CHAPTER 6

ALTERNATIVES

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6.0 PROJECT ALTERNATIVES

6.1 INTRODUCTION

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

Alternatives presented in this chapter were developed by reviewing alternatives to achieve most or some of the objectives of the proposed project. Consequently, each project alternative described below is similar to the proposed project in most respects. The rationale for selecting specific components of the proposed project on which to focus the alternatives analysis rests on CEQA's requirements to present a range of reasonable project alternatives that could feasibly attain the basic objectives of the project, while generating fewer or less severe adverse environmental impacts. The objectives of the proposed project are as follows:

- Comply with SCAQMD Rule 1105.1 - PM10 and Ammonia Emissions from FCCUs;
- Comply with SCAQMD Rule 1118 – Control of Emissions from Refinery Flares, and Rule 1173 - Control of Volatile Organic Compound Leaks and Releases from Components at Petroleum Facilities and Chemical Plants by maximizing the collection of vent gas streams with higher sulfur content;
- Improve the efficiency, availability and performance of vapor recovery systems;
- Comply with the settlement agreement between the SCAQMD and BP;
- Ensure that there is no increase in the annual average concentration of total reduced sulfur in the Refinery because of the proposed project by improving the operational efficiency and optimizing operations of the FCCU, FFHDS Unit, Alky Merox Unit, Alkylation Unit, Hydrocracker Unit, and Sulfur Plant; and
- Produce additional quantities of low sulfur gasoline, and ultra low sulfur diesel and jet fuel without increasing the crude throughput capacity of the BP Carson Refinery.

The proposed project involves modifications to a number of different units. The alternatives presented in this chapter include modifications to aspects of the specific equipment or operations of the proposed project that would still allow the Refinery to meet some or most of the objectives of the proposed project.

Section 15126.6(f) of the CEQA Guidelines stipulates that the range of alternatives required in an EIR is governed by a rule of reason in that the EIR must discuss only those alternatives "necessary to permit a reasoned choice" and those that could feasibly attain most of the basic objectives of the proposed project.

The project alternatives were developed by modifying one or more components of the proposed project taking into consideration the project's limitations as to space, permitting requirements, and compliance agreement stipulations. Unless otherwise stated, all other components of each project alternative are identical to the proposed project. The identified feasible project alternatives as well as the alternatives rejected as infeasible are discussed further below.

Aside from the alternatives described below, no other project alternatives were identified that met the objectives of the proposed project, while substantially reducing significant adverse environmental impacts.

6.2 ALTERNATIVES REJECTED AS INFEASIBLE

In accordance with CEQA Guidelines §15126.6(c), a CEQA document should identify any alternatives that were considered by the lead agency, but were rejected as infeasible during the scoping process and briefly explain the reason underlying the lead agency's determination.

Section 15126.6(c) also states that among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (1) failure to meet most of the basic project objectives; (2) infeasibility; or (3) inability to avoid significant environmental impacts. Furthermore, CEQA Guidelines §15126.6(f)(2)(B) indicates that if the lead agency concludes that no feasible alternative locations for the project exist, it must disclose the reasons for this conclusion, and should include the reasons in the EIR.

Alternative to Modifications to Vapor Recovery System: BP's existing vapor recovery system collects vent gases from process units and tanks, which otherwise would vent to flares or the atmosphere, and treats the gas which is then used as refinery fuel. Consequently, the vapor recovery collection system operates under vacuum. All other sources not collected by vapor recovery, vent to the flares. The vapor recovery system is comprised of multiple compressors and has a combined maximum compression capacity of 355,000 standard cubic feet per hour (SCFH). BP is currently operating below this level because one 95,000 SCFH vapor recovery compressor (the No. 7 unit) is not functional.

