5.0 PROJECT ALTERNATIVES

5.1 Introduction

The following sections identify and compare the relative merits of alternatives to the proposed project, as required by the CEQA guidelines. According to CEQA Guidelines § 15126.6 (a), "An EIR shall describe a range of reasonable alternatives to the proposed project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project…"The alternatives presented in this section have been selected based on the assumption that each is potentially capable of reducing or eliminating significant effects of one or more aspects of the project.

Section 15126.6 (c) of the CEQA Guidelines states that the EIR should identify alternatives that were considered but rejected as infeasible. No alternatives were considered and rejected as infeasible during the scoping process for this EIR.

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 project. The CEQA Guidelines also state in § 15126.6 (f) (2) (B) 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.

In accordance with Public Resources Code § 21178(g), which applies specifically to this type of reformulated gasoline EIR, the "no project" alternative and alternative sites outside of existing refinery boundaries are not discussed in this EIR.

Seven project alternatives (four alternatives and three sub-alternatives) are proposed for consideration. Project alternatives were developed by considering different processes or engineering designs that would allow the proposed project to phase out MTBE on an expedited schedule, and comply with CARB Phase 3 gasoline specifications. This chapter describes the modifications and/or additions that would be required at the Torrance Refinery and terminals for the alternatives; it also analyses the environmental impacts of each alternative and sub-alternative.

5.2 Project Alternatives Description

Four project alternatives and a total of three sub-alternatives have been identified for the proposed project. The alternatives and sub-alternatives were developed by modifying one or more components of the proposed project. Unless otherwise stated, the other components of each project alternative are identical to the proposed project. The alternatives and sub-alternatives involve a different location at the Torrance Refinery for a new rail spur and fuel ethanol unloading facilities; three different fuel ethanol tank storage alternatives at the Torrance

Refinery; two different approaches to achieving the removal of pentane from the base gasoline pool at the Torrance Refinery in order to reduce its Reid Vapor Pressure; and use of an existing Mobil pipeline rather than tanker trucks to transport marine tanker-delivered fuel ethanol from SWT.

- **Alternative 1 – Alternative Fuel Ethanol Receiving Location at Torrance Refinery**

  The proposed project includes installing a new rail spur west of Prairie Avenue for fuel ethanol unloading, which will include a six-spot unloading area and railcar unloading pumps. Under Alternative 1, the new spur and unloading facilities would be developed at a location east of Prairie Avenue, roughly 1,000 feet east of the proposed location. The unloading facilities themselves (e.g., the unloading pumps) would be the same as in the proposed project. Fuel ethanol railcars would use a portion of the existing LPG track and then move onto the new adjacent spur. Fuel ethanol storage would remain at the proposed location west of Prairie Avenue.

  Alternative 1 would require relocating a storage pad used for 90-day hazardous waste storage. A replacement 90-day hazardous waste storage pad would be constructed about 700 feet north of its current location. Two diesel fuel additive (octylnitrate [2-ethylhexyl nitrate]) storage tanks would be demolished. The proposed project would involve demolition of one of these two diesel fuel additive tanks and its replacement with a 300-bbl tank in the eastern portion of the refinery. No additional diesel fuel additive replacement tank would be constructed under this alternative, i.e., there would be only one 300-bbl diesel fuel additive tank under both the proposed project and Alternative 1.

  There would be a very slight increase in construction activities under this alternative compared to the proposed project, due to the relocation of the hazardous waste storage pad and the demolition of the second diesel fuel additive tank. Operations under this alternative would be the same as under the proposed project, because the same facilities, equipment, and activities would be required at different locations within the Torrance Refinery.

- **Alternative 2 – Fuel Ethanol Storage Alternatives at the Torrance Refinery**

  Alternative 2A – Construction of Second New 40,000 – Barrel Storage Tank for Fuel Ethanol Storage

  Under the proposed project, fuel ethanol will be stored in a new 40,000-bbl internal floating roof storage tank constructed for this project, and in two adjacent, existing 20,000-bbl tanks that are currently out of service. As part of the proposed project, the tanks will be converted from fixed roof to internal floating roof tanks. Alternative 2A would involve demolishing the two existing 20,000-bbl tanks and constructing a second 40,000-bbl internal floating roof tank at the site of the two demolished 20,000-bbl tanks. Slightly more construction work would be required under this alternative than for the proposed project, because constructing a new tank and the various associated pumps, piping, pads, etc., would involve somewhat more effort

than merely converting two existing tanks. There would be no differences in operational activities under Alternative 2A, compared to the proposed project.

