

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Addendum to the Final Environmental Impact Report for the

BP Carson Refinery (Formerly ARCO Los Angeles Refinery) California Air Resources Board (CARB) Phase 3/Methyl Tertiary Butyl Ether (MTBE) Phase-out Project

SCH. No. 2000061074

[Final EIR Certified May 15, 2001]

April 2005

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(Formerly referred to as the ARCO Los Angeles Refinery)**

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1.0 INTRODUCTION

To comply with the California Air Resources Board (CARB) Phase 3 Reformulated Gasoline regulations, ARCO proposed modifications to its Carson Refinery, four gasoline distribution terminals and one marine terminal. The proposed project was necessary to produce reformulated gasoline in accordance with Senate Bill 521 – The Methyl Tertiary Butyl Ether (MTBE) Public Health and Environmental Protection Act of 1997, and Executive Order D-5-99 to phase out the use of MTBE in gasoline. As part of the Executive Order, CARB adopted additional new reformulated gasoline specifications to maintain emission reductions obtained as part of the CARB Phase 2 reformulated gasoline regulations.

As lead agency, the South Coast Air Quality Management District (SCAQMD), prepared the May 2001 Final Environmental Impact Report for the ARCO California Air Resources Board (CARB) Phase 3/Methyl Tertiary Butyl Ether (MTBE) Phase-out Project [SCAQMD, SCH No. 2000061074] (May 2001 Final EIR), which was certified in May 2001, to evaluate the potential environmental impacts associated with the proposed modifications to the Carson Refinery and a number of terminals (the Carson, Colton, East Hynes, Hathaway, and Vinvale distribution terminals and Marine Terminal No. 2), all located in southern California. Subsequent to the certification of the May 2001 Final EIR, ARCO was acquired by BP, and thus, this document refers to BP rather than ARCO.

The primary objective of the project analyzed in the May 2001 Final EIR was to install new equipment and modify existing equipment at the Carson Refinery and the aforementioned terminals to comply with the CARB Phase 3 regulations by removing MTBE from product gasoline and by producing and distributing product gasoline meeting reformulated gasoline specifications, which required the use of an oxygenate instead of MTBE. The only oxygenate approved for use in CARB Phase 3 reformulated gasoline is ethanol.

Modifications are currently proposed which will involve changes to a portion of the CARB Phase 3 project evaluated in the May 2001 Final EIR. Specifically, BP is proposing to modify the portion of the May 2001 Final EIR project associated with converting the existing MTBE Unit to a unit that produces iso-octene. The MTBE Unit conversion was originally scheduled in the May 2001 Final EIR to be constructed from January to September 2002. However, as construction of the initial phases of the overall CARB Phase 3 project was underway, additional engineering and process designs specific to the MTBE Unit presented a preferable, but different technology for producing iso-octene than had been contemplated at the time of the May 2001 Final EIR analyses. This different technology is offered by a different vendor and involves a somewhat different equipment configuration than was previously described in the May 2001 Final EIR.

For example, rather than replacing the existing MTBE reactor with a new reactor as was analyzed in the May 2001 Final EIR, BP is instead proposing to modify the existing MTBE reactor and add a new, second reactor in series. Further, the technology contemplated at the time of preparation of the May 2001 Final EIR was not a water-based system and as such did not require water pumps. However, the technology under consideration in the currently proposed project modification utilizes water and thus would require new water injection pumps. In total, including two new water injection pumps, the currently proposed project modifications involve the installation of eight new pumps (and the removal of 10 existing pumps), and modifications to two existing distillation columns, one existing surge vessel, and three existing heat exchangers. Finally, due to the

proposed change to a water-based system, the currently proposed project will require a different equipment configuration that will involve different piping and control systems modifications than what was evaluated in the May 2001 Final EIR. The details of these currently proposed changes are explained in Section 5.3 of this Addendum.

The SCAQMD has evaluated the proposed changes to the BP Carson Refinery (as detailed in Section 5.3) and determined that the currently proposed project modifications do 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 previous May 2001 Final EIR adequate for the revised project. Therefore, when considering the effects of the currently proposed project modifications, 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 project modifications.

2.0 BASIS FOR DECISION TO PREPARE AN ADDENDUM

The SCAQMD was the lead agency responsible for preparing the May 2001 Final EIR and is the public agency that has the primary responsibility for approving the currently proposed project modifications. Therefore, the SCAQMD is the appropriate lead agency to evaluate the potential environmental effects of the currently proposed project modifications that are the subject of this Addendum.

Based on the analysis of the currently proposed project modifications that follows in Chapters 6.0 and 7.0, the SCAQMD has concluded that the only environmental areas affected by the currently proposed project modifications are construction and operational air quality. The May 2001 Final EIR identified significant adverse project air quality impacts during both construction and operation. The currently proposed project modifications do not change this conclusion: air quality impacts of the CARB Phase 3/MTBE Phase-out project would be significantly adverse during construction and operations with the currently proposed project modifications. However, as shown in Section 6.2.1 of this Addendum, the currently proposed project modifications would not result in new significant adverse air quality impacts or increase the severity of significant adverse air quality impacts identified in the May 2001 Final EIR.

The May 2001 Final EIR analyzed the construction impacts of modifications to nine existing process units at the Carson Refinery (including the MTBE Unit conversion), as well as modifications to a number of support facilities at the refinery (e.g., tank farm, product/feedstock loading and unloading, pentane transport by pipeline), several BP gasoline distribution terminals, and one marine terminal. In addition to the MTBE Unit conversion, the affected process units at the Carson Refinery were the Light Hydro Unit, Isomerization Sieve (ISO SIV) Unit, Number 3 Reformer Fractionator, Super Fractionation Integrated Area (SFIA) debutanizer, Fluid Catalytic Cracking Unit (FCCU), North Hydrogen Plant, Cat Poly Unit, and Mid-Barrel Unit. The affected support facilities at the refinery were the tank farm, pentane off-loading, pentane transport, and butane loading and off-loading facilities. The affected terminals were the Carson, Colton, East Hynes, Hathaway, and Vinvale gasoline distribution terminals, and Marine Terminal No. 2, used to ship and receive input materials and refined products by marine tanker. The currently proposed project modifications only affect the construction portion of the CARB Phase 3/MTBE Phase-out project that involves converting the MTBE Unit to an Iso-octene Unit at the Carson Refinery. Construction of the other portions of the CARB Phase 3/MTBE Phase-out project at the refinery

(both process units and support facilities) and the terminals has been completed. As a result, the currently proposed project modifications do not affect construction activities associated with any of the other equipment modifications located at the Carson Refinery or at the terminals as previously addressed in the May 2001 Final EIR.

The construction activities evaluated in the May 2001 Final EIR did not all occur simultaneously. As shown in Figure 2-1 (Figure 2.6-1 from the May 2001 Final EIR), construction of the various modifications and new equipment were scheduled to begin and end at different times, with construction of different components overlapping at different times. The May 2001 Final EIR evaluated the construction activities and resulting emissions of the overall CARB Phase 3/MTBE Phase-out project and concluded that peak daily construction emissions occurred in September 2001 (see Appendix C.2, Table 3). As shown in Figure 2-1, construction was ongoing for 11 different project components at the refinery and three terminals during September 2001. However, Figure 2-1 also shows that construction activities associated with converting the MTBE Unit to an Iso-octene Unit were not scheduled to begin until January 2002. Thus, the MTBE Unit conversion did not contribute to the CARB Phase 3/MTBE Phase-out project's peak daily construction emissions.

The construction analysis for the currently proposed project modifications includes changes to the construction equipment required to convert the MTBE Unit to an Iso-octene Unit as evaluated in the May 2001 Final EIR (see discussion in Section 6.0). Since the currently proposed project modifications only affect construction activities associated with converting the MTBE Unit to an Iso-octene Unit, construction emissions associated with this portion of the overall CARB Phase 3/MTBE Phase-out project have been recalculated. The recalculated construction emissions for the currently proposed project modifications to convert the MTBE Unit were added to other concurrent emissions activities, that is, construction activities that were shown in the May 2001 Final EIR to overlap with construction activities for MTBE Unit conversion, even though these other concurrent construction activities have already been completed. The results indicate that maximum daily construction emissions associated with the currently proposed project modifications to convert the MTBE Unit to an Iso-octene Unit are less than the peak daily construction emissions for the project shown in the May 2001 Final EIR (see Section 6.0, Table 6-6). Thus, no new significant adverse impacts from construction activities are expected from the currently proposed project modifications and existing significant adverse impacts identified in the May 2001 Final EIR will not be made substantially worse.

With respect to operational impacts, the May 2001 Final EIR found that VOC emissions exceeded the SCAQMD significance threshold and, thus, project operations phase air quality impacts were concluded to be significant. Operational emissions from the currently proposed project modifications were recalculated and compared to the operational emission estimates in the May 2001 Final EIR. It was concluded that CO, NO_x, SO_x and PM₁₀ emissions from the currently proposed project modifications did not change from the estimates provided in the May 2001 Final EIR. As shown in Section 6.2.1 of this Addendum, the May 2001 Final EIR showed that fugitive

VOC emissions would decrease by 7.7 pounds per day as a result of the MTBE Unit conversion. The currently proposed project modifications would reduce fugitive VOC emissions by 4.0 pounds per day. Thus, the currently proposed project modifications would result in a smaller decrease (i.e., an increase) in fugitive VOC emissions than the MTBE Unit conversion evaluated in the May 2001 Final EIR. However, the amount of the VOC emissions increase (7.7 pounds per day – 4.0 pounds per day = 3.0 pounds per day) did not exceed the operational VOC emission significance threshold.

Therefore, it can be concluded that the currently proposed project modifications do not create new significant adverse impacts or increase the severity of significant impacts previously identified in the May 2001 Final EIR. As a result, pursuant to CEQA Guidelines §15164(a), this document constitutes an Addendum to the May 2001 Final EIR for the BP CARB Phase 3/MTBE Phase-out 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 all of the following conditions are met.

- Substantial changes with respect to the circumstances under which the project is undertaken do not require major revisions to the previous Final EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects.
- No new information becomes available which shows new significant effects, significant effects substantially more severe than previously discussed, or additional or modified mitigation measures.
- Only minor technical changes or additions are necessary to make the Final EIR under consideration adequate under CEQA.
- The changes to the Final EIR made by the Addendum do not raise important new issues about the significant effects on the environment.

The currently proposed project modifications would result in no new significant adverse effects, substantially increased severity of significant effects previously identified, or require new or modified mitigation measures. Further, the currently proposed project modifications consist of only minor changes to the May 2001 Final EIR that do not raise important new issues about the previously analyzed significant environmental effects. Thus, the currently proposed project modifications meet all of the conditions in the CEQA Guidelines for the preparation of an Addendum.

3.0 BACKGROUND CEQA DOCUMENTS

The activities associated with the BP CARB Phase 3/MTBE Phase-out project were evaluated sequentially in the following CEQA documents. Summaries of each of these CEQA documents are provided below. These 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 Webpages at the following Internet address:

<http://www.aqmd.gov/ceqa/documents/2001/nonaqmd/arco/finalEIR/arcoFEIR.html>.

Notice of Preparation and Initial Study for the Draft Environmental Impact Report For Proposed ARCO CARB Phase 3 – MTBE Phase-out Project (SCAQMD, June 2000): A Notice of Preparation (NOP) and Initial Study for the CARB Phase 3 – MTBE Phase-out Project were released for a 30-day public review and comment period on June 20, 2000. The Initial Study included a project description, project location, an environmental checklist, and a discussion of potential adverse environmental impacts. The NOP solicited input from public agencies and other interested parties on the scope and content of the environmental information to be evaluated in the Draft EIR.

Draft Environmental Impact Report for Proposed ARCO CARB Phase 3 – MTBE Phase-out Project (SCAQMD, November 2000): The Draft EIR was released for a 45-day public review and comment period on November 29, 2000. The Draft EIR included a comprehensive project description, a description of the existing environmental setting that could be adversely affected by the proposed project, analysis of potential adverse environmental impacts (including cumulative impacts), mitigation measures, project alternatives, and all other topics required by CEQA. The Draft EIR also included a copy of the NOP and Initial Study, copies of comment letters received on the NOP and Initial Study, and responses to all comment letters received on the NOP and Initial Study. The Draft EIR concluded that the CARB Phase 3 – MTBE Phase-out Project may generate significant adverse impacts, following mitigation, in two environmental areas: air quality and hazards.

Final Environmental Impact Report For Proposed ARCO CARB Phase 3/MTBE Phase-out Project (SCAQMD, May 2001): The Final EIR was prepared by revising the Draft EIR to incorporate applicable updated information and to respond to comments received on the Draft EIR. The Final EIR contained 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 15, 2001.