As part of the March 2005 settlement agreement between the SCAQMD and the BP Carson Refinery, BP agreed to implement a Supplemental Environmental Project (SEP) which would increase the capabilities of the existing vapor recovery system to collect and treat vent gases that would otherwise vent to the Refinery flares, with a priority placed on

maximizing collection of vent gas streams with high sulfur content. The SEP requires BP to increase the total vapor compression capacity by a minimum of 195,000 SCFH. BP proposes to accomplish part of this obligation by replacing the No. 7 vapor recovery compressor with a new 95,000 to *140,000* SCFH vapor recovery compressor, intercooler, and knockout drum. This will restore the compression capacity in the Vapor Recovery Unit to *at least* 355,000 SCFH. In addition, the SEP requires BP to invest at least $20 million towards achieving the remaining 100,000 SCFH of vapor compression capacity. BP elected to install this compression capacity as a flare gas recovery system on the Coker Flare, the flare with the highest sulfur content.

An alternative to installing a vapor recovery compressor on the Coker Flare would be to install additional capacity in the existing vapor recovery unit and reroute vents from the flares to the vapor recovery system. This alternative was rejected because:

- It would put high-pressure gases into a vacuum system and decrease its efficiency.
- It would require extensive modifications to the existing vapor recovery header system to handle the increased flow.
- It would require major modifications to the hydrogen sulfide treatment system within the Vapor Recovery unit to increase its capacity to treat the additional gas.
- It would not recover flare header purges or relief valve leakage that would continue to vent to the flare.
- It would not recover small relief valve releases or portions of large relief valve releases, typically high in hydrogen sulfide.
- It would be less efficient in collecting all of the high sulfur containing gases in the Refinery.

This alternative was rejected as infeasible because the amount of gas and sulfur recovered would not be as great as the proposed project, but would have similar or potentially greater environmental impacts.

Alternatives to Flare Gas Recovery Project: The North Area Flare Gas Recovery project will recover gas from the FCCU, Hydrocracker, Flare No. 5 and the FFHDS flares, and will be implemented to comply with Rule 1118. As previously noted, all hydrocarbon vents in the Refinery are vented either to the vapor recovery unit or to the flares. An alternative would be to route all process vents to the vapor recovery unit. The vapor recovery unit does not have the capacity to process all the gas that would be collected by the North Area Flare Gas Recovery Project. This alternative was rejected because:

- To relocate hundreds of connections from one collection system to another and then make major modifications to that system to increase its capacity is not feasible.

- It would put high-pressure gases into a vacuum system and decrease its efficiency.

- It would not recover flare header purges or relief valve leakage that would continue to vent to the flare.

- It would not recover small relief valves releases or portions of large relief valve releases, typically high in hydrogen sulfide.

Because of the above reasons, this alternative was rejected as infeasible.

Alternative Sites: The refinery has limited space for new units. The flare gas recovery compressor for the Coker Flare, the North Area Flare Gas Recovery Project compressors, and their supporting infrastructure require significant plot space. Alternate sites are not feasible because:

- There is not enough plot space elsewhere in the Refinery where the equipment and supporting infrastructure for both projects can be located together.

- If the projects were sited separately, either there is not sufficient space for two different sites or extensive modifications would be required to the surrounding facilities to meet current code and safety requirements.

- Separate sites would require more equipment and consequently, would result in additional fugitive emissions.

- The compressor sites would be located so far from the sources that the new recovery systems would not work.

An alternative location to the BP Refinery site is also not feasible as the proposed project consists of modifications to an existing refinery that contains necessary processing units; natural gas, water, and electric transmission infrastructures; petroleum product transportation infrastructure; and the appropriate land use designation necessary to support the project. Advantages of the existing Refinery site would be lost if another location were proposed. The development of a new refinery in an alternative location would require substantially more equipment, construction, and potentially generate substantially greater impacts in many environmental categories (e.g., air quality, energy, noise, traffic, and hazards) than the proposed project. Therefore, an alternative Refinery site for the proposed project is not feasible.

6.3 DESCRIPTION OF THE PROJECT ALTERNATIVES

6.3.1 ALTERNATIVE 1 – NO PROJECT ALTERNATIVE

CEQA Guidelines § 15126.6 (e) requires evaluation of a "No Project Alternative". Under the "No Project Alternative," no Refinery modifications would occur. The proposed modifications to the FCCU, FFHDS Unit, Alky Merox Unit, Alkylation Unit, Hydrocraker Unit, Coker Gas Debutanizer Pressure Relief Valve, Sulfur Plant, Vapor Recovery Systems, and the North Area Flare System would not occur and the Refinery would continue to operate under its current configuration.