Alternative 2B – Conversion of Two Existing 20,000 – Barrel Tanks and No New Tank Construction for Fuel Ethanol Storage

Alternative 2B would involve converting the two existing out-of-service 20,000-bbl tanks to internal floating roof tanks (which is the same as under the proposed project), and not constructing the proposed new 40,000-bbl tank for fuel ethanol storage. The location of fuel ethanol storage at the Torrance Refinery would be the same as under the proposed project. Slightly less construction work would be required under this alternative, because the construction activities associated with the proposed new 40,000-bbl tank would not occur.

Operationally, this alternative would be similar to the proposed project. Decreased fuel ethanol storage capacity at Torrance might mean that somewhat less fuel ethanol would be trucked from Torrance to other distribution terminals (i.e., Atwood and remote, third-party terminals), and more would be trucked to these sites directly from SWT and/or from the Vernon Terminal.

Alternative 2C – Conversion of Two Existing 1,500 – Barrel Storage Tanks and No New Tank Construction for Fuel Ethanol Storage

Alternative 2C would involve converting two existing 1,500-bbl tanks for fuel ethanol storage; these two tanks are currently used for storing a diesel fuel additive (octylnitrate). These two tanks are located east of Prairie Avenue, adjacent to the existing LPG rail tracks, and less than 300 feet north of the truck racks at the Torrance Loading Rack. This alternative location is less than 1,000 feet east of the proposed project's fuel ethanol storage location.

This alternative would require less construction than the proposed project, primarily because the proposed new 40,000-bbl tank for fuel ethanol storage would not be built, and the proposed conversion of two 20,000-bbl tanks to fuel ethanol service would not occur. Converting the two 1,500-bbl tanks to fuel ethanol storage would require similar activities to the proposed project's conversion of the two 20,000-bbl tanks. No additional diesel fuel additive tanks would be constructed. For both the proposed project and Alternative 2C, one 300-bbl replacement tank would be installed.

Operationally, the primary differences between Alternative 2C and the proposed project would relate to the significantly decreased fuel ethanol storage capacity at the Torrance site. There would be no truck deliveries of fuel ethanol to other terminals from Torrance.

Implementation of Alternative 2C would conflict with Alternative 1 above, in that the proposed alternative fuel ethanol rail spur and unloading facilities location would utilize the same area as the two existing diesel fuel additive storage tanks that would be converted. Thus, it would not be possible to implement both alternatives as they are currently presented.

- **Alternative 3 – Alternative to Construction of a New C4/C5 Splitter at the Torrance Refinery**

  Alternative 3A – Conversion of Existing Stabilizer at Torrance Refinery instead of Constructing New C4/C5 Splitter

  To comply with CARB Phase 3 gasoline specifications requires reducing the RVP of the base gasoline pool during the summer months by removing butanes and pentanes. Under the proposed project, Mobil will construct a new C4/C5 splitter to remove the C5. The C5 then will be pumped to two new 10,000-bbl spheroid storage tanks. During the summer the C5 will be loaded onto railcars for shipment outside California; in the winter a portion of the C5 will be returned and used for blending. Four new railcar loading/unloading spots will be required at the LPG rack; they will be equipped with pressurizing and relief lines, vapor recovery, and spill containment.

  Alternative 3A would involve conversion of an idle, existing stabilizer at the Torrance Refinery to serve as a C4/C5 splitter. Refurbishing the idle stabilizer would involve similar construction activities as a new splitter, because of the extensive modifications to the stabilizer that would be required. These would include replacing existing bubble cap trays on the stabilizer with new valve trays, replacing the tube bundle in the existing reboiler, and installing a new feed heater, overhead condenser, accumulator, and pumps. Approximately 600 feet of additional piping runs would be required for this alternative, compared to the proposed new splitter. However, there would be no need to demolish an existing Bender Tower and associated support equipment, as would be the case under the proposed project.

