( 370750.00, 3753800.00, 27.52, 27.52, 0.00) DC		
	4TH HIGHEST VALUE IS 0.02646 AT ( 370850.00, 3753800.00, 29.99, 29.99, 0.00) DC		
	5TH HIGHEST VALUE IS 0.02642 AT ( 370950.00, 3753700.00, 33.98, 33.98, 0.00) DC		
	6TH HIGHEST VALUE IS 0.02636 AT ( 370950.00, 3753600.00, 32.31, 32.31, 0.00) DC		
	7TH HIGHEST VALUE IS 0.02609 AT ( 370450.00, 3753800.00, 35.78, 35.78, 0.00) DC		
	8TH HIGHEST VALUE IS 0.02594 AT ( 370949.65, 3753774.43, 33.86, 33.86, 0.00) DC		
	9TH HIGHEST VALUE IS 0.02569 AT ( 370950.00, 3753800.00, 33.50, 33.50, 0.00) DC		
	10TH HIGHEST VALUE IS 0.02501 AT ( 370950.00, 3753500.00, 29.49, 29.49, 0.00) DC		
ALL	1ST HIGHEST VALUE IS 0.02723 AT ( 370650.00, 3753800.00, 29.01, 29.01, 0.00) DC		
	2ND HIGHEST VALUE IS 0.02694 AT ( 370550.00, 3753800.00, 28.87, 28.87, 0.00) DC		
	3RD HIGHEST VALUE IS 0.02675 AT ( 370750.00, 3753800.00, 27.52, 27.52, 0.00) DC		
	4TH HIGHEST VALUE IS 0.02646 AT ( 370850.00, 3753800.00, 29.99, 29.99, 0.00) DC		
	5TH HIGHEST VALUE IS 0.02642 AT ( 370950.00, 3753700.00, 33.98, 33.98, 0.00) DC		
	6TH HIGHEST VALUE IS 0.02636 AT ( 370950.00, 3753600.00, 32.31, 32.31, 0.00) DC		
	7TH HIGHEST VALUE IS 0.02609 AT ( 370450.00, 3753800.00, 35.78, 35.78, 0.00) DC		
	8TH HIGHEST VALUE IS 0.02594 AT ( 370949.65, 3753774.43, 33.86, 33.86, 0.00) DC		

File: C:\Users\Michael\AFRMOD\2505BTGU\CO\2008CO\2008CO.ADO 6/26/2015, 2:20:25PM

9TH HIGHEST VALUE IS	0.02569 AT (	370950.00,	3753800.00,	33.50,	33.50,	0.00)	DC
10TH HIGHEST VALUE IS	0.02501 AT (	370950.00,	3753500.00,	29.49,	29.49,	0.00)	DC

\*\*\* RECEPTOR TYPES: GC = GRIDCART  
GP = GRIDPOLR  
DC = DISCCART  
DP = DISCPOLR



File: C:\Users\Michael\AERMOD\2505BTGU\CO\2008CO\2008CO.ADO 6/26/2015, 2:20:25PM

\*\*\* AERMOD - VERSION 14134 \*\*\* \*\* C:\Documents and Settings\Micheal\My Documents\My Projects\2505Chev\  
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\*\*\* 14:19:49

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\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* THE SUMMARY OF HIGHEST 1-HR RESULTS \*\*\*

\*\* CONC OF AAQ IN MICROGRAMS/M\*\*3 \*\*

NETWORK GROUP ID ZFLAG)	OF TYPE	GRID-ID	AVERAGE CONC (YYMMDDHH)	RECEPTOR	(XR, YR, ZELEV, ZHILL,
DATE					
TGU	HIGH	1ST HIGH VALUE IS	0.32320	ON 08100317: AT (	370050.00, 3753800.00, 45.23,
45.23,	0.00)	DC			
ALL	HIGH	1ST HIGH VALUE IS	0.32320	ON 08100317: AT (	370050.00, 3753800.00, 45.23,
45.23,	0.00)	DC			

\*\*\* RECEPTOR TYPES: GC = GRIDCART  
GP = GRIDPOLR  
DC = DISCCART  
DP = DISCPOLR

File: C:\Users\Michael\AERMOD\2505BTGU\CO\2008CO\2008CO.ADO 6/26/2015, 2:20:25PM

\*\*\* AERMOD - VERSION 14134 \*\*\* \*\* C:\Documents and Settings\Micheal\My Documents\My Projects\2505Chev\  
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\*\*\* 14:19:49