4.0 PROJECT LOCATION

The currently proposed project modifications apply only to the MTBE/Iso-octene Unit at BP's Carson Refinery; no changes are planned for other process units or support facilities at the refinery. No additional modifications are planned for the five terminals that were affected by the CARB Phase 3/MTBE Phase-out project addressed in the May 2001 Final EIR, and the previously proposed modifications have been completed. Thus, a discussion of the location of these terminals is not required or included. The Carson Refinery is located at 1801 East Sepulveda Boulevard in the City of Carson, California. The Carson Refinery occupies an irregularly shaped parcel of land between Wilmington Avenue on the west, 223rd Avenue on the north, Alameda Avenue on the east, and Sepulveda Boulevard on the south (See Figure 4-1).

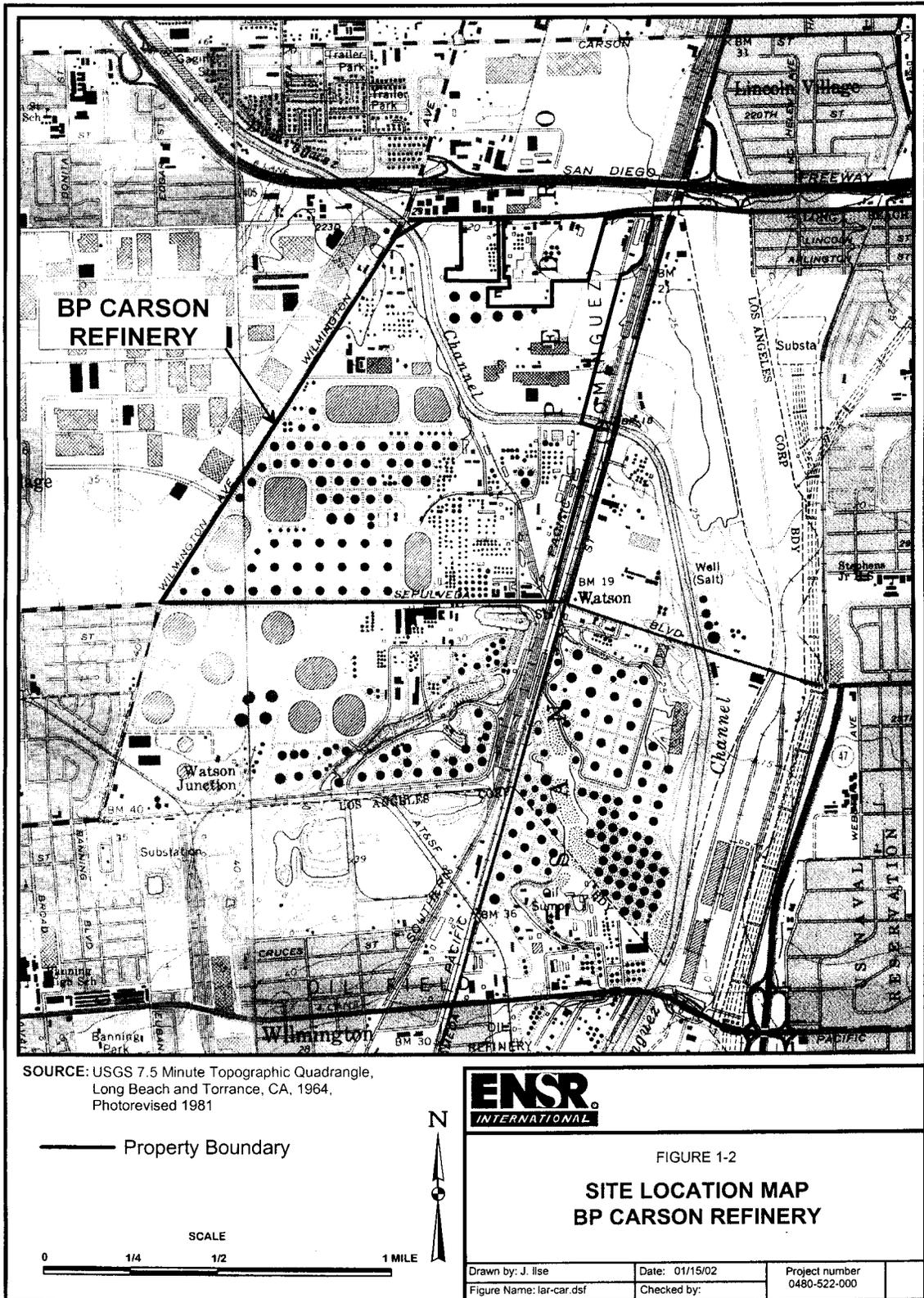


Figure 4-1 Site Location Map BP Carson Refinery

5.0 PROJECT DESCRIPTION

This section presents a description of the MTBE/iso-octene conversion project as evaluated in the May 2001 Final EIR, as well as a description of the currently proposed project modifications. Although the currently proposed project modifications affect only one portion of the entire CARB Phase 3/MTBE Phase-out project that was previously evaluated in the May 2001 Final EIR, a full description of the entire project analyzed in the May 2001 Final EIR is provided to present a clear understanding of the previously proposed project as compared with the currently proposed project.

This section sequentially presents the initial project evaluated in the May 2001 Final EIR and the currently proposed project modifications to show the chronology of activities that have occurred, or are expected to occur, as part of the Refinery's compliance with the CARB Phase 3 reformulated gasoline regulations.

5.1 Project as Analyzed in May 2001 Final EIR

In order to comply with the requirements of CARB Phase 3 while producing adequate quantities of petroleum products, modifications were proposed to process units and support facilities at the existing Carson Refinery and to facilities at various terminals located in southern California (the Carson, Colton, East Hynes, Hathaway, and Vinvale distribution terminals and Marine Terminal No. 2). The modifications were evaluated in the May 2001 Final EIR for the ARCO CARB Phase 3/MTBE Phase-out Project (SCAQMD, May 2001). The primary objective of the modifications was to comply with both the federal oxygenate content requirements for gasoline and CARB Phase 3 by ceasing the practice of adding MTBE as the oxygenate to gasoline and instead, adding ethanol.

To comply with CARB Phase 3 specifications at the BP Carson Refinery, the following modifications were proposed, evaluated, and certified in the May 2001 Final EIR for the following process units: modify the existing Light Hydro Unit to accommodate additional sulfur removal, convert the Isomerization Sieve (ISO-SIV) Unit to a hydrotreater, modify the No. 3 Reformer Fractionator to accommodate removal of butanes and pentanes, modify the Super Fractionation Integrated Area (SFIA) Unit by converting the existing No. 1 Naphtha Splitter to a new Debutanizer and converting the SFIA Depentanizer to the new No. 1 Naphtha Splitter, construct a new Fluidized Catalytic Cracking Unit (FCCU) Reruns Bottoms Splitter, modify the existing North Hydrogen Plant to accommodate pentanes, convert the MTBE Unit to an Iso-octene Unit, and modify the Mid-Barrel Unit to function as a Gasoline Hydrotreater. The project also included planned modifications to convert the existing Cat Poly Unit to a pentanes Dimerization Unit, but this modification was not specifically required by CARB Phase 3. The project did not include a proposal to increase the crude throughput capacity of the BP Carson Refinery. The May 2001 Final EIR also evaluated modifications that were proposed for support facilities at the Carson Refinery, such as the piping systems at the refinery's Tank Farm, facilities and equipment related to offloading pentane from an existing railcar pentane loading facility, pentane transportation by pipeline, and loading and offloading butane from railcars at an existing railcar propylene loading facility. Table 5-1 of this Addendum contains a summary of the modifications at the Carson Refinery as evaluated in the May 2001 Final EIR.

Task No. 7 (conversion of the MTBE Unit to an Iso-octene Unit) in Table 5-1 identifies refinery modifications and new equipment that were evaluated in the May 2001 Final EIR, but that did not occur as scheduled. These modifications did not occur because, as construction of the initial phases of the overall CARB Phase 3 project was underway, additional engineering and process designs specific to the MTBE Unit presented a preferable, but different technology for producing

iso-octene than had been contemplated at the time of the May 2001 Final EIR analyses. Other than the MTBE Unit conversion, no tasks of the CARB Phase 3/MTBE Phase-out project addressed in the May 2001 Final EIR will be affected by the currently proposed project modifications.

In addition to modifications proposed for the Carson Refinery, the May 2001 Final EIR also contained an evaluation of modifications proposed pertaining to importing ethanol, and blending and distributing gasoline blended with ethanol at various terminals, including the Carson, Colton, East Hynes, Hathaway, and Vinvale distribution terminals and Marine Terminal No. 2. See Table 5-2 of this Addendum for a summary of the modifications at the terminals.

5.2 Currently Proposed Project Modifications

The currently proposed modifications involve changes to one portion of the CARB Phase 3 project evaluated in the May 2001 Final EIR – the production of iso-octene by converting the existing MTBE Unit that was removed from MTBE service because of the CARB Phase 3 requirement to cease use of MTBE as a gasoline additive. Labeled as “MTBE Unit Conversion” on Figure 5-1 Refinery Layout Map (Figure 2.4-1 in the May 2001 Final EIR), the modified and new equipment associated with the currently proposed modifications would be located within the existing MTBE Unit, as was the case with the MTBE Unit conversion analyzed in the May 2001 Final EIR. The MTBE Unit conversion was not constructed from January to September 2002 as was previously proposed and evaluated in the May 2001 Final EIR. As construction of the initial phases of the overall CARB Phase 3 project was underway, additional engineering and process designs specific to the MTBE Unit presented a preferable, but different technology for producing iso-octene than had been contemplated at the time of the May 2001 Final EIR analyses. This different technology is offered by a different vendor and involves a somewhat different equipment configuration than was previously described in the May 2001 Final EIR.

**Table 5-1
 Proposed BP Carson Refinery Modifications and New Equipment**

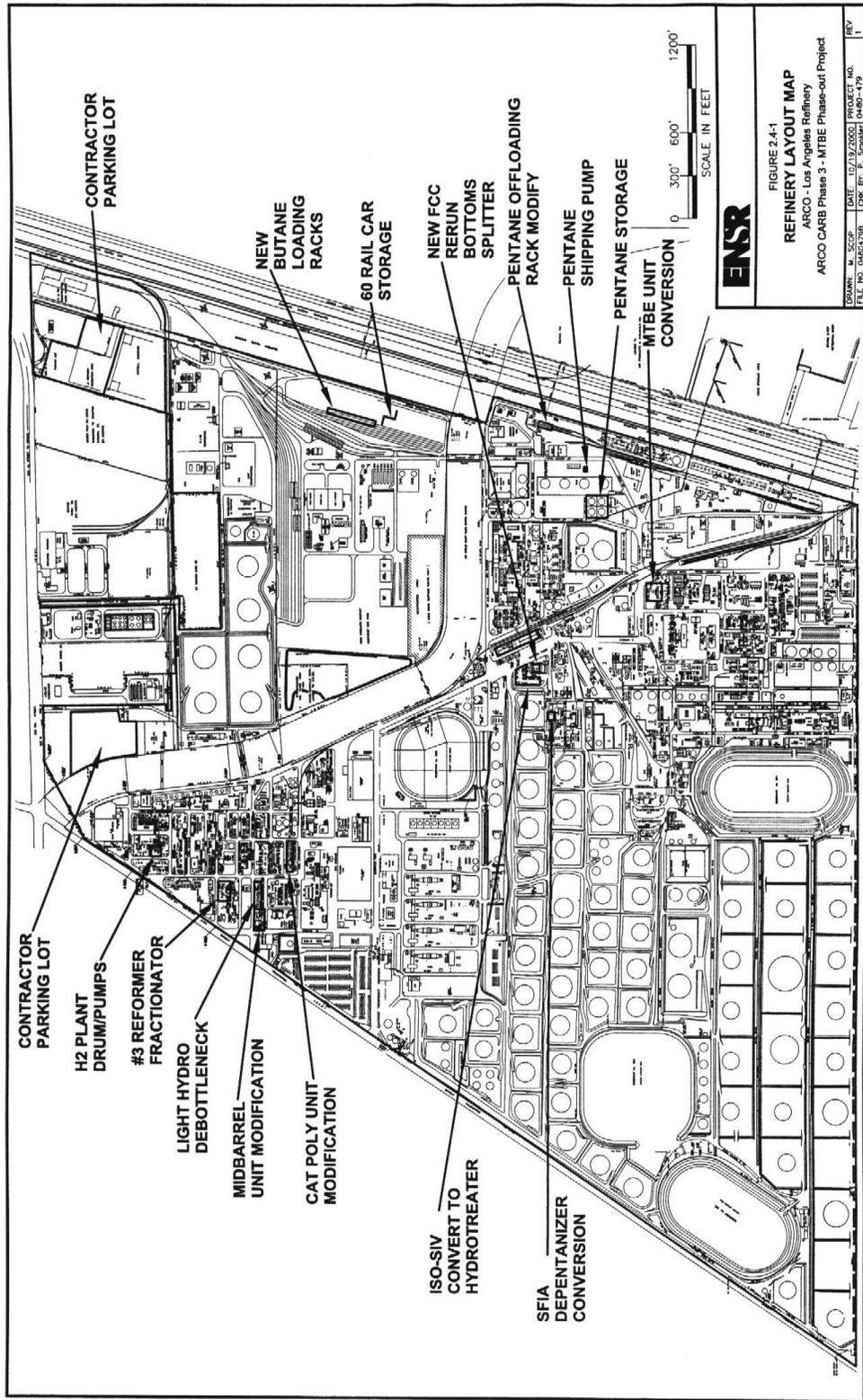
Task No.	Equipment/Process	Nature of Change	Primary Driving Force		
			Sulfur Reduction	RVP Control	MTBE Phase-Out
1.	Light hydro unit (LHU) – heat exchangers	Modifications	√		
	Exchangers, piping, pumps, and control systems	New Equipment			
2.	Conversion of Isomerization Sieve (ISO SIV) unit to a hydrotreater – heat exchangers, piping, and control systems	Modifications	√		
	Reactor, exchangers, pumps, and control systems	New Equipment			
3.	No. 3 Reformer Fractionator and overhead condenser, piping, and control systems	Modifications		√	
	Pumps	New Equipment			
4.	SFIA Debutanizer modifications (No. 1 Naphtha Splitter, SFIA Depentanizer, heat exchangers, pumps, and control systems)	Modifications		√	
5.	FCCU rerun bottoms splitter (splitter tower, heat exchangers, etc.)	New Unit	√		
6.	North hydrogen plant (use pentanes as an alternate feedstock) Feed drum, pump, and vaporizer	New Equipment		√	
7.	Convert MTBE unit into Iso-octene Unit – heat exchangers, piping, and control systems	Modifications			√
	Reactor, Steam heater, heat exchangers	New Equipment			
8.	Modification of existing Cat Poly Unit to a Dimerization Unit	Modifications		√	
	Hydrotreater reactor system – piping and control systems Pumps, heat exchangers, vessels, piping, and control systems	New Equipment			
9.	Modification of Mid-Barrel Unit to Gasoline Hydrotreater - feed and product piping, hydrogen supply system, and heat exchanger, controls systems	Modifications	√		
10.	Piping modification in tank farm	Modifications			√
11.	Facilities and equipment for pentane off-loading at existing railcar pentane loading facility	Modifications		√	
	Repressurizing vaporizer system and two railcar spots	New Equipment			
12.	Piping modification and substation upgrades to ship pentane by pipeline	Modifications		√	
	Pump	New Equipment			
13.	Facilities and equipment for butane loading and off-loading at existing railcar propylene loading facility at Northeast Property	Modifications		√	