The "No Project Alternative" would not meet the objectives of the proposed project which include: (1) compliance with SCAQMD Rule 1105.1, Rule 1118, and Rule 1173 as well as attain compliance with the March 2005 settlement agreement between the SCAQMD and BP; (2) improve the efficiency, availability, and performance of vapor recovery systems; (3) improve operational efficiency and optimize operations of the FCCU, FFHDS Unit, Alky Merox Unit, Alkylation Unit, Hydrocracker Unit, and Sulfur Plant; and (4) produce additional quantities of low sulfur gasoline, and ultra low sulfur diesel and jet fuel without increasing the crude throughput capacity of the BP Carson Refinery.

6.3.2 ALTERNATIVE 2 – COMPLIANCE PROJECTS ONLY

Under Alternative 2, only the projects that are required to comply with rules, regulations and requirements would be completed. Under this alternative only the changes to the FCCU to comply with SCAQMD Rule 1105.1, the FFHDS modifications, Coker Gas Debutanizer Pressure Relief Valve, Vapor Recovery System, and North Area Flare Gas Recovery would occur. The FCCU upgrades, Alky Merox Unit modifications, Alkylation Unit modifications, Hydrocracker Unit modifications, and Sulfur Plant modifications would not occur. One of the objectives of the FCCU, Alky MeroxUnit, Alkylation Unit, Hydrocracker Units Optimization projects is to produce additional clean fuels without increasing refinery throughput. The proposed project provides a benefit to the public by increasing the low sulfur clean gasoline and diesel pools available to the general public while not increasing crude throughput. Alternative 2 is not expected to provide additional quantities of low sulfur gasoline and diesel. Additionally, Alternative 2 would not achieve the Refinery's objective to improve operational efficiency and optimize operations of the FCCU, Alky Merox Unit, Alkylation Unit, Hydrocracker Unit, and Sulfur Plant.

6.3.3 ALTERNATIVE 3 – ALTERNATIVE TO CONTROL STRATEGIES FOR SCAQMD RULE 1105.1 COMPLIANCE

Alternative 3 proposes an alternative strategy for complying with SCAQMD Rule 1105.1. BP is proposing to comply with SCAQMD Rule 1105.1-PM10 and Ammonia Emissions from Fluid Catalytic Cracking Units by replacing the existing ESPs with one new dual chamber ESP. Under Alternative 3, BP would comply with Rule 1105.1 by installing a wet gas scrubber. The project under Alternative 3 would remain the same as the proposed project described in Chapter 2, except for the air pollution control equipment that BP would use to comply with SCAQMD Rule 1105.1. Under Alternative 3, the existing ESPs would be removed. A new duct would be installed to direct the FCCU flue gas from the waste heat boiler to the existing SCR Unit. The FCCU flue gas from the existing SCR Unit would be sent to the new wet gas scrubber. The FCCU flue gas from the wet gas scrubber would be discharge to the atmosphere via a wet gas scrubber stack. Alternative 3 may achieve all of the project objectives, pending further engineering review, but would potentially increase combustion emissions (e.g., NOx, VOC, SOx, CO, and PM10), as well as consume more energy and natural resources.

6.4 ENVIRONMENTAL IMPACTS FROM THE PROJECT ALTERNATIVES

6.4.1 ALTERNATIVE 1 – NO PROJECT ALTERNATIVE

Air Quality: Air quality impacts associated with construction under Alternative 1 would be eliminated (see Table 4-7) because no construction activities would be required. Construction emissions associated with the proposed project were considered significant for CO, VOC, NOx, and PM10. Under Alternative 1, air quality impacts during construction would be less than significant.

The emissions associated with the operational phase of Alternative 1 would be less than the proposed project since no new or modified units are required under this Alternative. Therefore, the emissions identified in Table 4-4 (including 13 lbs/day of CO, *52* ~~36~~ lbs/day of VOC, 20 lbs/day for NOx, less than one lb/day of SOx, and 15 lbs/day of PM10), would be eliminated. The No Project Alternative would eliminate all emission increases and all emission benefits associated with the proposed project during the operational phase. The operational emissions from the proposed project were considered to be less than significant. Consequently, Alternative 1 would result in no significant air quality impacts.