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\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* THE SUMMARY OF HIGHEST 8-HR RESULTS \*\*\*

\*\* CONC OF AAQ IN MICROGRAMS/M\*\*3 \*\*

NETWORK GROUP ID ZFLAG)	OF TYPE	GRID-ID	AVERAGE CONC (YYMMDDHH)	RECEPTOR	(XR, YR, ZELEV, ZHILL,
DATE					
TGU	HIGH	1ST HIGH VALUE IS	0.17390	ON 08052316: AT (	369850.00, 3753800.00, 39.47,
39.47,	0.00)	DC			
ALL	HIGH	1ST HIGH VALUE IS	0.17390	ON 08052316: AT (	369850.00, 3753800.00, 39.47,
39.47,	0.00)	DC			

\*\*\* RECEPTOR TYPES: GC = GRIDCART  
GP = GRIDPOLR  
DC = DISCCART  
DP = DISCPOLR

File: C:\Users\Michael\AERMOD\2505BTGU\CO\2008CO\2008CO.ADO 6/26/2015, 2:20:25PM

\*\*\* AERMOD - VERSION 14134 \*\*\* \*\* C:\Documents and Settings\Micheal\My Documents\My Projects\2505Chev\  
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\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* THE SUMMARY OF HIGHEST 24-HR RESULTS \*\*\*

\*\* CONC OF AAQ IN MICROGRAMS/M\*\*3 \*\*

NETWORK GROUP ID ZFLAG)	OF TYPE	GRID-ID	AVERAGE CONC (YYMMDDHH)	RECEPTOR	(XR, YR, ZELEV, ZHILL,
DATE					
TGU	HIGH	1ST HIGH VALUE IS	0.08407	ON 08080424: AT (	371350.00, 3754000.00, 35.54,
35.54,	0.00)	DC			
ALL	HIGH	1ST HIGH VALUE IS	0.08407	ON 08080424: AT (	371350.00, 3754000.00, 35.54,
35.54,	0.00)	DC			

\*\*\* RECEPTOR TYPES: GC = GRIDCART  
GP = GRIDPOLR  
DC = DISCCART  
DP = DISCPOLR

File: C:\Users\Michael\AERMOD\2505BTGU\CO\2008CO\2008CO.ADO 6/26/2015, 2:20:25PM

\*\*\* AERMOD - VERSION 14134 \*\*\* \*\* C:\Documents and Settings\Micheal\My Documents\My Projects\2505Chev\  
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\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* Message Summary : AERMOD Model Execution \*\*\*

----- Summary of Total Messages -----

A Total of 0 Fatal Error Message(s)  
A Total of 0 Warning Message(s)  
A Total of 391 Informational Message(s)  
A Total of 8784 Hours Were Processed  
A Total of 0 Calm Hours Identified  
A Total of 338 Missing Hours Identified ( 3.85 Percent)

\*\*\*\*\* FATAL ERROR MESSAGES \*\*\*\*\*  
\*\*\* NONE \*\*\*

\*\*\*\*\* WARNING MESSAGES \*\*\*\*\*  
\*\*\* NONE \*\*\*

\*\*\*\*\*  
\*\*\* AERMOD Finishes Successfully \*\*\*  
\*\*\*\*\*

File: C:\Users\Michael\AERMOD\2505BTGU\CO\2009CO\2009CO.ADO 6/26/2015, 2:49:59PM

\*\*\* AERMOD - VERSION 14134 \*\*\* \*\* C:\Documents and Settings\Micheal\My Documents\My Projects\2505Chev\ \*\*\*  
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 \*\*\* AERMET - VERSION 14134 \*\*\* \*\* 2009  
 \*\*\* 14:49:23

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\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS \*\*\*