Source: May 2001 Final EIR, Table 2.4-2

**Table 5-2
Proposed Terminal Changes**

Terminal	Proposed Change and/or Addition
Marine Terminal No. 2	<ul style="list-style-type: none"> • Conversion of two existing tanks to store fuel ethanol • Modifications to existing tank piping and metering systems • Construction of new 100,000 barrels (BBL) refrigerated tank to store pentane prior to loading for export • Demolition of two existing tanks to provide space for the new pentane storage tank
East Hynes Terminal	<ul style="list-style-type: none"> • Conversion of one existing tank to store fuel ethanol • Modifications to piping and metering for loading/off-loading and blending ethanol at the loading racks • Addition of new pumps for ethanol blending
Vinvale Terminal	<ul style="list-style-type: none"> • Conversion of two existing tanks to store fuel ethanol • Modifications to piping and metering for off-loading and blending ethanol at the loading racks • Modification of existing loading rack systems for ethanol delivery and blending
Hathaway Terminal	<ul style="list-style-type: none"> • Conversion of seven existing tanks to store fuel ethanol • Modification to piping and metering systems for off-loading and blending ethanol at the loading racks • Modifications to truck loading racks
Colton Terminal	<ul style="list-style-type: none"> • Conversion of one existing tank to store fuel ethanol • Modification to piping and metering systems for off-loading and blending ethanol at the loading racks
Carson Terminal	<ul style="list-style-type: none"> • Conversion of one existing tank to store fuel ethanol • Modification to piping and metering systems for off-loading and blending ethanol at the loading rack\\
Source: May 2001 Final EIR, Table 2.4-2	

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ARCO CARB PHASE 3/MTBE PHASE-OUT PROJECT**



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Figure 5-1 Refinery Layout Map (May 2001 Final EIR Figure 2.4-1)

Table 5-3 compares the equipment changes associated with the currently proposed MTBE Unit conversion with the MTBE Unit conversion evaluated in the May 2001 Final EIR.

**Table 5-3
Comparison of the Currently Proposed MTBE Unit Conversion with the MTBE Unit
Conversion Evaluated in the May 2001 Final EIR**

Proposed MTBE Unit Conversion in May 2001 Final EIR	Currently Proposed MTBE Unit Conversion
<ul style="list-style-type: none"> • Remove and replace existing reactor • No new or modified vessels • Remove six existing pumps and add two new pumps • Remove one existing heat exchanger and add three new heat exchangers 	<ul style="list-style-type: none"> • Modify existing reactor and add one new reactor • Modify two existing distillation columns and one surge vessel • Remove ten existing pumps and install eight new pumps • No removed or new heat exchangers; three exchangers will be modified (changed nozzle sizes and new tube handles)

The currently proposed modifications described in the following sub-sections will meet the same objective (converting the MTBE Unit so that it can produce iso-octene instead), as the conversion approach evaluated in the May 2001 Final EIR.

Operation of the existing MTBE reactor in a modified service

The May 2001 Final EIR indicated that the refinery’s single existing MTBE reactor that was used to react isobutene with methanol in the presence of a catalyst to produce MTBE, would be removed and replaced with a new reactor that would produce iso-octene instead by reacting isobutene with itself in the presence of a catalyst. However, the currently proposed project modifications utilize a different technology than was evaluated in the May 2001 Final EIR, and the current proposed modifications would allow the existing reactor to be modified so that it can be operated to react isobutene in the presence of water and a catalyst to produce iso-octene.

Addition of a new reactor operating in series with the existing MTBE reactor

The May 2001 Final EIR assumed that the one new reactor would have a sufficient amount of catalyst to provide the desired conversion rate during the reaction. However, with the currently proposed project modifications, the required amount of catalyst needed would be twice as much as was assumed in the May 2001 Final EIR because two reactors would be needed instead of one. The second new reactor would be needed to achieve the same desired conversion rate during the reaction as was analyzed in the May 2001 Final EIR.

The currently proposed project modifications would require a different type of catalyst than was originally proposed in the May 2001 Final EIR. The new catalyst is similar to the ion exchange resin used to produce MTBE in the past. The new catalyst is in the form of opaque polymeric beads that contain a sulfuric acid-type material. The new catalyst is considered non-

hazardous under the OSHA Hazardous Communication Standard (29CFR 1910.1200), is not covered under SARA Title 3, and does not contain chemicals that are listed in SARA Title 3 Section 313. Releases of the new catalyst to air, land, and water are not reportable under CERCLA or to state and local emergency planning agencies under SARA Title 3 Section 304. Handling, loading, unloading, and waste management procedures for the new catalyst will be equivalent to the procedures used for the MTBE production catalyst. The useful life of the new catalyst is one year; however, because the MTBE catalyst life was one to two years, the currently proposed project modifications will dispose of up to four times as much spent catalyst as the MTBE Unit. The MTBE Unit loaded and disposed of approximately 2,800 cubic feet of catalyst every two years, and the proposed changes to the Iso-octene Unit will load and dispose up to approximately 5,600 cubic feet of catalyst per year.

As was the case with the MTBE catalyst, the spent catalyst from iso-octene production is freed of hydrocarbons by water washing and heating with low pressure steam or hot nitrogen. Since up to four times as much spent catalyst will be generated compared to past MTBE production, up to four times as much water (non-potable water obtained from BP's own wells) will be used, and up to four times as much wash water will also be generated. The currently proposed modifications will use up to approximately 20,300 gallons per year of water, compared to approximately 10,100 gallons of water used every two years for MTBE production. The currently proposed modifications also will generate approximately 20,300 gallons per year of wash water compared to approximately 10,100 gallons of wash water every two years for MTBE production. During the catalyst washing process, oily water will be produced and sent to the Carson Refinery's existing wastewater treatment system. The vapors that are stripped from the catalyst will be sent to an existing vapor recovery system or flare. The discarded catalyst is not listed as a hazardous waste in 40CFR 261.33, nor does it exhibit the characteristics that would also define it as a hazardous waste under RCRA, such as ignitability, corrosivity, reactivity or toxicity. Because the spent catalyst cannot be economically recycled after the hydrocarbons have been removed from the spent catalyst, it will be transported to an appropriately permitted landfill (a Class III facility landfill that accepts non-hazardous waste materials and has a solid waste permit from the California Integrated Waste Management Board) for disposal.

Removal of six methanol pumps and installation of two new pumps to inject water into the reactors and two new pumps to recycle tertiary butyl alcohol (TBA) to the reactors

As previously analyzed in the May 2001 Final EIR, the MTBE unit utilized six pumps to inject methanol into the reactor in order to react isobutene with methanol to produce MTBE. The current proposal for producing iso-octene requires water instead of methanol. The water injection rate for the current proposed modifications is a fraction of the previous methanol injection rate, and the existing pumps cannot be turned down enough to provide efficient controllable flow. Thus, two new pumps will be installed to inject water into the reactor. Two new pumps also will be installed to recycle TBA to the reactors. (TBA is a byproduct of the iso-octene reaction produced when isobutene reacts with water in the presence of a catalyst.) The six existing methanol injection pumps will be removed.

Conversion of the methanol stripper tower to an iso-octene column and the removal of four existing pumps and installation of four new pumps to replace them

The existing methanol stripper tower will be converted to an iso-octene distillation column with an increased rate of reflux (in the distillation process, reflux is overhead liquid that is cooled and pumped back to the top tray of the tower to improve product separation in the tower). This column will be used to separate the iso-octene product from pentanes or 'C5s'. All of the tower trays will be replaced with higher capacity trays to accommodate the higher reflux flow rate. In addition, four new pumps will be installed and four existing pumps at the tower will be removed. The two existing bottoms pumps will be replaced with two new pumps to enable transfer of iso-octene bottoms product to the refinery's light hydro unit or directly to gasoline blending; this is necessary because the existing bottoms pumps cannot develop enough pressure to supply product to these destinations. The two existing reflux pumps will be replaced with two new pumps because the process will be changing from a water/alcohol service to a hydrocarbon service.

Modification of an existing surge vessel to receive sidedraw from the converted methanol stripper tower

Once the methanol stripper tower is converted to an iso-octene distillation column and is operating to produce iso-octene, TBA will also be produced as a byproduct of the iso-octene reaction. In order to collect the TBA so that it can be recycled back to the reactors, an existing methanol feed surge drum (RPV-0922) will be reused. Collecting and recycling the TBA will minimize the loss of a high end-point product and will maximize the amount of iso-octene produced. This existing vessel is made of carbon steel and its dimensions are 9 feet by 32 feet. Since the material in the vessel will change, a new relief valve discharging to flare will replace the existing relief valve that discharges to atmosphere.

Modification of the Debutanizer Tower

All of the tower trays will be replaced with higher efficiency trays to improve product separation.

No new storage facilities are needed to handle products from the converted MTBE Unit as currently proposed. The currently proposed modifications will not require modifications to the refinery fuel system or utilities systems (e.g., water supply, electrical power, wastewater treatment). The currently proposed project modifications will increase the overall CARB Phase 3/MTBE Phase-out project's electrical load by approximately 40 HP. In addition to the spent catalyst washing discussed previously that would occur once each year and would use up to approximately 20,300 gallons of water and generate up to approximately 20,300 gallons of wastewater, the currently proposed project modifications will increase average daily water consumption at the refinery by approximately 760 gallons per day, and will result in a minimal increase in process wastewater generation (an increase of less than 50 gallons per day). No impacts are expected on the refinery's fuel system because neither the MTBE process nor the iso-octene production process uses fuel gas, has a vapor byproduct or has an off-gas stream. Other than what was described in this section, no upstream or downstream units at the Refinery will require modification as a result of the currently proposed modifications to the MTBE Unit conversion.

As analyzed in the May 2001 Final EIR, the overall CARB Phase 3/MTBE Phase-out project construction at the Carson Refinery was estimated to take 22 months, and require a maximum of 310 workers. Construction of the MTBE Unit modifications was anticipated to occur over a nine-month period, 10 hours per day, four days per week, and require a maximum of 30 construction workers (see pages 4-9 and 4-10, Table 4.1-2 of the Final EIR). Construction of the currently

proposed MTBE Unit conversion is anticipated to occur over a seven-month period, 10 hours per day, four days per week, and require a maximum of 65 construction workers.

As shown in the following discussion, the SCAQMD has evaluated the proposed changes to the Carson Refinery and determined that the currently proposed project modifications do not create any new significant adverse environmental impacts or make substantially worse any existing significant adverse environmental impacts that were previously identified in the May 2001 Final EIR.