Alternative 1 would eliminate the increased toxic air contaminant emissions and the associated health risks. The health risks associated with the proposed project (both carcinogenic and non-carcinogenic) were considered to be less than significant. Under Alternative 1 the Sulfur Recovery Plant would continue to use DEA, which is considered to be a hazardous air pollutant under the Clean Air Act 112(b). The proposed project would replace DEA with MDEA, which is not considered a hazardous air pollutant.

Hazards: The No Project Alternative would eliminate the potentially significant hazard impacts associated with the Hydrocracker Unit, FCCU, Alkylation Unit and Alky Merox Unit. While the hazard impacts associated with these modifications are considered to be significant, the potential hazards are largely confined to the industrial area near the Refinery, where workers often have safety training and access to safety equipment is readily available.

Under Alternative 1 the Sulfur Recovery Plant would continue to use, store and transport DEA, which is considered to be a hazardous air pollutant under the Clean Air Act 112(b). The proposed project would replace DEA with MDEA, which is not considered a hazardous air pollutant.

Other than DEA, the No Project Alternative is not expected to increase the amount of hazardous materials transported to or from the Refinery. Therefore, no increase in transportation hazards is expected from the No Project Alternatives.

Noise: The No Project Alternative would eliminate the increase in noise during both the construction and operational phases. The proposed project is expected to increase the noise levels at the Refinery due to operation of construction equipment and new Refinery equipment. The increased noise levels associated with the proposed project were considered less than significant during both the construction and operational phase of the proposed project as no noticeable noise increase is expected. Implementation of the No Project Alternative would eliminate the potential noise impacts and the impacts would remain less than significant.

Traffic/Transportation: The No Project Alternative would eliminate traffic associated with construction activities since no portion of the proposed project would be constructed. The construction traffic impacts associated with the proposed project are considered to be significant; however, mitigation measures are expected to reduce the traffic impacts to less than significant. The No Project Alternative would eliminate traffic impacts as no construction activities would be required. The proposed project impacts on traffic during the operational phase were considered to be less than significant and they would remain less than significant under this alternative. The No Project Alternative would eliminate construction and operation traffic impacts associated with the proposed project.

6.4.2 ALTERNATIVE 2 – COMPLIANCE PROJECTS ONLY ALTERNATIVE

Air Quality: Air quality impacts associated with construction under Alternative 2 would be reduced because of the reduced number of modifications that would be required. Construction emissions associated with the proposed project were considered significant for CO, VOC, and NOx.

Construction emissions under Alternative 2 would be less than the proposed project because fewer construction activities would take place. Under this alternative only the

changes to the FCCU to comply with SCAQMD Rule 1105.1, the FFHDS modifications (modifications help comply with Rule 1105.1), Coker Gas Debutanizer Pressure Relief Valve (modifications required to comply with Rule 1173), Enhanced Vapor Recovery System (an SEP required to comply with the March 2005 settlement agreement), and North Area Flare Gas Recovery (required to comply with Rule 1118) would occur. The FCCU upgrades, Alky Merox Unit modifications, Alkylation Unit modifications, Hydrocracker Unit modifications, and Sulfur Plant modifications would not occur. The construction emissions under Alternative 2 are estimated in Table 6-1.

Based on Table 6-1, the construction emissions of CO, SOx, and PM10 are expected to be less than the significance thresholds under Alternative 2 and, thus, less than significant. The emissions of VOC and NOx are expected to exceed the significance thresholds under Alternative 2. Thus, significant air quality impacts of VOC and NOx are expected during the construction phase under Alternative 2.

TABLE 6-1

Alternative 2
Estimated Peak Construction Emissions(1)
(lbs/day)

ACTIVITY	CO	VOC	NOx	SOx	PM10
Construction Equipment	332.29	81.11	763.91	59.35	44.02
Vehicle Emissions	196.71	22.73	68.98	0.18	1.92
Fugitive Dust From Construction(2)	--	--	--	--	48.05
Fugitive Road Dust(2)	--	--	--	--	47.05
Architectural Coatings	--	28.08	--	--	--
Total Construction Emissions	529.0	131.92	832.89	59.53	141.03
SCAQMD Threshold Level	550	75	100	150	150
Significant?	NO	YES	YES	NO	NO

(1) Peak emissions for all pollutants predicted to occur during November 2007.
(2) Assumes application of water three times per day.