\*\* CONC OF AAQ IN MICROGRAMS/M\*\*3 \*\*

NETWORK GROUP ID GRID-ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE
TGU	1ST HIGHEST VALUE IS 0.02773 AT ( 370650.00, 3753800.00, 29.01, 29.01, 0.00) DC		
	2ND HIGHEST VALUE IS 0.02761 AT ( 370550.00, 3753800.00, 28.87, 28.87, 0.00) DC		
	3RD HIGHEST VALUE IS 0.02707 AT ( 370750.00, 3753800.00, 27.52, 27.52, 0.00) DC		
	4TH HIGHEST VALUE IS 0.02684 AT ( 370450.00, 3753800.00, 35.78, 35.78, 0.00) DC		
	5TH HIGHEST VALUE IS 0.02661 AT ( 370850.00, 3753800.00, 29.99, 29.99, 0.00) DC		
	6TH HIGHEST VALUE IS 0.02631 AT ( 370950.00, 3753700.00, 33.98, 33.98, 0.00) DC		
	7TH HIGHEST VALUE IS 0.02609 AT ( 370950.00, 3753600.00, 32.31, 32.31, 0.00) DC		
	8TH HIGHEST VALUE IS 0.02594 AT ( 370949.65, 3753774.43, 33.86, 33.86, 0.00) DC		
	9TH HIGHEST VALUE IS 0.02572 AT ( 370950.00, 3753800.00, 33.50, 33.50, 0.00) DC		
	10TH HIGHEST VALUE IS 0.02512 AT ( 370350.00, 3753800.00, 43.03, 43.03, 0.00) DC		
ALL	1ST HIGHEST VALUE IS 0.02773 AT ( 370650.00, 3753800.00, 29.01, 29.01, 0.00) DC		
	2ND HIGHEST VALUE IS 0.02761 AT ( 370550.00, 3753800.00, 28.87, 28.87, 0.00) DC		
	3RD HIGHEST VALUE IS 0.02707 AT ( 370750.00, 3753800.00, 27.52, 27.52, 0.00) DC		
	4TH HIGHEST VALUE IS 0.02684 AT ( 370450.00, 3753800.00, 35.78, 35.78, 0.00) DC		
	5TH HIGHEST VALUE IS 0.02661 AT ( 370850.00, 3753800.00, 29.99, 29.99, 0.00) DC		
	6TH HIGHEST VALUE IS 0.02631 AT ( 370950.00, 3753700.00, 33.98, 33.98, 0.00) DC		
	7TH HIGHEST VALUE IS 0.02609 AT ( 370950.00, 3753600.00, 32.31, 32.31, 0.00) DC		
	8TH HIGHEST VALUE IS 0.02594 AT ( 370949.65, 3753774.43, 33.86, 33.86, 0.00) DC		

File: C:\Users\Michael\AFRMOD\2505BTGU\CO\2009CO\2009CO.ADO 6/26/2015, 2:49:59PM

9TH HIGHEST VALUE IS	0.02572 AT (	370950.00,	3753800.00,	33.50,	0.00)	DC
10TH HIGHEST VALUE IS	0.02512 AT (	370350.00,	3753800.00,	43.03,	0.00)	DC

\*\*\* RECEPTOR TYPES: GC = GRIDCART  
GP = GRIDPOLR  
DC = DISCCART  
DP = DISCPOLR

File: C:\Users\Michael\AERMOD\2505BTGU\CO\2009CO\2009CO.ADO 6/26/2015, 2:49:59PM

\*\*\* AERMOD - VERSION 14134 \*\*\* \*\* C:\Documents and Settings\Micheal\My Documents\My Projects\2505Chev\  
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\*\*\* 14:49:23

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\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* THE SUMMARY OF HIGHEST 1-HR RESULTS \*\*\*

\*\* CONC OF AAQ IN MICROGRAMS/M\*\*3 \*\*

NETWORK GROUP ID ZFLAG)	OF TYPE	GRID-ID	AVERAGE CONC (YYMMDDHH)	RECEPTOR	(XR, YR, ZELEV, ZHILL,
DATE					
TGU	HIGH	1ST HIGH VALUE IS	0.36098	ON 09102117: AT (	369750.00, 3753800.00, 35.24,
35.24,	0.00)	DC			
ALL	HIGH	1ST HIGH VALUE IS	0.36098	ON 09102117: AT (	369750.00, 3753800.00, 35.24,
35.24,	0.00)	DC			

\*\*\* RECEPTOR TYPES: GC = GRIDCART  
GP = GRIDPOLR  
DC = DISCCART  
DP = DISCPOLR

File: C:\Users\Michael\AERMOD\2505BTGU\CO\2009CO\2009CO.ADO 6/26/2015, 2:49:59PM

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 \*\*\* 14:49:23

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\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* THE SUMMARY OF HIGHEST 8-HR RESULTS \*\*\*