6.0 IMPACT ANALYSIS

This section presents a description of the impact analysis contained in the May 2001 Final EIR, as well as the analysis of the impacts of the currently proposed project modifications. Although the currently proposed project modifications affect only one portion of the overall project evaluated in the May 2001 Final EIR, a full description of the impacts presented in the May 2001 Final EIR is presented to provide a clear understanding of the previously proposed project as well as the currently proposed project.

This section sequentially presents the initial project evaluated in the May 2001 Final EIR and the currently proposed project to show the chronology of the impact analysis, and to show the comparison of the currently proposed modifications with the May 2001 Final EIR project. The May 2001 Final EIR project complied with the CARB Phase 3 gasoline requirements and the current proposed modifications do not affect the Refinery's compliance with the CARB Phase 3 requirements.

6.1 Summary of Impacts in May 2001 Final EIR

The NOP/IS for the May 2001 Final EIR project evaluated all 17 of the environmental topics in accordance with CEQA and determined that six of the 17 environmental topics would not be significantly adversely affected by the proposed project. These topics are aesthetics, agricultural resources, biological resources, mineral resources, population and housing, and recreation. Four comment letters were received on the NOP/IS. However, none of the comments received expressed concerns about the six environmental topics that the IS/NOP determined would not be significantly affected by the proposed project. Thus, these topics were not addressed further in the Draft EIR or the Final EIR.

Eleven of the 17 environmental topics required further evaluation in the EIR. The May 2001 Final EIR concluded that the following nine of the 11 environmental topics evaluated in the EIR would not be significantly adversely affected by the proposed project or could be mitigated to a level of insignificance: hydrology/water quality, transportation/traffic, energy, cultural resources, noise, public services, land use/planning, solid/hazardous waste, and geology and soils. Section 7.0 of this Addendum discusses the effects of the currently proposed project modifications on the environmental topics not found to be significant and the environmental topics mitigated to a level of insignificance as concluded in the May 2001 Final EIR. The analysis shows that these environmental areas would not be substantially affected by the currently proposed project modifications. Therefore, the conclusions for these environmental topic areas from the May 2001 Final EIR do not change as a result of implementing the currently proposed project modifications.

As discussed in the following paragraphs, the May 2001 Final EIR identified significant potentially adverse impacts after the implementation of available mitigation measures for two environmental topic areas: 1) air quality (construction emissions and fugitive VOC emissions during operation),

and 2) hazards (primarily from the operation of a new pentane storage tank at Marine Terminal No. 2).

The May 2001 Final EIR indicated that the CARB Phase 3/MTBE Phase-out project would result in the following significant unavoidable adverse impacts:

- Emissions of CO, VOC, NO_x and particulate matter less than 10 microns diameter (PM10) will exceed mass daily significance thresholds during construction; therefore, construction air quality impacts were considered to be significant.
- VOC emissions will exceed the mass daily significance threshold during operation; therefore, operation phase air quality impacts were considered to be significant.
- The hazard analysis showed that the proposed storage of pentane at Marine Terminal No. 2, instead of nonene which is currently stored at the facility, significantly extends the impact distances associated with a potential tank rupture scenario accompanied by either an explosion or a fire; therefore, potential hazard impacts from pentane storage at Marine Terminal No. 2 were considered to be significant.
- The hazard analysis showed that the proposed shipment of pentane by barge from Marine Terminal No. 2 significantly extends the potential impact distance associated with a fire on a barge from the distance associated with a fire involving currently imported MTBE; therefore, potential hazard impacts from transport of pentane by barge were considered to be significant.
- A fire associated with an ethanol spill from a tanker truck accident could have a potentially significant impact distance; therefore, potential hazard impacts associated with tanker truck transport of ethanol were considered to be significant.

The analysis in the May 2001 Final EIR also indicated that the proposed project would result in the following potentially significant but mitigable impacts:

- Noise during construction activities at the Hathaway and Colton terminals could have potentially significant adverse impacts; mitigation measures were identified that would reduce the impacts to less-than-significant levels.
- Asbestos-containing materials could potentially be exposed during excavation activities at the refinery; mitigation measures were identified that would reduce the impacts associated with exposure to these materials to less-than-significant levels.
- Excavation activities during construction of the proposed project could potentially expose culturally significant deposits; mitigation measures were identified that would reduce the potential impacts on such deposits to less-than-significant levels.

6.2 Analysis of Impacts from the Currently Proposed Project Modifications

This Addendum evaluated all 17 of the environmental topics as required by CEQA, and concluded that two environmental topic areas would be affected by the currently proposed project modifications – air quality and hazards. The following subsection presents the results of the evaluation of the air quality and hazards impacts associated with the currently proposed project modifications. Section 7.2 presents the analysis of the remaining 15 environmental topic areas where the impacts of the currently proposed project modifications were evaluated in the Addendum and found not to be potentially significant.

6.2.1 Air Quality

Both construction and operational air quality impacts are typically analyzed for each project. The construction phase may be further divided into specific sub-phases that include different construction activities.

Air quality impacts that equal or exceed the significance thresholds identified in Table 6-1 are considered to be significant adverse air quality impacts.

Subsequent to the adoption of the SCAQMD CEQA Air Quality Handbook (SCAQMD, 1993), the SCAQMD adopted the RECLAIM program, fundamentally changing the framework of air quality rules and permits that apply to the largest NO_x and SO_x sources within the air district. The RECLAIM program is a pollution credit trading program for large sources of NO_x and SO_x emissions within the jurisdiction of the SCAQMD. Companies within the program are given an emissions allocation that reflects historical usage, but that declines yearly to reduce total emissions from the program. Facilities are allowed to buy and sell credits, reflecting the facilities' emissions for the year. The emissions from the universe of RECLAIM sources were capped in 1994. The emissions cap declined each year from 1995 to 2003, and is now fixed at a level of approximately 78 percent below the initial levels. As implementation of the RECLAIM program proceeded, the SCAQMD realized that it needed to examine how to apply the CEQA significance thresholds to RECLAIM facilities, recognizing that CEQA case law directs that the existing environmental setting includes permits and approvals that entitle operators to conduct or continue certain activities. The SCAQMD determined that the baseline should be the RECLAIM initial allocation for each RECLAIM facility, and that a project would be considered significant if the proposed project would cause the facility's emissions to exceed the baseline plus the adopted significance threshold.

Under the RECLAIM program, the SCAQMD issues facility-wide permits to sources. The facility permits specify an initial allocation and annual emission allocations for NO_x and SO_x. The initial allocations were based on historical reported emissions for the years immediately prior to implementation of the RECLAIM program. Annual allocations represent the number of RECLAIM Trading Credits or RTCs the facilities begin with each year. The allocations generally declined each year from 1994 through 2003. Operators of RECLAIM sources must not emit more than the total number of RECLAIM credits they possess, which include the annual allocation plus any credits bought and minus any credits sold. In this way, the RECLAIM permit process operates to reduce on an annual basis the overall emissions of NO_x and SO_x in the Basin, while providing flexibility at individual facilities to vary emissions up to the levels of the actual emissions as determined in 1994. Some facilities reduce emissions through a variety of ways including curtailing production and installing pollution control equipment, to remain below annual allocations. Facilities in the program can generate credits to sell by reducing their emissions beyond their annual allocation. Although the allocations for RECLAIM facilities have declined each year since 1994, the maximum annual emissions of NO_x and SO_x permitted from each facility remain at the 1994 limits – so long as that facility acquires additional allocations (“trading credits”) from another RECLAIM facility that has reduced its emissions below its current-year allocation.

**Table 6-1
SCAQMD Air Quality Significance Thresholds**

Pollutant	Mass Daily Thresholds	
	Construction	Operation

**APRIL 2005 ADDENDUM TO THE MAY 2001 FINAL EIR FOR THE
ARCO CARB PHASE 3/MTBE PHASE-OUT PROJECT**

NOx	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM10	150 lbs/day	150 lbs/day
SOx	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day
Toxic Air Contaminants (TACs) and Odor Thresholds		
TACs (including carcinogens and non-carcinogens)	Maximum Incremental Cancer Risk \geq 10 in 1 million Hazard Index \geq 1.0 (project increment) Hazard Index \geq 3.0 (facility-wide)	
Odor	Project creates an odor nuisance pursuant to SCAQMD Rule 402	
Ambient Air Quality for Criteria Pollutants^a		
NO2 1-hour average annual average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 0.25 ppm (state) 0.053 ppm (federal)	
PM10 24-hour average annual geometric average annual arithmetic mean	10.4 $\mu\text{g}/\text{m}^3$ (recommended for construction) ^b 2.5 $\mu\text{g}/\text{m}^3$ (operation) 1.0 $\mu\text{g}/\text{m}^3$ 20 $\mu\text{g}/\text{m}^3$	
Sulfate 24-hour average	1 $\mu\text{g}/\text{m}^3$	
CO 1-hour average 8-hour average	SCAQMD is in attainment; project is significant if it causes or contributes to an exceedance of the following attainment standards: 20 ppm (state) 9.0 ppm (state/federal)	

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

^b Ambient air quality threshold based on SCAQMD Rule 403.

KEY: lbs/day = pounds per day ppm = parts per million $\mu\text{g}/\text{m}^3$ = microgram per cubic meter \geq greater than or equal to

Air quality impacts for a RECLAIM facility are considered to be significant if the incremental mass daily emissions for NO_x and SO_x from sources regulated under the RECLAIM permit, when added to the allocation for the year in which the project will commence operations, will be greater than the facility's 1994 allocation (including non-tradable credits) plus the increase established in the SCAQMD Air Quality Handbook for that pollutant (55 pounds per day [lb/day] for NO_x and 150 lb/day for SO_x). In order to make this calculation, annual allocations as well as the project's incremental annual emissions are converted to a daily average by dividing by 365. Thus, the proposed project is considered significant if:

$$(A_1/365) + I < (P + A_2)/365$$

Where:

P = the annual emissions increase associated with the proposed project.

A₁ = 1994 initial annual allocation (including non-tradable credits).

A₂ = Annual allocation in the year the proposed project will commence operations.

I = Incremental emissions established as significant in the SCAQMD Air Quality Handbook (55 lb/day NO_x or 150 lb/day SO_x).

The above analysis provides a way of applying the standard CEQA significance thresholds to the facilities that have CEQA baselines that are determined by the unique permitting program of

RECLAIM. The analysis ensures that the CEQA significance criteria are applied properly and fairly, taking into account the unique aspects of the RECLAIM permit program. For localized impacts associated with a physical modification, the RECLAIM regulations require modeling and establish thresholds that cannot be exceeded.

The determination of CEQA significance for RECLAIM facilities applies only to operational emissions of NO_x and/or SO_x that would be included in the RECLAIM allocation and subject to the RECLAIM regulations. The RECLAIM CEQA significance determination does not apply to sources that would not be regulated by the RECLAIM regulations (i.e., indirect sources of emissions such as trucks, rail cars, and marine vessels), construction emission sources, and to non-RECLAIM pollutants (i.e., VOC, CO, and PM10) for which the SCAQMD has established significance thresholds. The level of emissions at which CEQA significance is triggered for RECLAIM pollutants NO_x and SO_x for the BP Carson Refinery ((A₁/365) + I) is calculated in Table 6-2.

**Table 6-2
Determining Significance for RECLAIM Pollutants at the BP Carson Refinery**

Pollutant	A₁ Initial Allocation (lb/yr)^a	A₁/365 Initial Allocation (lb/day)	I Significance Threshold (lb/day)	A₁/365 + I (lb/day)
NO _x	3,706,790	10,156	55	10,211
SO _x	3,702,692	10,144	150	10,294

^a Includes non-tradeable credits

The use of the RECLAIM CEQA NO_x and SO_x significance criteria to determine the significance of air quality impacts from stationary sources subject to RECLAIM at the Carson Refinery is appropriate because the refinery is a RECLAIM facility. It should be noted that the BP terminals are not RECLAIM facilities.

The CARB Phase 3/MTBE Phase-out project analyzed in the May 2001 Final EIR, including conversion of the MTBE Unit to an Iso-octene Unit, was scheduled to commence operations during 2002. Therefore, 2002 NO_x and SO_x RECLAIM allocations for the Carson Refinery were used in determining the significance of operational air quality impacts from RECLAIM sources for the project analyzed in the May 2001 Final EIR. The 2002 allocations for NO_x and SO_x were 1,851,698 lb/yr (5,073 lb/day) and 1,336,509 lb/yr (3,662 lb/day), respectively. Therefore, emission increases up to [(A₁ / 365 + I)_{NO_x} - A_{2,NO_x} / 365] = (10,211 lb/day - 5,073 lb/day) = 5,138 lb/day of NO_x and [(A₁ / 365 + I)_{SO_x} - A_{2,SO_x} / 365] = (10,294 lb/day - 3,662 lb/day) = 6,632 lb/day of SO_x for the CARB Phase 3/MTBE Phase-out project analyzed in the May 2001 Final EIR would be less than significant.