The emission increases associated with the operational phase of Alternative 2 would be less than the proposed project since the modifications would be limited to those required to comply with rules and regulations. The total operational emissions would be limited to about *38.4* ~~33.9~~ pounds per day of VOC emissions (includes the FFHDS, Coker Gas Debutanizer, Vapor Recovery System, ~~and~~ Flare modifications, *and modifications to pressure relief valves*, see Table 4-4). The other stationary source emissions (about *11.6* ~~0.2~~ pound per day of VOC) identified in Table 4-4 would be eliminated. The emissions associated with the mobile sources (e.g., trucks) would be expected to occur under Alternative 2 (see Table 4-4). The operational emissions from the proposed project were

considered to be less than significant. Consequently, Alternative 2 would result in no significant air quality impacts during project operation.

Alternative 2 would have about the same toxic air contaminant emissions and the associated health risks as the proposed project (because the VOC emissions *from stationary sources* are *similar* ~~essentially the same~~ at *38.4 vs 50* ~~33.9 vs 34.1~~ pounds per day); therefore, the health risks associated with the proposed project would also be reduced. The health risks associated with the proposed project (both carcinogenic and non-carcinogenic) were considered to be less than significant. Under Alternative 2, the Sulfur Recovery Plant would continue to use DEA, which is considered to be a hazardous air pollutant under the Clean Air Act 112(b). The proposed project would replace DEA with MDEA, which is not considered a hazardous air pollutant.

Hazards: Alternative 2 would eliminate the potentially significant hazard impacts associated with the Hydrocracker Unit, FCCU, Alkylation Unit and Alky Merox. While the hazard impacts associated with these modifications is considered to be significant, the potential hazards are largely confined to the industrial area near the Refinery, where workers often have safety training and access to safety equipment is readily available.

The Refinery would continue to transport DEA under Alternative 2, which is considered a hazardous air pollutant. Other than DEA, Alternative 2 is not expected to increase the amount of hazardous materials transported to or from the Refinery. Therefore, no increase in transportation hazards is expected from Alternative 2.

Noise: The proposed project is expected to increase the noise levels at the Refinery due to operation of construction equipment and new Refinery equipment. The increased noise levels associated with the proposed project were considered less than significant during both the construction and operational phase of the proposed project as no noticeable noise increase is expected. Implementation of Alternative 2 is expected to require less construction activities than the proposed project because fewer Refinery units would be modified, so noise impacts are expected to be less than the proposed project, and less than significant.

Operational noise impacts associated with Alternative 2 are expected to be less than the proposed project as less noise sources would be installed at the Refinery. However, the major noise generating sources included as part of the project are:

- New compressors and pumps associated with the North Area Flare Gas Recovery project;

- New pumps and compressors associated with the Enhanced Vapor Recovery Project; and

- New pumps and motors associated with modifications to the Hydrocracker Unit.

Alternative 2 would only eliminate the new pumps and motors associated with the Hydrocracker. The pumps and compressors associated with the North Area Flare Gas Recovery and Enhanced Vapor Recovery Projects would still be installed. The location of the new equipment is a sufficient distance from sensitive receptors so that noise impacts under Alternative 2 are expected to remain less than significant.

Traffic/Transportation: The construction traffic impacts associated with the proposed project are considered to be significant; however, mitigation measures are expected to reduce the traffic impacts to less than significant. Alternative 2 would result in less construction activities so that fewer workers and less traffic impacts would be expected. Traffic/transportation impacts during construction of Alternative 2 would be expected to be mitigated to less than significant.

The proposed project impacts on traffic during the operational phase were considered to be less than significant and they would remain less than significant under this alternative. Alternative 2 would be expected to require about the same number of workers (four) and trucks (eight trucks per day) as the proposed project during the operational phase.