\*\* CONC OF AAQ IN MICROGRAMS/M\*\*3 \*\*

NETWORK GROUP ID ZFLAG)	OF TYPE	GRID-ID	AVERAGE CONC (YYMMDDHH)	RECEPTOR	(XR, YR, ZELEV, ZHILL,
DATE					
TGU	HIGH	1ST HIGH VALUE IS	0.17416	ON 09120616: AT (	369950.00, 3753800.00, 42.92,
42.92,	0.00)	DC			
ALL	HIGH	1ST HIGH VALUE IS	0.17416	ON 09120616: AT (	369950.00, 3753800.00, 42.92,
42.92,	0.00)	DC			

\*\*\* RECEPTOR TYPES: GC = GRIDCART  
 GP = GRIDPOLR  
 DC = DISCCART  
 DP = DISCPOLR



File: C:\Users\Michael\AERMOD\2505BTGU\CO\2009CO\2009CO.ADO 6/26/2015, 2:49:59PM

\*\*\* AERMOD - VERSION 14134 \*\*\* \*\* C:\Documents and Settings\Micheal\My Documents\My Projects\2505Chev\  
\*\*\* 06/26/15  
\*\*\* AERMET - VERSION 14134 \*\*\* \*\* 2009  
\*\*\* 14:49:23

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\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* THE SUMMARY OF HIGHEST 24-HR RESULTS \*\*\*

\*\* CONC OF AAQ IN MICROGRAMS/M\*\*3 \*\*

NETWORK GROUP ID ZFLAG)	OF TYPE	GRID-ID	AVERAGE CONC (YYMMDDHH)	RECEPTOR	(XR, YR, ZELEV, ZHILL,
DATE					
TGU	HIGH	1ST HIGH VALUE IS	0.06572	ON 09121224: AT (	369850.00, 3753800.00, 39.47,
39.47,	0.00)	DC			
ALL	HIGH	1ST HIGH VALUE IS	0.06572	ON 09121224: AT (	369850.00, 3753800.00, 39.47,
39.47,	0.00)	DC			

\*\*\* RECEPTOR TYPES: GC = GRIDCART  
GP = GRIDPOLR  
DC = DISCCART  
DP = DISCPOLR

File: C:\Users\Michael\AERMOD\2505BTGU\CO\2009CO\2009CO.ADO 6/26/2015, 2:49:59PM

\*\*\* AERMOD - VERSION 14134 \*\*\* \*\* C:\Documents and Settings\Micheal\My Documents\My Projects\2505Chev\  
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\*\*\* AERMET - VERSION 14134 \*\*\* \*\* 2009  
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\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* Message Summary : AERMOD Model Execution \*\*\*

----- Summary of Total Messages -----

A Total of 0 Fatal Error Message(s)  
A Total of 0 Warning Message(s)  
A Total of 426 Informational Message(s)  
A Total of 8760 Hours Were Processed  
A Total of 0 Calm Hours Identified  
A Total of 35 Missing Hours Identified ( 0.40 Percent)

\*\*\*\*\* FATAL ERROR MESSAGES \*\*\*\*\*  
\*\*\* NONE \*\*\*

\*\*\*\*\* WARNING MESSAGES \*\*\*\*\*  
\*\*\* NONE \*\*\*

\*\*\*\*\*  
\*\*\* AERMOD Finishes Successfully \*\*\*  
\*\*\*\*\*

File: C:\Users\Michael\AERMOD\2505BTGU\CO\2010CO\2010CO.ADO 6/26/2015, 2:51:00PM

\*\*\* AERMOD - VERSION 14134 \*\*\* \*\* C:\Documents and Settings\Micheal\My Documents\My Projects\2505Chev\ \*\*\*  
 06/26/15  
 \*\*\* AERMET - VERSION 14134 \*\*\* \*\* 2010  
 \*\*\* 14:50:25

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\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS \*\*\*