The currently proposed project modifications will commence operations during late 2005, and RECLAIM allocations generally apply to 12-month periods from July 1 through June 30. Therefore, NO_x and SO_x RECLAIM allocations for the period from July 2005 through June 2006

for the BP refinery were used in determining the significance of operational air quality impacts from RECLAIM sources for the currently proposed project modifications. The 2005/2006 allocations for NO_x and SO_x are 1,483,062 lb/yr (4,063 lb/day) and 854,339 lb/yr (2,341 lb/day), respectively. Therefore, emission increases up to $[(A_1 / 365 + I)_{\text{NO}_x} - A_{2,\text{NO}_x} / 365] = (10,211 \text{ lb/day} - 4,063 \text{ lb/day}) = 6,148 \text{ lb/day}$ of NO_x and $[(A_1 / 365 + I)_{\text{SO}_x} - A_{2,\text{SO}_x} / 365] = (10,294 \text{ lb/day} - 2,341 \text{ lb/day}) = 7,953 \text{ lb/day}$ of SO_x for the currently proposed project modifications would be less than significant.

Construction Emissions

The May 2001 Final EIR evaluated construction activities and emissions during modifications to each of the refinery process units, each of the affected refinery support facilities, and each of the individual terminals. The schedules for the construction activities for the individual process units, refinery support facilities and terminals were analyzed to determine the daily construction activities and emissions that occurred during each week of the overall project construction period, from February 2001 through October 2002. The peak daily construction emissions were projected to occur during a one-week period in September 2001 that involved simultaneous construction activities to modify: (1) the Light Hydro Unit; (2) the ISO SIV Unit; (3) the Number 3 Reformer Fractionator; (4) the SFIA Debutanizer; (5) the FCCU; (6) refinery pentane off-loading facilities; (7) refinery pentane transport facilities; (8) refinery butane loading and off-loading facilities; (9) the East Hynes gasoline distribution terminal; (10) the Vinvale distribution terminal; and (11) Marine Terminal No. 2. Construction of these process units, support facilities and terminals, as well as construction of the other portions of the CARB Phase 3/MTBE Phase-out project, have been completed, except for the conversion of the MTBE Unit to an Iso-octene Unit.

The construction activities related to the currently proposed project modifications are only associated with conversion of the MTBE Unit to an Iso-octene Unit. Construction activities associated with conversion of the MTBE Unit to an Iso-octene Unit were expected to occur between January and September 2002, after completion (in September 2001) of most of the activities when peak daily construction emissions occurred. Based on the construction schedule of the various project components, construction activities associated with conversion of the MTBE Unit to an Iso-octene Unit did not contribute to peak day construction emissions. Since the currently proposed project modifications only affect construction activities associated with conversion of the MTBE Unit to an Iso-octene Unit, construction emissions associated with this conversion have been recalculated. The peak daily emissions associated with the currently proposed project modifications will be compared to the peak daily emissions in the May 2001 Final EIR.

As analyzed in the May 2001 Final EIR, refinery construction activities at their peak were expected to require a maximum of 310 workers, working four days a week, from 6:00 a.m. to 5:00 p.m. (see Appendix B of the Addendum for the air quality impact analysis from the May 2001 Final EIR, which outlines the methodology and assumptions used to derive the conclusions in the Final EIR). The complete construction schedule for the May 2001 Final EIR activities can be found in Appendix C.2, Table 2 of this Addendum. Table 6-3 shows the peak daily construction emissions (mitigated) as presented in the May 2001 Final EIR. As noted above, the project's peak daily construction emissions occurred during September 2001.

Peak refinery construction activities associated with the currently proposed project modifications are expected to occur over a seven-month period. A maximum of 65 workers would be required, working four days per week, 10 hours per day.

Table 6-4 shows the maximum daily construction emissions (mitigated) associated with conversion of the MTBE Unit to an Iso-octene Unit as presented in the May 2001 Final EIR. These construction emissions were expected to occur between January and September 2002. Comparing Table 6-3 with Table 6-4 illustrates that the peak daily construction emissions in the May 2001 Final EIR exceed the peak daily construction emissions to convert the MTBE Unit to an Iso-octene Unit.

It is important to note that the construction activities associated with portions of the project that overlap the conversion of the MTBE Unit to an Iso-octene Unit occurred as scheduled between January and September 2002, and thus, are complete. The overlapping construction activities included the following tasks: ISO-SIV conversion to Light Hydro Unit, new FCCU Rerun Bottoms Splitter, North Hydrogen Plant modifications, Mid-Barrel Unit conversion to Gasoline Hydrotreater, new pentane off-loading racks, new pentane transfer pumps, butane loading facilities, Marine Terminal No. 2 modifications for ethanol shipping, general grading, general surface coating, and general asphaltic paving. Rather than calculating emissions that would only be associated with the conversion of the MTBE Unit to an Iso-octene Unit and comparing that result with the peak maximum daily emissions from the May 2001 Final EIR (Table 6-3), the SCAQMD has taken a more conservative approach. The SCAQMD calculated the construction emissions for the currently proposed project modifications (i.e., to convert the MTBE Unit to an Iso-octene Unit) and added these emissions to the emissions that would be generated from other concurrent construction activities that were shown in the May 2001 Final EIR as overlapping with construction activities for the MTBE Unit to an Iso-octene Unit conversion, even though these other concurrent construction activities have already been completed. This more conservative approach also provides an “apples-to-apples” comparison.

**Table 6-3
Mitigated Peak Daily Construction Emissions in May 2001 Final EIR**

Process/Activity/Terminal	CO (lb/day)	VOC (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM10 (lb/day)
Light Hydro Unit #1 Modifications	58.0	9.3	51.9	3.5	17.1
ISO-SIV Conversion to Light Hydro Unit #2	132.4	20.2	103.3	6.9	37.9
#3 Reformer Fractionator Modifications	37.3	6.7	51.3	4.3	9.9
Debutanizer Modifications in Gasoline Fractionation Area	46.1	7.4	38.7	2.9	10.9
New FCCU Rerun Bottoms Splitter	123.7	20.3	122.5	8.7	38.7
North Hydrogen Plant Modifications	0.0	0.0	0.0	0.0	0.0
MTBE Unit Conversion to Iso-octene	0.0	0.0	0.0	0.0	0.0
Cat-Poly Unit Conversion to Dimerization Unit	0.0	0.0	0.0	0.0	0.0
Mid-Barrel Unit Conversion to Gasoline Hydrotreater	0.0	0.0	0.0	0.0	0.0
Tank Farm Piping Modifications	0.0	0.0	0.0	0.0	0.0
New Pentane Off-Loading Racks at Pentane Rail Car Loading Facility	73.8	11.1	51.5	3.2	25.3
New Pentane Transfer Pumps at Pentane Spheres	39.8	6.5	38.1	2.6	14.8
Butane Loading Facilities at Polypropylene Loading Facility	102.9	16.8	104.4	6.9	50.7
Marine Terminal No. 2 Modifications for Ethanol Off-Loading	20.8	3.6	26.5	2.1	4.4
Marine Terminal No. 2 Modifications for Pentanes Shipping	72.8	12.0	69.4	5.0	19.8
East Hynes Terminal Modifications	20.8	3.6	26.5	2.1	4.4
Vinvale Terminal Modifications	27.6	4.5	31.7	2.7	4.9
Hathaway Terminal Modifications	0.0	0.0	0.0	0.0	0.0
Carson Terminal Modifications	0.0	0.0	0.0	0.0	0.0
Colton Terminal Modifications	0.0	0.0	0.0	0.0	0.0
General Grading	0.0	0.0	0.0	0.0	1.8
General Surface Coating	0.0	24.0	0.0	0.0	0.0
General Asphaltic Paving	0.0	0.1	0.0	0.0	0.0
Total	755.9	146.1	715.8	51.0	240.7
CEQA Significance Threshold	550	75	100	150	150
Significant? (Yes/No)	Yes	Yes	Yes	No	Yes

Source: Appendix C.2 of this Addendum, Table 3 for week of 9/6/01
Note: Sums of individual values may not equal totals because of rounding

Table 6-4
Mitigated Peak Daily Construction Emissions Associated with Conversion of the MTBE Unit to an Iso-octene Unit in May 2001 Final EIR

Process/Activity/Terminal	CO (lb/day)	VOC (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM10 (lb/day)
ISO-SIV Conversion to Light Hydro Unit #2	132.4	20.2	103.3	6.9	37.9
New FCCU Rerun Bottoms Splitter	123.7	20.3	122.5	8.7	38.7
North Hydrogen Plant Modifications	46.8	7.7	51.2	4.0	10.5
MTBE Unit Conversion to Iso-octene	67.7	11.5	71.8	5.3	20.1
Mid-Barrel Unit Conversion to Gasoline Hydrotreater	65.5	10.8	66.4	4.8	19.7
New Pentane Off-Loading Racks at Pentane Rail Car Loading Facility	73.8	11.1	51.5	3.2	25.3
New Pentane Transfer Pumps at Pentane Spheres	39.8	6.5	38.1	2.6	14.8
Butane Loading Facilities at Polypropylene Loading Facility	102.9	16.8	104.4	6.9	50.7
Marine Terminal No. 2 Modifications for Pentanes Shipping	72.8	12.0	69.4	5.0	19.8
General Grading	0.0	0.0	0.0	0.0	1.8
General Surface Coating	0.0	24.0	0.0	0.0	0.0
General Asphaltic Paving	0.0	0.1	0.0	0.0	0.0
Total	725.3	141.0	678.5	47.4	239.3

Source: Appendix C.2 of this Addendum, Table 3 for week of 1/3/02
 Note: Sums of individual values may not equal totals because of rounding

Table 6-5 shows the *revised* maximum daily construction emissions (mitigated) related to the currently proposed project modifications associated with conversion of the MTBE Unit to an Iso-octene Unit and emissions from other concurrent activities, even though these other construction activities have been completed. Construction emission calculations, assumptions, emission factors, etc., used to calculate construction emissions from the currently proposed project modifications can be found in Appendix C.1 of this addendum.

Table 6-6 presents a comparison of the peak daily construction emissions (mitigated) from the May 2001 Final EIR and the revised maximum (peak) daily construction emissions associated with the currently proposed project modifications (mitigated) to convert the MTBE Unit to an Iso-octene Unit. Actual emissions from the currently proposed project modifications are expected to be even less than shown in Table 6-6 because the other concurrent construction activities have already occurred and will not be part of the currently proposed project modifications. Since Table 6-6 demonstrates that construction emissions from the currently proposed project modifications remain less than the peak daily construction emissions in the May 2001 Final EIR, the currently proposed project modifications do not create new significant adverse construction-related air quality impacts, or make previously identified significant construction-related air quality impacts substantially worse. This analysis of construction-related air quality impacts associated with the currently proposed project modifications contributes to the conclusion that an addendum is the appropriate CEQA document for the currently proposed project modifications.

Table 6-5
Mitigated Peak Daily Construction Emissions Associated with Currently Proposed Project Modifications to Convert the MTBE Unit to an Iso-octene Unit

Process/Activity/Terminal	CO (lb/day)	VOC (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM10 (lb/day)
ISO-SIV Conversion to Light Hydro Unit #2	132.4	20.2	103.3	6.9	37.9
New FCCU Rerun Bottoms Splitter	123.7	20.3	122.5	8.7	38.7
North Hydrogen Plant Modifications	46.8	7.7	51.2	4.0	10.5
MTBE Unit Conversion to Iso-octene	73.4	11.7	42.6	5.5	8.5
Mid-Barrel Unit Conversion to Gasoline Hydrotreater	65.5	10.8	66.4	4.8	19.7
New Pentane Off-Loading Racks at Pentane Rail Car Loading Facility	73.8	11.1	51.5	3.2	25.3
New Pentane Transfer Pumps at Pentane Spheres	39.8	6.5	38.1	2.6	14.8
Butane Loading Facilities at Polypropylene Loading Facility	102.9	16.8	104.4	6.9	50.7
Marine Terminal No. 2 Modifications for Pentanes Shipping	72.8	12.0	69.4	5.0	19.8
General Grading	0.0	0.0	0.0	0.0	1.8
General Surface Coating	0.0	24.0	0.0	0.0	0.0
General Asphaltic Paving	0.0	0.1	0.0	0.0	0.0
Total	731.0	141.2	649.2	47.6	227.7

Note: Sums of individual values may not equal totals because of rounding

Table 6-6
Comparison of May 2001 Final EIR Peak Daily Construction Emissions with the Currently Proposed Project Modifications to Convert the MTBE Unit to an Iso-octene Unit Peak Daily Construction Emissions

Activity	CO (lb/day)	VOC (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM10 (lb/day)
May 2001 Final EIR Peak Daily Construction Emissions	755.9	146.1	715.8	51.0	240.7
Currently proposed Project Modifications Peak Daily Construction Emissions	731.0	141.2	649.2	47.6	227.7
Do the currently proposed project emissions exceed the May 2001 Final EIR Peak Daily Construction Emissions?	No	No	No	No	No

Operational Emissions

Operational emissions analyzed in the May 2001 Final EIR are the difference between the emissions at the refinery and terminals (baseline), and the emissions after the portions of the CARB Phase 3/MTBE Phase-out project evaluated in the May 2001 Final EIR are constructed. Table 6-7 presents the peak daily operational emissions from the May 2001 Final EIR. As shown in Table 6-8, which shows the determination of the significance of operational emissions from the May 2001 Final EIR, peak daily operational CO, NO_x, SO_x and PM10 emissions from the May 2001 Final EIR were below the significance thresholds. Peak daily operational VOC emissions, which

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exceeded the significance threshold, were primarily due to butane and pentane loading into railcars at the refinery, pentane loading into marine tankers and a new pentane storage tank at Marine Terminal No. 2, and loading ethanol into tanker trucks at the Hathaway terminal. As shown in Table 6-8, NO_x and SO_x emissions associated with the incremental increase in the operation of affected equipment combined with the emissions increase from conversion of the MTBE Unit to an Iso-octene Unit were expected to be less than significant.