6.4.3 ALTERNATIVE 3 - ALTERNATIVE CONTROL STRATEGIES FOR SCAQMD RULE 1105.1 COMPLIANCE

Air Quality: Air quality impacts associated with construction under Alternative 3 are expected to be about the same as the proposed project because similar construction activities would be required. The project under Alternative 3 would remain the same as the proposed project described in Chapter 2, except for the air pollution control equipment that BP would use to comply with SCAQMD Rule 1105.1. Mitigated construction emissions associated with the proposed project were considered significant for CO, VOC, and NOx, and are also expected to be significant under Alternative 3.

The emissions associated with the operational phase of Alternative 3 are expected to be higher than the proposed project due to the plume mitigation system. Compliance with Rule 1105.1 under Alternative 3 would be achieved using a wet gas scrubber, which would be expected to control emissions to a similar level as ESPs. The wet gas scrubber would be expected to require a plume mitigation system, since the scrubber would be expected to generate a visible steam plume, generating potential significant aesthetic impacts. The plume could be mitigated by a steam plume mitigation system that consists of a heat recovery system followed by a direct-fired trim heater or just a direct-fired trim heater. Additional emissions would be expected from the direct-fired heater (with a maximum firing rate of about 50-90 mm BTU/hr). This heater would be required to utilize natural gas, which would increase energy impacts associated with the project. In addition, it would be expected to increase combustion emissions, including CO, VOCs, NOx, SOx, and PM10. Therefore, the emissions associated with Alternative 3 are expected to be greater than the proposed project, but less than significant during operation, due to the requirement to use BACT.

Alternative 3 would result in a slight increase in toxic air contaminants associated with the increase in combustion emissions related to the direct-fired heater. The toxic air contaminant emissions and the associated health risks from Alternative 3 are expected to be similar to the proposed project; therefore, the health risks are expected to be less than significant. The health risks associated with the proposed project (both carcinogenic and non-carcinogenic) were considered to be less than significant. Under Alternative 3, the Sulfur Recovery Plant would eliminate the use of DEA, which is considered to be a hazardous air pollutant under the Clean Air Act 112(b) and replace DEA with MDEA, which is not considered a hazardous air pollutant.

Hazards: Alternative 3 is expected to have the same hazard impacts as the proposed project and the hazard impacts are expected to be significant due to modifications to the the Hydrocracker Unit, FCCU, Alkylation Unit and Alky Merox. Alternative 3 would generate the same hazard impacts, resulting in the conclusions compared to the proposed project. Therefore, the hazard impacts would be significant for both the proposed project and Alternative 3. Alternative 3 is not expected to increase the amount of hazardous materials transported to or from the Refinery. Therefore, no increase in transportation hazards is expected from Alternative 3.

Noise: The proposed project is expected to increase the noise levels at the Refinery due to operation of construction equipment and new Refinery equipment. The increased noise levels associated with the proposed project were considered less than significant during both the construction and operational phase of the proposed project as no noticeable noise increase is expected. Implementation of Alternative 3 is expected to require the same level of construction activities as the proposed project so noise impacts are expected to be similar to the proposed project, and less than significant.

Operational noise impacts associated with Alternative 3 are expected to be about the same as the proposed project as the noise from ESPs and wet gas scrubbers is about the same. Further, the location of the equipment is a sufficient distance to result in impacts to sensitive receptors. Noise impacts under Alternative 3 are expected to remain less than significant.

Traffic/Transportation: The construction traffic impacts associated with the proposed project are considered to be significant; however, mitigation measures are expected to reduce the traffic impacts to less than significant. Alternative 3 would be expected to require about the same construction activities as the proposed project. Therefore, traffic/transportation impacts during construction of Alternative 3 would be expected to be mitigated to less than significant.

The proposed project impacts on traffic during the operational phase were considered to be less than significant and they would remain less than significant under this alternative. Alternative 3 would be expected to require about the same number of permanent workers four) and trucks (eight per day) as the proposed project.