\*\* CONC OF AAQ IN MICROGRAMS/M\*\*3 \*\*

NETWORK GROUP ID GRID-ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE
TGU	1ST HIGHEST VALUE IS 0.02846 AT ( 370950.00, 3753500.00, 29.49, 29.49, 0.00) DC		
	2ND HIGHEST VALUE IS 0.02799 AT ( 370950.00, 3753400.00, 27.73, 27.73, 0.00) DC		
	3RD HIGHEST VALUE IS 0.02770 AT ( 370950.00, 3753600.00, 32.31, 32.31, 0.00) DC		
	4TH HIGHEST VALUE IS 0.02682 AT ( 370950.00, 3753300.00, 30.18, 30.18, 0.00) DC		
	5TH HIGHEST VALUE IS 0.02674 AT ( 371050.00, 3753500.00, 33.99, 33.99, 0.00) DC		
	6TH HIGHEST VALUE IS 0.02635 AT ( 371050.00, 3753600.00, 33.56, 33.56, 0.00) DC		
	7TH HIGHEST VALUE IS 0.02619 AT ( 371050.00, 3753400.00, 32.23, 39.62, 0.00) DC		
	8TH HIGHEST VALUE IS 0.02579 AT ( 370950.00, 3753700.00, 33.98, 33.98, 0.00) DC		
	9TH HIGHEST VALUE IS 0.02517 AT ( 371150.00, 3753500.00, 38.10, 38.10, 0.00) DC		
	10TH HIGHEST VALUE IS 0.02517 AT ( 371150.00, 3753600.00, 36.58, 36.58, 0.00) DC		
ALL	1ST HIGHEST VALUE IS 0.02846 AT ( 370950.00, 3753500.00, 29.49, 29.49, 0.00) DC		
	2ND HIGHEST VALUE IS 0.02799 AT ( 370950.00, 3753400.00, 27.73, 27.73, 0.00) DC		
	3RD HIGHEST VALUE IS 0.02770 AT ( 370950.00, 3753600.00, 32.31, 32.31, 0.00) DC		
	4TH HIGHEST VALUE IS 0.02682 AT ( 370950.00, 3753300.00, 30.18, 30.18, 0.00) DC		
	5TH HIGHEST VALUE IS 0.02674 AT ( 371050.00, 3753500.00, 33.99, 33.99, 0.00) DC		
	6TH HIGHEST VALUE IS 0.02635 AT ( 371050.00, 3753600.00, 33.56, 33.56, 0.00) DC		
	7TH HIGHEST VALUE IS 0.02619 AT ( 371050.00, 3753400.00, 32.23, 39.62, 0.00) DC		
	8TH HIGHEST VALUE IS 0.02579 AT ( 370950.00, 3753700.00, 33.98, 33.98, 0.00) DC		

File: C:\Users\Michael\AFRMOD\2505BTGU\CO\2010CO\2010CO.ADO 6/26/2015, 2:51:00PM

9TH HIGHEST VALUE IS	0.02517 AT (	371150.00,	3753500.00,	38.10,	38.10,	0.00)	DC
10TH HIGHEST VALUE IS	0.02517 AT (	371150.00,	3753600.00,	36.58,	36.58,	0.00)	DC

\*\*\* RECEPTOR TYPES: GC = GRIDCART  
GP = GRIDPOLR  
DC = DISCCART  
DP = DISCPOLR

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\*\*\* 06/26/15  
\*\*\* AERMET - VERSION 14134 \*\*\* \*\* 2010  
\*\*\* 14:50:25

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\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* THE SUMMARY OF HIGHEST 1-HR RESULTS \*\*\*

\*\* CONC OF AAQ IN MICROGRAMS/M\*\*3 \*\*

NETWORK GROUP ID ZFLAG)	OF TYPE	GRID-ID	AVERAGE CONC (YYMMDDHH)	RECEPTOR	(XR, YR, ZELEV, ZHILL,
DATE					
TGU	HIGH	1ST HIGH VALUE IS	0.34567	ON 10122914: AT (	369950.00, 3753800.00, 42.92,
42.92,	0.00)	DC			
ALL	HIGH	1ST HIGH VALUE IS	0.34567	ON 10122914: AT (	369950.00, 3753800.00, 42.92,
42.92,	0.00)	DC			

\*\*\* RECEPTOR TYPES: GC = GRIDCART  
GP = GRIDPOLR  
DC = DISCCART  
DP = DISCPOLR

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\*\*\* AERMET - VERSION 14134 \*\*\* \*\* 2010  
14:50:25

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\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* THE SUMMARY OF HIGHEST 8-HR RESULTS \*\*\*

\*\* CONC OF AAQ IN MICROGRAMS/M\*\*3 \*\*

NETWORK GROUP ID ZFLAG)	OF TYPE	GRID-ID	AVERAGE CONC (YYMMDDHH)	RECEPTOR	(XR, YR, ZELEV, ZHILL,
DATE					
TGU	HIGH	1ST HIGH VALUE IS	0.18147	ON 10041116: AT (	369850.00, 3753800.00, 39.47,
39.47,	0.00)	DC			
ALL	HIGH	1ST HIGH VALUE IS	0.18147	ON 10041116: AT (	369850.00, 3753800.00, 39.47,
39.47,	0.00)	DC			