**Table 6-7
Peak Daily Operational Emissions from the May 2001 Final EIR**

Source	CO (lb/day)	VOC (lb/day)	NO _x (lb/day)	SO _x (lb/day)	PM10 (lb/day)
DIRECT EMISSIONS					
Refinery					
Fugitive VOC from process components	0.0	-34.1	0.0	0.0	0.0
Rail car pentane loading	0.0	7.1	0.0	0.0	0.0
Sulfur recovery plant	0.0	0.0	0.0	10.0	0.0
Subtotal	0.0	-27.0 NR	0.0	10.0 R	0.0
Marine Terminal 2 pentane storage and shipping					
Fugitive VOC from components	0.0	3.1	0.0	0.0	0.0
Pentane storage tank	0.0	17.6	0.0	0.0	0.0
Demolished tanks	0.0	-0.2	0.0	0.0	0.0
Marine tanker loading	0.0	44.6	0.0	0.0	0.0
Subtotal	0.0	65.1 NR	0.0	0.0	0.0
Marine Terminal 2 Ethanol Storage					
Fugitive VOC from components	0.0	0.8 NR	0.0	0.0	0.0
Hathaway Terminal					
Fugitive VOC from components	0.0	0.8	0.0	0.0	0.0
Tanker truck loading	0.0	31.0	0.0	0.0	0.0
Subtotal	0.0	31.8 NR	0.0	0.0	0.0
East Hynes Terminal					
Fugitive VOC from components	0.0	5.0 NR	0.0	0.0	0.0
Vinale Terminal					
Fugitive VOC from components	0.0	2.2 NR	0.0	0.0	0.0
Carson Terminal					
Fugitive VOC from components	0.0	0.9 NR	0.0	0.0	0.0
Colton Terminal					
Fugitive VOC from components	0.0	0.9 NR	0.0	0.0	0.0
Total Direct Emissions	0.0	79.6 NR	0.0	10.0 R	0.0
INDIRECT EMISSIONS					
New refinery employee commuting	7.4	0.9	0.9	0.0	0.4
Ethanol tanker trucks	34.5	5.4	48.3	0.0	56.9
Total Indirect Emissions	41.8 NR	6.3 NR	49.2 NR	0.0	57.4 NR
Source: May 2001 Final EIR, Attachment B.2, Table 1					
NR = non-RECLAIM pollutant; R = RECLAIM pollutant					

Table 6-8
Operational Emissions Summary Significance Determination from the May 2001 Final EIR

	CO (lb/day)	VOC (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM10 (lb/day)
Background Data					
2002 RECLAIM Allocation ^a	N/A	N/A	5,073	3,662	N/A
Increased Direct Emissions for RECLAIM Pollutants	N/A	N/A	0	10.0	N/A
Increased Direct Emissions for Non-RECLAIM Pollutants	0.0	79.6	0.0	0.0	0.0
Increased Indirect Emissions	41.8	6.3	49.2	0.0	57.4
Significance Determination					
Project Increase for RECLAIM Pollutants + 2002 RECLAIM Allocation	N/A	N/A	5,073	3,672	N/A
Indirect + Direct Emissions a = non-RECLAIM, b = RECLAIM	a) 41.8 b) 0	a) 85.9 b) 0	a) 49.2 b) 0	a) 0.0 b) 10.0	a) 57.4 b) 0
Significance Threshold a = non-RECLAIM, b = RECLAIM ^b	a) 55 b) N/A	a) 55 b) N/A	a) 55 b) 10,211	a) 150 b) 10,294	a) 150 b) N/A
Significant? a = non-RECLAIM b = RECLAIM	a) NO b) N/A	a) YES b) N/A	a) NO b) NO	a) NO b) NO	a) NO b) NO
^a The 2002 facility allocations for NO _x and SO _x include purchased RTCs and are converted to pounds per day. These values were taken from the Facility Permit to Operate. The values from the Facility Permit to Operate column headed NO _x and SO _x RTC Holding were selected. Note that the May 2001 Final EIR incorrectly used 1998 allocations. However, this does not affect the conclusion that peak daily operational NO _x and SO _x do not exceed the significance thresholds. ^b From Table 6-2 N/A = not applicable for this pollutant					

As shown in Table 6-9, which summarizes operational emissions from conversion of the MTBE Unit to an Iso-octene Unit as evaluated in the May 2001 Final EIR, the May 2001 Final EIR estimated that the conversion of the MTBE Unit to an Iso-octene Unit would reduce fugitive VOC emissions by 7.7 pounds per day from components such as valves, pumps and flanges. This estimated decrease in emissions was primarily attributed to the proposed replacement of non-bellows seal valves, which generate fugitive emissions, with leakless bellows seal valves, which do not generate fugitive emissions, when existing process units are modified.

Operational emissions associated with the currently proposed project modifications to convert the MTBE Unit to an Iso-octene Unit also consist of fugitive VOC emissions from valves, pumps and flanges. The numbers and types of valves, pumps and flanges to be modified to convert the MTBE Unit to an Iso-octene Unit are different in the currently proposed project modifications than was anticipated in the May 2001 Final EIR project. Fugitive VOC emissions resulting from the currently proposed project modifications to convert the MTBE Unit to an Iso-octene Unit have been estimated to decrease by approximately 4.0 pounds per day, as presented in Table 32 of

Appendix C.1 of this addendum. Thus, the currently proposed project modifications result in a smaller decrease in fugitive VOC emissions (a decrease of 4.0 lb/day instead of 7.7 lb/day) from the conversion of the MTBE Unit to an Iso-octene Unit as compared to the conversion of the MTBE Unit as shown in the May 2001 Final EIR.

**Table 6-9
Operational Emissions from the Conversion of the MTBE Unit
to an Iso-octene Unit Evaluated in the May 2001 Final EIR**

Component Type	Service	Emission Factor (lb/year per component)	Count	VOC (lb/day)
Valves, sealed bellows (added)	Vapor	0	0	0.0
Valves, sealed bellows (removed)	Vapor	0	0	0.0
Valves, sealed bellows (added)	Light Liquid	0	54	0.0
Valves, sealed bellows (removed)	Light Liquid	0	0	0.0
Valves, non-sealed bellows (added)	Vapor	72	0	0.0
Valves, non-sealed bellows (removed)	Vapor	-72	0	0.0
Valves, non-sealed bellows (added)	Light Liquid	57	18	2.8
Valves, non-sealed bellows (removed)	Light Liquid	-57	37	-5.8
Pumps, sealless (added)	Light Liquid	0	0	0.0
Pumps, sealless (removed)	Light Liquid	0	0	0.0
Pumps, non-sealless (added)	Light Liquid	520	2	2.8
Pumps, non-sealless (removed)	Light Liquid	-520	6	-8.5
Compressors (added)	Vapor	2570	0	0.0
Compressors (removed)	Vapor	-2570	0	0.0
Flanges (added)	All	4.9	143	1.9
Flanges (removed)	All	-4.9	74	-1.0
Pressure relief valves (added)	All	0	0	0.0
Pressure relief valves (removed)	All	0	0	0.0
Process drains (added)	All	398	0	0.0
Process drains (removed)	All	-398	0	0.0
TOTAL				-7.7

Source: May 2001 Final EIR, Attachment B.2, Table 4

Tables 6-10 and 6-11 summarize the peak daily operational emissions associated with the currently proposed project modifications. Peak daily operational emissions of all pollutants except VOC are the same as the peak daily operational emissions in the May 2001 Final EIR. Although the VOC operational emissions are higher based on the currently proposed project modifications, the increase from the VOC operational emissions in the May 2001 Final EIR is less than the SCAQMD significance threshold of 55 pounds a day, and therefore, is insignificant. Thus, operational peak daily emissions from the currently proposed project modifications will not cause new significant adverse operational-related air quality impacts, nor would they substantially increase the severity of the significant operational-related air quality impacts identified in the May 2001 Final EIR.

Appendix C.1 of this addendum provides the supporting calculations for the operational emissions associated with the currently proposed project modifications.

**Table 6-10
Peak Daily Operational Emissions from the Currently Proposed Project Modifications to
Convert the MTBE Unit to an Iso-octene Unit**

Source	CO (lbs/day)	VOC (lbs/day)	NO _x (lbs/day)	SO _x (lbs/day)	PM10 (lbs/day)
DIRECT EMISSIONS					
Refinery					
Fugitive VOC from process components	0.0	-30.3	0.0	0.0	0.0
Rail car pentane loading	0.0	7.1	0.0	0.0	0.0
Sulfur recovery plant	0.0	0.0	0.0	10.0	0.0
Subtotal	0.0	-23.2 NR	0.0	10.0 R	0.0
Marine Terminal 2 pentane storage and shipping					
Fugitive VOC from components	0.0	3.1	0.0	0.0	0.0
Pentane storage tank	0.0	17.6	0.0	0.0	0.0
Demolished tanks	0.0	-0.2	0.0	0.0	0.0
Marine tanker loading	0.0	44.6	0.0	0.0	0.0
Subtotal	0.0	65.1 NR	0.0	0.0	0.0
Marine Terminal 2 Ethanol Storage					
Fugitive VOC from components	0.0	0.8 NR	0.0	0.0	0.0
Hathaway Terminal					
Fugitive VOC from components	0.0	0.8	0.0	0.0	0.0
Tanker truck loading	0.0	31.0	0.0	0.0	0.0
Subtotal	0.0	31.8 NR	0.0	0.0	0.0
East Hynes Terminal					
Fugitive VOC from components	0.0	5.0 NR	0.0	0.0	0.0
Vinvale Terminal					
Fugitive VOC from components	0.0	2.2 NR	0.0	0.0	0.0
Carson Terminal					
Fugitive VOC from components	0.0	0.9 NR	0.0	0.0	0.0
Colton Terminal					
Fugitive VOC from components	0.0	0.9 NR	0.0	0.0	0.0
Total Direct Emissions	0.0	83.4 NR	0.0	10.0 R	0.0
INDIRECT EMISSIONS					
New refinery employee commuting	7.4	0.9	0.9	0.0	0.4
Ethanol tanker trucks	34.5	5.4	48.3	0.0	56.9
Total Indirect Emissions	41.8 NR	6.3 NR	49.2 NR	0.0	57.4 NR

NR = non-RECLAIM pollutant; R = RECLAIM pollutant

**Table 6-11
Operational Emissions Summary Significance Determination for the Currently Proposed
Project Modifications**

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	CO (lb/day)	VOC (lb/day)	NO_x (lb/day)	SO_x (lb/day)	PM10 (lb/day)
Background Data					
2005/2006 RECLAIM Allocation ^a	N/A	N/A	4,063	2,341	N/A
Increased Direct Emissions for RECLAIM Pollutants	N/A	N/A	0	10.0	N/A
Increased Direct Emissions for Non-RECLAIM Pollutants	0.0	83.4	0.0	0.0	0.0
Increased Indirect Emissions	41.8	6.3	49.2	0.0	57.4
Significance Determination					
Project Increase for RECLAIM Pollutants + 2002 RECLAIM Allocation	N/A	N/A	5,073	3,672	N/A
Indirect + Direct Emissions a = non-RECLAIM, b = RECLAIM	a) 41.8 b) 0	a) 89.7 b) 0	a) 49.2 b) 0	a) 0.0 b) 10.0	a) 57.4 b) 0
Significance Threshold a = non-RECLAIM, b = RECLAIM ^b	a) 55 b) N/A	a) 55 b) N/A	a) 55 b) 10,211	a) 150 b) 10,294	a) 150 b) N/A
Significant? a = non-RECLAIM b = RECLAIM	a) NO b) N/A	a) YES b) N/A	a) NO b) NO	a) NO b) NO	a) NO b) NO
^a The 2005/2006 (July 2005-June 2006) facility allocations for NO _x and SO _x include purchased RTCs and are converted to pounds per day. These values were taken from the Facility Permit to Operate. The values from the Facility Permit to Operate column headed NO _x and SO _x RTC Holding were selected. ^b From Table 6-2 N/A = not applicable for this pollutant					

Table 6-12 presents a comparison of the peak daily operational emissions from the May 2001 Final EIR and the revised maximum (peak) daily operational emissions associated with the currently proposed project modifications. Since Table 6-12 demonstrates that operational emissions from the currently proposed project modification are not substantially greater than the peak daily operational emissions in the May 2001 Final EIR, the operational emissions from the currently proposed project modifications do not create new significant adverse operational-related air quality impacts, or make previously identified significant operational-related air quality impacts substantially worse. This analysis of operational-related air quality impacts associated with the currently proposed project modifications contributes to the conclusion that an addendum is the appropriate CEQA document for the currently proposed project modifications.