  Under Alternative 3A, operation of the refurbished splitter would be the same as for a new splitter. Except for the lack of a C4/C5 splitter, project operations would be essentially the same as the proposed project.

  Alternative 3B – Routing C5/LSR Stream Directly to Storage

  Under Alternative 3B, the C5/LSR stream, which is composed primarily of C5, would be sent directly to storage at the Torrance Refinery for subsequent rail shipment off the site. It would involve less construction than the proposed project, as a new splitter would not be required. Thus, the heaters, pumps, and condensers associated with the new splitter would not be needed, and there would be a reduction in the level of project steam and cooling water demand. This alternative would require an additional 5,000 feet of new piping at the Torrance Refinery to transfer the C5/LSR.

  Other than the absence of a C4/C5 splitter, operations under this alternative would be essentially the same as the proposed project.

- **Alternative 4 – Transport Fuel Ethanol from SWT Through Existing Pipeline instead of by Truck**

The proposed project involves importing fuel ethanol by marine tanker to Mobil's SWT in the Port of Los Angeles, where it would be stored and loaded aboard tanker trucks for transport to the various distribution terminals for blending. Alternative 4 would involve use of an existing Mobil pipeline to transfer fuel ethanol from SWT to the Vernon Terminal. From Vernon, the fuel ethanol would be transported by truck to the other distribution terminals for blending.

The proposed import of fuel ethanol by rail would be unaffected by this alternative. The SWT-Vernon pipeline alternative would eliminate the construction of the proposed new truck loading racks and vapor destruction unit at SWT. The same existing storage tanks at SWT would be converted to also store fuel ethanol, as under the proposed project. The existing pipeline that would be used for fuel ethanol transport would require no substantial modifications. There would be no truck transport of ethanol from SWT to any distribution terminals. Once the fuel ethanol arrived at Vernon via pipeline, its storage, use, and distribution to other terminals would be the same as under the proposed project. Construction and operational activities at the various terminals other than SWT would be the same as under the proposed project.

5.3 Alternatives Analysis

This section contains an analysis of the relative merits of each of the alternatives by each environmental topic. Because air quality and hazards have the greatest potential to be adversely affected by the proposed project and project alternatives, each alternative is evaluated separately for these environmental issue areas. For the other environmental topics, alternatives are discussed together.

5.3.1 Air Quality

Tables 5.3-1 and 5.3-2 summarize the emissions associated with construction and operation, respectively, for the project alternatives in comparison with the proposed project. Details of the emission calculations are in Appendix B. Peak daily construction emissions would be the same for Alternatives 1 and 3A as for the proposed project. Peak daily construction emissions would be higher for Alternative 2A than for the proposed project, while peak daily construction emissions from the other alternatives would be lower than the proposed project. CO, VOC, NO_X and PM_{10} emissions associated with construction for all of the alternatives exceed the significance thresholds in Table 4-1.

Peak daily operational emissions would be the same for Alternatives 1 and 3A as for the proposed project. Peak daily operational emissions would be higher for Alternative 2C than for the proposed project, while peak daily operational emissions from the other alternatives would be lower than for the proposed project. Alternative 4 would have lower emissions than the proposed project during both construction and operations, although the difference during operations would be slight.

Alternative 1 – Alternative Ethanol Receiving Location at Torrance Refinery

This alternative would require relocating a storage pad used for 90-day hazardous waste storage. A replacement 90-day hazardous waste storage pad would be constructed about 700 feet north of its current location. The diesel fuel additive storage tanks would be demolished. No additional replacement diesel fuel additive tanks would be constructed under this alternative; as with the proposed project, a 300-bbl replacement diesel fuel additive tank would be constructed in the eastern portion of the Torrance Refinery.

Peak daily construction emissions would be the same under Alternative 1 as for the proposed project. Operation emissions under this alternative would be the same as under the proposed project, because the same facilities, equipment, and activities would be required at different locations within the Torrance Refinery.