\*\*\* RECEPTOR TYPES: GC = GRIDCART  
GP = GRIDPOLR  
DC = DISCCART  
DP = DISCPOLR

File: C:\Users\Michael\AERMOD\2505BTGU\CO\2010CO\2010CO.ADO 6/26/2015, 2:51:00PM

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\*\*\* 06/26/15  
\*\*\* AERMET - VERSION 14134 \*\*\* \*\* 2010  
\*\*\* 14:50:25

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\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* THE SUMMARY OF HIGHEST 24-HR RESULTS \*\*\*

\*\* CONC OF AAQ IN MICROGRAMS/M\*\*3 \*\*

NETWORK GROUP ID ZFLAG)	OF TYPE	GRID-ID	AVERAGE CONC (YYMMDDHH)	RECEPTOR	(XR, YR, ZELEV, ZHILL,
DATE					
TGU	HIGH	1ST HIGH VALUE IS	0.07574	ON 10121924: AT (	369850.00, 3753800.00, 39.47,
39.47,	0.00)	DC			
ALL	HIGH	1ST HIGH VALUE IS	0.07574	ON 10121924: AT (	369850.00, 3753800.00, 39.47,
39.47,	0.00)	DC			

\*\*\* RECEPTOR TYPES: GC = GRIDCART  
GP = GRIDPOLR  
DC = DISCCART  
DP = DISCPOLR

File: C:\Users\Michael\AERMOD\2505BTGU\CO\2010CO\2010CO.ADO 6/26/2015, 2:51:00PM

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\*\*\* AERMET - VERSION 14134 \*\*\* \*\* 2010  
14:50:25

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\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* Message Summary : AERMOD Model Execution \*\*\*

----- Summary of Total Messages -----

A Total of	0 Fatal Error Message(s)
A Total of	0 Warning Message(s)
A Total of	828 Informational Message(s)
A Total of	8760 Hours Were Processed
A Total of	3 Calm Hours Identified
A Total of	399 Missing Hours Identified ( 4.55 Percent)

\*\*\*\*\* FATAL ERROR MESSAGES \*\*\*\*\*  
\*\*\* NONE \*\*\*

\*\*\*\*\* WARNING MESSAGES \*\*\*\*\*  
\*\*\* NONE \*\*\*

\*\*\*\*\*  
\*\*\* AERMOD Finishes Successfully \*\*\*  
\*\*\*\*\*



File: C:\Users\Michael\AERMOD\2505BTGU\CO\2011CO\2011CO.ADO 6/26/2015, 3:23:15PM

\*\*\* AERMOD - VERSION 14134 \*\*\* \*\* C:\Documents and Settings\Micheal\My Documents\My Projects\2505Chev\  
 \*\*\* 06/26/15  
 \*\*\* AERMET - VERSION 14134 \*\*\* \*\* 2011  
 \*\*\* 15:22:40

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\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS \*\*\*