**Table 6-12
Comparison of May 2001 Final EIR Peak Daily Operational Emissions with the Currently Proposed Project Modifications to Convert the MTBE Unit to an Iso-octene Unit Peak Daily Operational Emissions**

CEQA Document	CO	VOC	NO_x	SO_x	PM10
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	(lb/day)	(lb/day)	(lb/day)	(lb/day)	(lb/day)
May 2001 Final EIR peak daily operational emissions	41.8	85.9	49.2	10.0	57.4
Currently proposed project modifications peak daily operational emissions	41.8	89.6	49.2	10.0	57.4
Total Change in operational emissions	0.0	3.7	0.0	0.0	0.0
Does modified project substantially increase operational emissions?	No	No	No	No	No

Health Risks

The May 2001 Final EIR concluded that adverse human health risks posed by changes in emissions of toxic air contaminants (TAC) from the refinery associated with the CARB Phase 3/MTBE Phase-out project would not be significant during the operational phase¹. The maximum incremental increase in cancer risk was estimated to be 0.21 per million, which is well below the significance level of 10 per million. The maximum acute and chronic non-cancer hazard indices were estimated to be 0.0005 and 0.0166, respectively, which are both well below the significance level of 1.0.

As shown in Table 6-12, the only change in emissions between the May 2001 Final EIR and the currently proposed project modifications will be a change in fugitive emissions from process components. Fugitive TAC emissions from process components depend on the types and concentrations of TACs contained in the process streams that pass through the components. The process streams involved in the currently proposed project modifications will be different from those anticipated in the May 2001 Final EIR, because the process unit modifications will be different. As a result, fugitive TAC emissions will also be different.

Table 6-13 details and compares the TAC emissions from the currently proposed project modifications to those previously evaluated in the May 2001 Final EIR for both the MTBE/Iso-octene Unit conversion and for the overall CARB Phase 3/MTBE Phase-out project at the Refinery. Appendix C.1 of this addendum provides detailed information on TAC emissions from various refinery units. As shown in the table, the currently proposed MTBE Unit conversion is anticipated to result in net decreases in emissions of 1,3-butadiene, methyl alcohol and propylene, while the MTBE Unit conversion evaluated in the May 2001 Final EIR was anticipated to lead to decreases in emissions of 1,3-butadiene, naphthalene and propylene. The anticipated decreases in 1,3-butadiene and propylene emissions are smaller for the currently proposed project modifications than for the MTBE conversion evaluated in the May 2001 Final EIR. These changes in the TAC estimates are caused by differences in the process streams that are affected by the two conversions, the compositions of the process streams, and differences in the number and types of components to be added and removed. The changes in TAC estimates as proposed in this Addendum will affect the previous calculations for the net refinery-wide emission changes for the same TACs as analyzed in the May 2001 Final EIR.

**Table 6-13
Comparison of Toxic Air Contaminant Emissions Evaluated in
the May 2001 Final EIR with the Currently Proposed Project Modifications**

Species	Evaluated In May 2001 Final EIR	Currently Proposed Project
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¹ For a detailed discussion of toxic air contaminant risks, see May 2001 Final EIR, Section 4.1.4, page 4-39

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	MTBE Unit Conversion (lbs/yr)	Refinery Total (lbs/yr)	MTBE Unit Conversion (lbs/yr)	Refinery Total (lbs/yr)
Toxic Air Contaminants for Which Health Risk Factors Exist				
Benzene	0.0	-1,345.2	0.0	-1,345.2
1,3-Butadiene	-5.6	-5.6	-4.7	-4.7
Cresol (Mixed)	0.0	0.4	0.0	0.4
Hydrogen Cyanide	0.0	0.6	0.0	0.6
Hydrogen Sulfide	0.0	0.6	0.0	0.6
Methyl Alcohol	0.0	0.0	-1,292.5	-1,292.5
Naphthalene	-18.4	275.6	0.0	293.9
Phenol	0.0	-0.6	0.0	-0.6
Propylene	-494.4	-749.1	-23.0	-277.8
Toluene	0.0	233.7	0.0	233.7
Xylenes (Mixed)	0.0	705.3	0.0	705.3
Other Toxic Air Contaminants				
2,2,4-Trimethyl Pentane	0.0	917.0	0.0	917.0
Cumene	0.0	1.9	0.0	1.9
Ethyl Benzene	0.0	-18.5	0.0	-18.5
Hexane	0.0	-4,209.7	0.0	-4,209.7
Isopropyl Alcohol	0.0	0.0	0.0	0.0

Note: Sums of individual values may not equal totals because of rounding.

The TAC emission rates for the currently proposed project modifications were used to evaluate potential health risks in a health risk assessment (HRA), following the same procedures used for the May 2001 Final EIR. The results of the HRA are shown in Table 6-14. The May 2001 Final EIR concluded that project-related TAC emissions would not cause significant health risks. Analysis of the currently proposed project modifications also concluded that project-related TAC emissions would not cause significant new health risks, or make any existing health risks worse.

Localized Ambient Air Quality Impacts

As shown in Table 6-7, the CARB Phase 3/MTBE Phase-out project evaluated in the May 2001 Final EIR did not cause increased direct operational CO, NO_x or PM₁₀ emissions. Therefore, no air quality dispersion modeling was required or performed for the May 2001 Final EIR to evaluate localized ambient air quality impacts for CO, NO₂ or PM₁₀. For the currently proposed project modifications, there are also no increases in direct operational emissions of PM₁₀, CO or NO_x. As a result, no air quality dispersion modeling was required or performed for the currently proposed project modifications.

**Table 6-14
Toxic Air Contaminant Risk from the May 2001 Final EIR and for the Currently Proposed Project Modifications to Convert the MTBE Unit to an Iso-octene Unit**

Health Impact	May 2001 Final EIR^a	Currently Proposed Project Modifications	Significance Threshold
Maximum Incremental Cancer Risk	0.2149 in 1 million	0.2152 in 1 million	10 in 1 million
Project Increment Chronic Hazard Index	0.0166	0.0166	1.0

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Project Increment Acute Hazard Index	0.0005	0.0005	1.0
^a Source: May 2001 Final EIR, page 4-39			

6.2.2 Hazards

The impacts associated 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.
- Exposure to hazardous chemicals in concentrations equal to or greater than the Emergency Planning Guideline (EPRG) 2 levels.

These are the same hazards significance criteria used in the May 2001 Final EIR.

The May 2001 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. Several upset scenarios were evaluated based on “worst-case” conditions, and feasible mitigation measures were included. The May 2001 Final EIR concluded that the project posed increased risks that were significant from: 1) potential catastrophic failures of storage tanks, pipelines, and barge fires at Marine Terminal No. 2; 2) potential catastrophic failures of delivery trucks at the gasoline distribution terminals; and 3) potential catastrophic failures of storage tanks and pipelines at the Carson Refinery.

The May 2001 Final EIR found that the primary area that created the largest increase of risk from the project was related to the new pentane storage tank at Marine Terminal No. 2. The May 2001 Final EIR hazard analysis did not identify a scenario involving the MTBE Unit conversion at the refinery as an element of the project that would contribute to project risks. The currently proposed project modifications would add one new reactor to the refinery and modify an existing reactor, while the project evaluated in May 2001 involved the replacement of one existing reactor. The additional reactor represents an additional potential source of hazard impacts. With the planned updates to the Refinery’s Process Safety Management (PSM) and Risk Management Program to incorporate the currently proposed project modifications, the incremental hazard impacts of the currently proposed MTBE Unit conversion would not be significant. However, the conclusion of the May 2001 Final EIR that the CARB Phase 3/MTBE Phase-out project would have significant hazards impacts remains unchanged.

7.0 TOPIC AREAS FOUND NOT TO BE POTENTIALLY SIGNIFICANT

Section 7.0 discusses the areas found not to be potentially significant in both the May 2001 Final EIR for the overall CARB Phase 3/MTBE Phase-out project and in this Addendum that addresses currently proposed modifications to the MTBE/Iso-octene conversion portion of the CARB Phase 3/MTBE Phase-out project. The areas found not to be potentially significant in the May 2001 Final EIR are addressed first, followed by a discussion of the areas found not to be potentially significant for the currently proposed modifications.

7.1 May 2001 Final EIR

The Initial Study/Notice of Preparation (IS/NOP) for the ARCO CARB Phase 3/MTBE Phase-out project evaluated the 17 environmental topics in accordance with CEQA. The IS/NOP eliminated six topics from further consideration in the Draft EIR. The following paragraphs present the six environmental topics that were eliminated by the IS/NOP, along with brief summaries of why project impacts in each of these topics was found not to be potentially significant, and thus the topics were excluded from further consideration.

Aesthetics - The Initial Study (IS) for the CARB Phase 3/MTBE Phase-out project concluded that there would be no significant adverse aesthetic impacts from the project, given that the project would take place within an existing refinery or existing distribution/marine terminals in industrial areas, typically surrounded by other heavy industrial facilities. For this reason the May 2001 Final EIR did not further address aesthetic impacts.

Agricultural Resources – The IS concluded that there would be no significant adverse impacts on agricultural resources, because the construction and operational activities associated with the proposed project would occur within the existing BP Carson Refinery or distribution/marine terminals' boundaries, and there are no agricultural uses at the refinery or terminals. For these reasons, the May 2001 Final EIR did not further analyze potential adverse impacts to agricultural resources.

Biological Resources – The IS concluded that there would be no significant adverse impacts on biological resources, because the project activities would take place within the boundaries of the existing Refinery or distribution terminals, which are typically zoned and used for heavy manufacturing and have already been greatly disturbed. Animal and plant species, especially rare or endangered animals and plants, are typically not found at industrial sites because of the industrial nature of the site, and the need to clear weeds as a fire protection measure. For these reasons, the May 2001 Final EIR did not further address potential impacts to biological resources

Mineral Resources – The IS for the CARB Phase 3/MTBE Phase-out project concluded that there would be no significant adverse mineral resources impacts from the overall project, as there are no known mineral resources at the Carson Refinery or the BP distribution/marine terminals. Thus, this issue was not addressed further in the May 2001 Final EIR.

Population and Housing – The IS for the CARB Phase 3/MTBE Phase-out project concluded that there would be no significant adverse impacts on population and housing as a result of the proposed project. The large construction work force in the greater Los Angeles area could easily accommodate project labor requirements during construction without requiring in-migration of workers and their families (i.e., population growth). Additional operational employment at the refinery would be minimally affected by the proposed modifications. Since there would be no increase in population, and no significant adverse impacts on existing housing (because the project would take place within the boundaries of the existing refinery and distribution/marine terminals), the overall project would have no significant adverse impacts on housing. Thus, the topic of population and housing was not further addressed in the May 2001 Final EIR.

Recreation – The IS for the CARB Phase 3/MTBE Phase-out project concluded that, because the project would not lead to increases in population, there would be no significant adverse impacts on existing recreational facilities and thus, there would be no need to construct new facilities or expand existing ones. For these reasons, recreation impacts were not discussed further in the May 2001 Final EIR.

The May 2001 Final EIR evaluated the 11 remaining environmental topics as potential significant impacts and concluded that nine of the 11 environmental topic areas would not be adversely affected by the proposed project. These nine environmental topic areas are listed below, along with a summary as to why they were found not to be potentially significant

Cultural Resources – The May 2001 Final EIR analyzed the potential impacts to cultural resources and noted that because the Carson Refinery is located within an area of high archaeological sensitivity (a Tongva/Gabrielino village site and a large cemetery site have been discovered within or near the boundaries of the Refinery property). The November 2000 Draft EIR and May 2001 Final EIR concluded that construction of the CARB Phase 3/MTBE Phase-out project was not expected to significantly adversely affect the known limits of either of these two sites. However, because of the possibility that subsurface disturbance could affect previously existing, but currently unknown cultural resources, mitigation measures were provided to protect and preserve any cultural resources discovered during construction activities. These mitigation measures would reduce potentially significant cultural resources impacts to less-than-significant levels.

Energy – The May 2001 Final EIR found that that overall CARB Phase 3/MTBE Phase-out project fuel use during construction and electrical use during operation would represent a small fraction of one percent of the total amount of gasoline and diesel fuel used in construction activities throughout California and a small fraction of the total electrical demand on the Southern California Edison system. These levels of energy consumption would not result in significant adverse impacts on energy supplies.