Other Environmental Impacts: The proposed project impacts on aesthetics were considered to be less than significant (see Appendix A, NOP/IS). Installation of a wet gas scrubber could result in potentially significant adverse aesthetics impacts. The scrubber would be expected to generate a visible steam plume from about a 200-foot stack. This plume would be noticeable to the surrounding community because of its height and size. The plume could be mitigated by a steam plume mitigation system that consists of a heat recovery system followed by a direct-fired trim heater.

The proposed project impacts on hydrology and water quality were considered to be less than significant (see Appendix A, NOP/IS). Installation of a wet gas scrubber could result in potentially significant adverse water impacts as an increase in water demand would be required. About 550 gallons per minute (792,000 gallons per day) of water would be required resulting in a substantial increase in water used and wastewater discharged. Therefore, the impacts of Alternative 3 on hydrology and water quality are substantially greater than for the proposed project, but would not likely exceed the SCAQMDs water demand significance threshold of five million gallons per day.

As mentioned in the air quality section, Alternative 3 would be expected to require a heater for plume suppression, with a maximum firing rate of about 50-90 mmBTU/hr, increasing the natural gas consumption and related energy impacts associated with the proposed project. The energy impacts are not expected to be significant due to the availability of natural gas and existing infrastructure in place to supply natural gas to the Refinery.

6.5 CONCLUSION

Table 6-2 compares the potential environmental impacts of the various alternatives relative to the proposed project. Based on the analyses herein, no feasible alternatives were identified that would reduce or eliminate the potentially significant air quality or hazard impacts related to the proposed project and achieve the objectives of the proposed project.

The No Project Alternative (Alternative 1) would: (1) prevent BP from complying with SCAQMD Rule 1105.1, 1118 or 1173; (2) prevent BP from complying with the settlement agreement; (3) prevent BP from improving safety at the Refinery; and (4) prevent BP from producing additional quantities of low sulfur gasoline, and ultra low sulfur diesel and jet fuel without increasing the crude throughput capacity of the BP Carson Refinery. However, the No Project Alternative would eliminate the potentially significant impacts related to air quality during construction activities and hazards/hazardous materials impacts during operation.

Alternative 2 would result in significant impacts to air quality during construction activities but would eliminate the potentially significant impacts associated with the hazards due to the modifications to the FCCU, Hydrocracker Unit, Alkylation Unit, and Alky Merox Unit. Therefore, Alternative 2 would be considered the environmentally

superior alternative as it would eliminate one of the potentially significant impacts (hazards). However, Alternative 2 would not allow the Refinery to meet the project objective of producing additional quantities of low sulfur gasoline, and ultra low sulfur diesel and jet fuel without increasing the crude throughput capacity of the Refinery. Therefore, the proposed project is preferred because it would attain all project objectives.

Alternative 3 would have similar impacts to the proposed project for hazards/hazardous materials, noise and traffic. Alternative 3 could have potentially greater impacts than the proposed project on aesthetics, air quality, water demand/water quality, and energy. Therefore, the proposed project is preferred because it would attain all project objectives, with potentially fewer environmental impacts.

TABLE 6-2

Environmental Impacts of Alternatives
As Compared to Proposed Project

ENVIRONMENTAL TOPIC	Proposed Project	Alternative 1(1)	Alternative 2(1)	Alternative 3(1)
Air Quality				
Construction	S	NS(-)	S(-)	S(=)
Operation	NS	NS(-)	NS(=)	NS(+)
Toxic Air Contaminants	NS	NS(-)	NS(=)	NS(+)
Hazards and Hazardous Materials				
Operation	S	NS(-)	NS(-)	S(=)
Transportation Risks	NS	NS(+)	NS(+)	NS(=)
Noise				
Construction	NS	NS(-)	NS(-)	NS(=)
Operation	NS	NS(-)	NS(-)	NS(=)
Transportation/Circulation				
Construction	MNS	NS(-)	MNS(-)	MNS(=)
Operation	NS	NS(-)	NS(=)	NS(=)

(1) See pages 6-3 and 6-4 for further details.

Notes:
S = Significant
NS = Not Significant
MNS = Mitigated, Not Significant
(-) = Potential impacts are less than the proposed project.
(+) = Potential impacts are greater than the proposed project.
(=) = Potential impacts are approximately the same as the proposed project.

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