\*\* CONC OF AAQ IN MICROGRAMS/M\*\*3 \*\*

NETWORK GROUP ID GRID-ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE
TGU	1ST HIGHEST VALUE IS 0.02949 AT ( 370950.00, 3753500.00, 29.49, 29.49, 0.00) DC		
	2ND HIGHEST VALUE IS 0.02904 AT ( 370950.00, 3753400.00, 27.73, 27.73, 0.00) DC		
	3RD HIGHEST VALUE IS 0.02881 AT ( 370950.00, 3753600.00, 32.31, 32.31, 0.00) DC		
	4TH HIGHEST VALUE IS 0.02795 AT ( 370950.00, 3753300.00, 30.18, 30.18, 0.00) DC		
	5TH HIGHEST VALUE IS 0.02756 AT ( 371050.00, 3753500.00, 33.99, 33.99, 0.00) DC		
	6TH HIGHEST VALUE IS 0.02724 AT ( 371050.00, 3753600.00, 33.56, 33.56, 0.00) DC		
	7TH HIGHEST VALUE IS 0.02705 AT ( 371050.00, 3753400.00, 32.23, 39.62, 0.00) DC		
	8TH HIGHEST VALUE IS 0.02698 AT ( 370950.00, 3753700.00, 33.98, 33.98, 0.00) DC		
	9TH HIGHEST VALUE IS 0.02604 AT ( 371050.00, 3753700.00, 36.18, 36.18, 0.00) DC		
	10TH HIGHEST VALUE IS 0.02585 AT ( 371150.00, 3753600.00, 36.58, 36.58, 0.00) DC		
ALL	1ST HIGHEST VALUE IS 0.02949 AT ( 370950.00, 3753500.00, 29.49, 29.49, 0.00) DC		
	2ND HIGHEST VALUE IS 0.02904 AT ( 370950.00, 3753400.00, 27.73, 27.73, 0.00) DC		
	3RD HIGHEST VALUE IS 0.02881 AT ( 370950.00, 3753600.00, 32.31, 32.31, 0.00) DC		
	4TH HIGHEST VALUE IS 0.02795 AT ( 370950.00, 3753300.00, 30.18, 30.18, 0.00) DC		
	5TH HIGHEST VALUE IS 0.02756 AT ( 371050.00, 3753500.00, 33.99, 33.99, 0.00) DC		
	6TH HIGHEST VALUE IS 0.02724 AT ( 371050.00, 3753600.00, 33.56, 33.56, 0.00) DC		
	7TH HIGHEST VALUE IS 0.02705 AT ( 371050.00, 3753400.00, 32.23, 39.62, 0.00) DC		
	8TH HIGHEST VALUE IS 0.02698 AT ( 370950.00, 3753700.00, 33.98, 33.98, 0.00) DC		

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9TH HIGHEST VALUE IS	0.02604 AT (	371050.00,	3753700.00,	36.18,	36.18,	0.00)	DC
10TH HIGHEST VALUE IS	0.02585 AT (	371150.00,	3753600.00,	36.58,	36.58,	0.00)	DC

\*\*\* RECEPTOR TYPES: GC = GRIDCART  
GP = GRIDPOLR  
DC = DISCCART  
DP = DISCPOLR

File: C:\Users\Michael\AERMOD\2505BTGU\CO\2011CO\2011CO.ADO 6/26/2015, 3:23:15PM

\*\*\* AERMOD - VERSION 14134 \*\*\* \*\* C:\Documents and Settings\Micheal\My Documents\My Projects\2505Chev\  
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15:22:40

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\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* THE SUMMARY OF HIGHEST 1-HR RESULTS \*\*\*

\*\* CONC OF AAQ IN MICROGRAMS/M\*\*3 \*\*

NETWORK GROUP ID ZFLAG)	OF TYPE	GRID-ID	AVERAGE CONC (YYMMDDHH)	RECEPTOR	(XR, YR, ZELEV, ZHILL,
DATE					
TGU	HIGH	1ST HIGH VALUE IS	0.32117	ON 11013013: AT (	369850.00, 3753800.00, 39.47,
39.47,	0.00)	DC			
ALL	HIGH	1ST HIGH VALUE IS	0.32117	ON 11013013: AT (	369850.00, 3753800.00, 39.47,
39.47,	0.00)	DC			

\*\*\* RECEPTOR TYPES: GC = GRIDCART  
GP = GRIDPOLR  
DC = DISCCART  
DP = DISCPOLR

File: C:\Users\Michael\AERMOD\2505BTGU\CO\2011CO\2011CO.ADO 6/26/2015, 3:23:15PM

\*\*\* AERMOD - VERSION 14134 \*\*\* \*\* C:\Documents and Settings\Micheal\My Documents\My Projects\2505Chev\  
\*\*\* 06/26/15  
\*\*\* AERMET - VERSION 14134 \*\*\* \*\* 2011  
\*\*\* 15:22:40

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\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* THE SUMMARY OF HIGHEST 8-HR RESULTS \*\*\*

\*\* CONC OF AAQ IN MICROGRAMS/M\*\*3 \*\*

DATE

NETWORK GROUP ID ZFLAG)	OF TYPE	GRID-ID	AVERAGE CONC (YYMMDDHH)	RECEPTOR	(XR, YR, ZELEV, ZHILL,
TGU	HIGH	1ST HIGH VALUE IS	0.16165	ON 11022516: AT (	370050.00, 3753800.00, 45.23,
45.23,	0.00)	DC			
ALL	HIGH	1ST HIGH VALUE IS	0.16165	ON 11022516: AT (	370050.00, 3753800.00, 45.23,
45.23,	0.00)	DC			