Geology and Soils – The May 2001 Final EIR concluded that the overall CARB Phase 3/MTBE Phase-out project's geology and soils impacts would be less than significant for the following reasons: 1) grading requirements would be minimal; 2) the refinery site does not have expansive soils; 3) standard construction practices would adequately control erosion and runoff; and, 4) project structures would be designed and built in accordance with the requirements in the Uniform Building Code for construction in Seismic Zone 4.

Hydrology and Water Quality – The May 2001 Final EIR concluded that there would be no significant adverse impacts to water quality and supply for several reasons: 1) existing water supply and wastewater disposal systems were determined to be adequate to meet the proposed project demand; 2) stormwater would be controlled per the Stormwater Pollution Prevention Plan (SWPPP) developed for the project and the overall refinery Stormwater Pollution Prevention Plan (modified to incorporate the project as needed); and, 3) no significant adverse impacts would be expected to surface or groundwater quality because of surface water runoff control measures (i.e., SWPPP), and because ethanol (which would be substituted for MTBE in gasoline), is considered to have less potential for groundwater impacts than MTBE. Because no anticipated significant adverse impacts were identified for hydrology and water quality, no specific mitigation measures were identified or required.

Land Use – The May 2001 Final EIR concluded that the CARB Phase 3/MTBE Phase-out project would have no significant adverse land use impacts because the construction and operational activities: 1) would occur within the existing property boundaries of the Carson Refinery and distribution/marine terminals; 2) would not alter land uses within these facilities; and, 3) would be consistent with land uses in the areas of the refinery and terminals.

Noise – The May 2001 Final EIR concluded that the construction and operational activities resulting from the CARB Phase 3/MTBE Phase-out project would have no significant adverse noise impacts. No significant increase in sound levels at or near the refinery was expected from either construction or operational activities. Construction noise levels were expected to result in an increase in CNEL noise levels in the refinery area of less than one dBA. No significant noise sources would be involved in project operation, and noise emissions from modified and new equipment would not be expected to be audible over the existing noise at the refinery.

Public Services – The May 2001 Final EIR concluded that there would be no significant adverse impacts on schools, parks, or other public facilities because the project would not cause population increases. Further, no impacts on police services were expected, because the refinery has its own on-site security department. The November 2000 Draft EIR and May 2001 Final EIR also concluded that the project would have no significant adverse impacts on local fire departments, because the refinery has its own on-site fire department, and the project would not require local fire departments to increase their personnel or equipment levels. In sum, no significant adverse public services impacts were expected.

Solid/Hazardous Waste – The May 2001 Final EIR concluded that the volume of non-hazardous waste that potentially would be generated by the overall CARB Phase 3/MTBE Phase-out project during construction and operation would have no significant adverse impacts on the capacity of waste disposal facilities in southern California. Project excavation in the “Northeast Property” of the refinery would be minimized because this location is a former Johns Manville asbestos facility, and as such, would continue to adhere to an established Soil Handling Plan. Further, soil disturbance in that area would be conducted in a manner that would minimize potential airborne asbestos fibers. Established and appropriate handling, sampling, storing, etc., procedures would be followed if asbestos-containing materials (ACM) were uncovered.

Transportation/Traffic – The May 2001 Final EIR concluded that the CARB Phase 3/MTBE Phase-out project would not have significant adverse traffic impacts for the following reasons: 1) incremental construction traffic would not change traffic flow conditions near the refinery; 2) the minimal increase in operational employee traffic (a total of 10 new operational employees for the overall CARB Phase 3 project), and 3) the small estimated increase in truck traffic during the operation phase would have no significant impacts on traffic conditions. The Final EIR indicated that adequate off-street parking would need to be established inside the refinery to accommodate the peak project construction work force.

7.2 Currently Proposed Project Modifications

This Addendum evaluated the 17 environmental topics as required by CEQA and eliminated 15 of the 17 topics from further consideration. The 15 topic areas found not to be significant are presented below, along with a summary of the basis for this finding in each topic.

Aesthetics – The proposed modifications that are the subject of this Addendum would involve construction of one new reactor and one new vessel. However, the size of the reactor and the vessel would be smaller than nearby refinery equipment, and would be located within the interior of the refinery. As such, the proposed modifications are not expected to be visually intrusive, or have significant visual impacts from off-site locations. Thus, the currently proposed modifications to the project would not be expected to result in significant adverse aesthetic impacts.

Agricultural Resources – The currently proposed modifications that are the subject of this Addendum will occur within the existing refinery boundaries. Neither the refinery nor the surrounding industrial area contains agricultural resources and thus, the currently proposed modifications would not result in significant adverse impacts on agricultural resources.

Biological Resources – Construction and operational activities associated with the currently proposed project modifications will occur within the boundaries of the existing refinery, which is already highly disturbed and devoid of plant and animal species. Thus, no significant adverse impacts to biological resources would be expected.

Mineral Resources – There are no known mineral resources at the BP Carson Refinery. Because the currently proposed modifications will take place within the existing refinery boundary, there would be no significant adverse impacts on mineral resources.

Population and Housing – The large construction work force in the greater Los Angeles area could easily accommodate the project's proposed increase in labor requirements during construction without requiring in-migration of workers and their families that would represent population growth. Operational employment at the refinery would be unaffected by the currently proposed modifications. Since there would be no increase in population, and no significant adverse impacts on existing housing (because the project would take place within the boundary of the existing refinery), the currently proposed modifications would have no significant adverse impacts on housing. In sum, no significant adverse impacts on population and housing would be expected.

Recreation – The currently proposed modifications to the project that are the subject of this Addendum are not expected either to involve a change in population that would increase demand on recreational facilities or to cause negative effects on existing recreational facilities. Thus, the currently proposed project would not be expected to have significant adverse impacts on recreational facilities.

Cultural Resources – Construction of the other components of the CARB Phase 3/MTBE Phase-out project did not encounter cultural resources. As the construction and operational activities associated with the currently proposed project modifications will occur within the confines of the refinery boundaries, with implementation of the same mitigation measures as were detailed in the May 2001 Final EIR (e.g., worker orientations, archaeological monitoring, halting work if resources are encountered during construction), cultural resources impacts of the currently proposed project would be less than significant.

Energy – There would be a small increase in gasoline use for the additional daily construction worker commute trips compared to the MTBE Unit conversion as analyzed in the May 2001 Final EIR (peak work force of 65 for the current proposed modifications compared to 30 for the MTBE Unit conversion as analyzed in the May 2001 Final EIR; this compares to a peak work force of 310 for the overall CARB Phase 3/MTBE Phase-out project as analyzed in the May 2001 Final EIR). The electrical load of the currently proposed project modifications would represent a small (40 HP) incremental increase compared to the MTBE Unit conversion as analyzed in the May 2001 Final EIR (from 450 HP in the May 2001 Final EIR to 490 HP for the current proposed modification). The overall CARB Phase 3/MTBE Phase-out project as analyzed in the May 2001 Final EIR would have a less-than-significant impact on energy resources, and the proposed project modifications do not substantially increase energy demand. Thus, the proposed project modifications would have less-than-significant energy impacts.

Geology and Soils – The currently proposed project modifications would occur in the same area of the Refinery as was evaluated in the May 2001 Final EIR and would involve minimal grading and non-expansive soils. The currently proposed project would use standard construction practices that would adequately control erosion and runoff, and would adhere to the requirements of the Uniform Building Code for Seismic Zone 4. Thus, the impacts of the currently proposed project modifications on geology and soils would be less than significant.

Hydrology and Water Quality – The currently proposed modifications would use small additional amounts of water (approximately 760 gallons per day of makeup water), and generate minimal amounts of additional process wastewater (less than 50 gallons per day). The currently proposed modifications would also use up to approximately 20,300 gallons of non-potable water obtained from BP's own wells once each year for washing of spent catalyst and would generate a similar amount of wastewater (up to 20,300 gallons) after the water has been used for catalyst washing. The overall CARB Phase 3/MTBE Phase-out project as analyzed in the May 2001 Final EIR would use approximately 110,000 gallons per day in additional makeup water. The SCAQMD significance criterion for water demand is five million gallons per day. Water consumption associated with the overall CARB Phase 3/MTBE Phase-out project, including the currently proposed MTBE Unit conversion, is a small fraction of the impact significance criterion, and thus, the currently proposed project modifications would have less-than-significant water supply impacts. Further, the currently proposed project modifications are not expected to: 1) substantially change surface runoff volumes or patterns; or 2) increase the risk of contaminating groundwater resources. Thus, the currently proposed modifications to the project would not result in significant adverse impacts on hydrology and water quality.

Land Use – Construction and operation of the currently proposed modifications: 1) would occur within the existing property boundaries of the BP Carson Refinery, an area that is zoned, planned, and currently used for industrial activities; 2) would not alter land uses within the facility and; 3) would be consistent with land uses in the area of the refinery. For these reasons, the currently proposed modifications addressed in this Addendum would have no significant adverse impacts on land use or zoning.

Noise – Construction of the currently proposed project modifications would involve similar noise-emitting equipment as the CARB Phase 3/MTBE Phase-out project assessed in the

May 2001 Final EIR. Overall CARB Phase 3 project construction, including the MTBE-Unit conversion construction activities as they were contemplated at the time of the Final EIR, was predicted to have less-than-significant noise impacts. Noise impacts during construction of the currently proposed project modifications are expected to be similar to noise impacts during construction identified in the May 2001 Final EIR, because similar types of construction equipment are expected to be used. The currently proposed project modifications would not create significant new operational noise sources or modify existing noise sources that would cause noise audible over the existing noise at the refinery. Thus, the currently proposed modifications would not be expected to result in significant adverse noise impacts during construction or operation.

Public Services – No significant adverse impacts on schools, parks, or other public facilities are expected because the currently proposed modifications would not cause population increases. No impacts on police or fire services are expected because the refinery has its own security and fire departments, and the currently proposed project would not require local police or fire departments to increase their personnel or equipment levels. In sum, the currently proposed modifications would be expected to have no significant adverse impacts on public services.

Solid/Hazardous Waste – During construction, the currently proposed modifications would be expected to generate small amounts of normal non-hazardous construction wastes (e.g., trash, such as packaging materials), up to several hundred pounds of hazardous waste (paint and solvent waste) and less than 100 gallons of used motor oil. This would be similar to the volumes for the MTBE Unit conversion estimated in the May 2001 Final EIR. During operations, the project would generate small amounts of paint and solvent waste from normal maintenance activities. Operation of the Iso-octene Unit will generate up to approximately 5,600 cubic feet of spent catalyst per year; this material cannot be economically recycled, but is a non-hazardous waste that can be disposed of in a Class III (municipal) landfill. These waste volumes during construction and operation are not expected to substantially affect the disposal capacities of California's solid or hazardous waste disposal facilities. Because the MTBE Unit, which is the focus of the currently proposed project, is not located in the refinery's Northeast Property, no special ACM concerns are anticipated. In sum, hazardous and non-hazardous waste generation during both construction and operation of the currently proposed modifications would be less than significant.

Transportation/Traffic –The currently proposed modifications to the project would involve a peak construction work force of 65 workers, which is an increase of 35 workers compared to the MTBE Unit conversion as analyzed in the May 2001 Final EIR. The overall CARB Phase 3/MTBE Phase-out project analyzed in the May 2001 Final EIR involved a peak construction workforce of 350 workers; this peak workforce was not expected to cause significant adverse traffic impacts. The total peak project construction traffic volumes, including the 35 additional construction workers needed for the currently proposed project modifications, would not result in significant adverse traffic impacts, and thus, no significant impacts would be expected from the currently proposed MTBE Unit conversion. The currently proposed MTBE Unit modifications would involve no new operational employees, and thus would have minimal traffic impacts. In sum the currently proposed project modifications would be expected to have no significant adverse traffic impacts during construction or operation.

8.0 CONCLUSIONS

In 2004, BP proposed a modification to the portion of the project evaluated in the May 2001 Final EIR that involved conversion of the existing MTBE Unit to produce iso-octene. As shown in Sections 6.0 and 7.0, the analysis of the currently proposed project modifications indicated that they would not create new significant adverse impacts in any environmental areas analyzed in the May 2001 Final EIR or make substantially worse any existing significant adverse impacts. Based on the environmental analysis prepared for the currently proposed project modification, the SCAQMD has quantitatively and qualitatively demonstrated that the proposed project modification qualifies for an Addendum to make the previously certified May 2001 Final EIR complete.

9.0 REFERENCES

- California Air Resources Board. 1999. Proposed California Phase 3 Reformulated Gasoline Regulations: Staff Report: Initial Statement of Reasons. October.
- South Coast Air Quality Management District. 1993. CEQA Air Quality Handbook. November.
- South Coast Air Quality Management District. 2000. Initial Study for the Draft Environmental Impact Report for: ARCO California Air Resources Board (CARB) Phase 3/Methyl Tertiary Butyl Ether (MTBE) Phase-out Project. June.
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- South Coast Air Quality Management District. 2001. Final EIR for the ARCO California Air Resources Board (CARB) Phase 3/Methyl Tertiary Butyl Ether (MTBE) Phase-out Project. May.