Alternative 2A – Construction of Second New 40,000 – Barrel Storage Tank for Fuel Ethanol Storage at Torrance Refinery

More construction work would be required under this alternative, because constructing a new tank and the various associated pumps, piping, pads, etc. would involve more effort than merely converting two existing tanks. Construction emissions associated with this alternative were estimated by doubling the emissions associated with construction of the single 40,000-bbl tank under the proposed project. Mitigated overall peak daily construction emissions for this alternative are listed in Table 5.3-3.

Table 5.3-1
Summary of Construction Emissions for Alternatives

Project/Alternative	CO (lb/day)	VOC (lb/day)	NO_X (lb/day)	SO_X (lb/day)	PM_{10} (lb/day)
Proposed Project	12,139.0	1,529.5	1,635.2	130.7	552.1
1	12,139.0	1,529.5	1,635.2	130.7	552.1
2A	12,185.3	1,540.2	1,720.2	138.8	471.6
2B	12,092.6	1,518.8	1,550.2	122.5	538.7
2C	12,092.6	1,518.8	1,550.2	122.5	538.7
3A	12,089.7	1,519.2	1,562.4	120.1	546.0
3B	12,089.7	1,547.5	1,625.8	126.1	550.7
4	10,009.0	1,333.9	1,532.6	124.3	506.0

Table 5.3-2
Summary of Operation Emissions for Alternatives

Project/Alternative	CO (lb/day)	VOC (lb/day)	NO_X (lb/day)	SO_X (lb/day)	PM_{10} (lb/day)
Proposed Project	52.0	289.3	71.2	0.1	103.3
1	52.0	289.3	71.2	0.1	103.3
2A	52.0	289.2	71.2	0.1	103.3
2B	52.0	287.6	71.2	0.1	103.3
2C	52.0	295.4	71.2	0.1	103.3
3A	52.0	289.3	71.2	0.1	103.3
3B[(a)]	52.0	280.9	71.2	0.1	103.3
4	51.9	279.9	71.1	0.1	103.3
(a) Does not reflect decrease due to decrease in steam demand					

Table 5.3-3
Overall Peak Daily Construction Emissions - Alternative 2A (Mitigated)

Source	CO (lb/day)	VOC (lb/day)	NO_X (lb/day)	SO_X (lb/day)	Exhaust PM_{10} (lb/day)	Fugitive PM_{10} (lb/day)	Total PM_{10} (lb/day)
Onsite Construction Equipment Exhaust	11,656.8	583.9	1,456.1	141.5	87.5	N/A	87.5
Mitigation Reduction (%)	0%	5%	5%	5%	5%	--	
Mitigation Reduction (lb/day)	0.0	-29.2	-72.8	-7.1	-4.4	--	-4.4
Remaining Emissions	**11,656.8**	**554.7**	**1,383.3**	**134.4**	**83.1**	--	**83.1**
Onsite Motor Vehicles	174.8	36.4	101.1	4.4	5.5	235.0	240.5
Mitigation Reduction (%)	0%	0%	0%	0%	0%	0%	
Mitigation Reduction (lb/day)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Remaining Emissions	**174.8**	**36.4**	**101.1**	**4.4**	**5.5**	**235.0**	**240.5**
Onsite Fugitive PM_{10}	N/A	N/A	N/A	N/A	N/A	5.0	5.0
Mitigation Reduction (%)	--	--	--	--	--	16%	
Mitigation Reduction (lb/day)	--	--	--	--	--	-0.8	-0.8
Remaining Emissions	--	--	--	--	--	**4.2**	**4.2**
Architectural Coating	N/A	896.7	N/A	N/A	N/A	N/A	N/A
Mitigation Reduction (%)	--	0%	--	--	--	--	--
Mitigation Reduction (lb/day)	--	0.0	--	--	--	--	--
Remaining Emissions	--	**896.7**	--	--	--	--	--
Total Onsite	**11,831.6**	**1,487.8**	**1,484.5**	**138.8**	**88.7**	**239.2**	**327.9**
Offsite Motor Vehicles	353.7	52.4	235.8	0.0	5.3	232.3	237.6
Mitigation Reduction (%)	0%	0%	0%	0%	0%	0%	
Mitigation Reduction (lb/day)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Remaining Emissions	**353.7**	**52.4**	**235.8**	**0.0**	**5.3**	**232.3**	**237.6**
TOTAL	**12,185.3**	**1,540.2**	**1,720.2**	**138.8**	**94.0**	**471.6**	**565.6**
Significance Threshold	*550*	*75*	*100*	*150*	---	---	*150*
Significant? (Yes/No)	**Yes**	**Yes**	**Yes**	No	---	---	**Yes**
Note: Sums of individual values may not equal totals because of rounding.							