\*\*\* RECEPTOR TYPES: GC = GRIDCART  
GP = GRIDPOLR  
DC = DISCCART  
DP = DISCPOLR

File: C:\Users\Michael\AERMOD\2505BTGU\CO\2011CO\2011CO.ADO 6/26/2015, 3:23:15PM

\*\*\* AERMOD - VERSION 14134 \*\*\* \*\* C:\Documents and Settings\Micheal\My Documents\My Projects\2505Chev\  
\*\*\* 06/26/15  
\*\*\* AERMET - VERSION 14134 \*\*\* \*\* 2011  
\*\*\* 15:22:40

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\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* THE SUMMARY OF HIGHEST 24-HR RESULTS \*\*\*

\*\* CONC OF AAQ IN MICROGRAMS/M\*\*3 \*\*

NETWORK GROUP ID ZFLAG)	OF TYPE	GRID-ID	AVERAGE CONC (YYMMDDHH)	RECEPTOR	(XR, YR, ZELEV, ZHILL,
DATE					
TGU	HIGH	1ST HIGH VALUE IS	0.10860m ON 11022524: AT (	370050.00,	3753800.00,
45.23,	0.00)	DC			45.23,
ALL	HIGH	1ST HIGH VALUE IS	0.10860m ON 11022524: AT (	370050.00,	3753800.00,
45.23,	0.00)	DC			45.23,

\*\*\* RECEPTOR TYPES: GC = GRIDCART  
GP = GRIDPOLR  
DC = DISCCART  
DP = DISCPOLR

File: C:\Users\Michael\AERMOD\2505BTGU\CO\2011CO\2011CO.ADO 6/26/2015, 3:23:15PM

\*\*\* AERMOD - VERSION 14134 \*\*\* \*\* C:\Documents and Settings\Micheal\My Documents\My Projects\2505Chev\  
06/26/15  
\*\*\* AERMET - VERSION 14134 \*\*\* \*\* 2011  
15:22:40

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\*\*MODELOPTs: RegDEFAULT CONC ELEV

\*\*\* Message Summary : AERMOD Model Execution \*\*\*

----- Summary of Total Messages -----

A Total of	0 Fatal Error Message(s)
A Total of	0 Warning Message(s)
A Total of	1107 Informational Message(s)
A Total of	8760 Hours Were Processed
A Total of	2 Calm Hours Identified
A Total of	277 Missing Hours Identified ( 3.16 Percent )

\*\*\*\*\* FATAL ERROR MESSAGES \*\*\*\*\*  
\*\*\* NONE \*\*\*

\*\*\*\*\* WARNING MESSAGES \*\*\*\*\*  
\*\*\* NONE \*\*\*

\*\*\*\*\*  
\*\*\* AERMOD Finishes Successfully \*\*\*  
\*\*\*\*\*

## **APPENDIX D**

### **HEALTH RISK ANALYSIS**

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**APPENDIX D  
CHEVRON PRODUCTS COMPANY  
EL SEGUNDO REFINERY  
TAIL GAS UNIT  
HEALTH RISK ANALYSIS**

<b>Scenario</b>	<b>Burner Duty (mmbtu/hr)</b>	<b>MEIR</b>	<b>MEIW</b>	<b>MCHI<sup>(1)</sup></b>	<b>MAHI<sup>(1)</sup></b>
2010 Addendum - TGU <sup>(2)</sup>	41.9	4.16E-09	1.87E-09	1.33E-07	4.94E-07
2015 Addendum - TGU <sup>(3)</sup>	50.1	4.97E-09	2.24E-09	1.59E-07	5.91E-07
2008 EIR - TGU	32.7	6.84E-09	2.34E-09	NA	NA
2008 EIR - Total	NA	3.26E-07	2.18E-07	6.62E-03	3.07E-02
2008 EIR - w/o TGU	NA	3.19E-07	2.16E-07	6.62E-03	3.07E-02
2015 Addendum - Total <sup>(4)</sup>	NA	3.24E-07	2.18E-07	6.62E-03	3.07E-02

(1) The 2008 EIR MCHI and MAHI target organs are the central nervous and developmental systems, respectively.

(2) Peak cancer risk values from Rule 1401 Analysis on file with SCAQMD. Chronic and acute values are for central nervous and developmental systems, respectively.

(3) Values scaled from 41.9 mmbtu/hr to 50.1 mmbtu/hr.

(4) 2015 Addendum Total = 2008 EIR w/o TGU + 2015 Addendum - TGU. This approach replaces the TGU contribution originally modeled with the contribution for the currently proposed TGU modifications.