During operations, there would be a 0.1 lb/day decrease in direct VOC emissions at the Torrance Refinery under this alternative, compared to the proposed project. There would be no change in indirect emissions for this alternative, compared to the proposed project.

Alternative 2B – Conversion of Two Existing 20,000 – Barrel Tanks and No New Storage Tank Construction for Fuel Ethanol Storage at Torrance Refinery

Less construction work would be required under this alternative, because the construction activities associated with the proposed new 40,000-bbl tank would not occur, which would

eliminate the emissions associated with tank construction and painting. Mitigated overall peak daily construction emissions for this alternative are listed in Table 5.3-4.

Table 5.3-4
Overall Peak Daily Construction Emissions - Alternative 2B (Mitigated)

Source	CO (lb/day)	VOC (lb/day)	NO_X (lb/day)	SO_X (lb/day)	Exhaust PM_{10} (lb/day)	Fugitive PM_{10} (lb/day)	Total PM_{10} (lb/day)
Onsite Construction Equipment Exhaust	11,572.7	563.4	1,286.6	124.8	77.2	N/A	77.2
Mitigation Reduction (%)	0%	5%	5%	5%	5%	---	
Mitigation Reduction (lb/day)	0.0	-28.2	-64.3	-6.2	-3.9	---	-3.9
Remaining Emissions	**11,572.7**	**535.2**	**1,222.3**	**118.6**	**73.4**	---	**73.4**
Onsite Motor Vehicles	166.2	34.5	92.2	4.0	5.1	218.3	223.5
Mitigation Reduction (%)	0%	0%	0%	0%	0%	0%	
Mitigation Reduction (lb/day)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Remaining Emissions	**166.2**	**34.5**	**92.2**	**4.0**	**5.1**	**218.3**	**223.5**
Onsite Fugitive PM_{10}	N/A	N/A	N/A	N/A	N/A	5.0	5.0
Mitigation Reduction (%)	---	---	---	---	---	16%	
Mitigation Reduction (lb/day)	---	---	---	---	---	-0.8	-0.8
Remaining Emissions	---	---	---	---	---	**4.2**	**4.2**
Architectural Coating	N/A	896.7	N/A	N/A	N/A	N/A	N/A
Mitigation Reduction (%)	---	0%	---	---	---	---	---
Mitigation Reduction (lb/day)	---	0.0	---	---	---	---	---
Remaining Emissions	---	**896.7**	---	---	---	---	---
Total Onsite	**11,738.9**	**1,466.4**	**1,314.5**	**122.5**	**78.5**	**222.6**	**301.1**
Offsite Motor Vehicles	353.7	52.4	235.8	0.0	5.3	232.3	237.6
Mitigation Reduction (%)	0%	0%	0%	0%	0%	0%	
Mitigation Reduction (lb/day)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Remaining Emissions	**353.7**	**52.4**	**235.8**	**0.0**	**5.3**	**232.3**	**237.6**
TOTAL	**12,092.6**	**1,518.8**	**1,550.2**	**122.5**	**83.8**	**454.9**	**538.7**
Significance Threshold	*550*	*75*	*100*	*150*	---	---	*150*
Significant? (Yes/No)	**Yes**	**Yes**	**Yes**	No	---	---	**Yes**
Note: Sums of individual values may not equal totals because of rounding.							

Direct operational VOC emissions for Alternative 2B would decrease by 1.8 lb/day at the Torrance Refinery, since there would not be a new 40,000-bbl tank. Decreased fuel ethanol storage capacity at Torrance might mean that less fuel ethanol would be trucked from Torrance to other distribution terminals (i.e., Atwood and remote, third-party terminals), and more would be trucked to these sites directly from SWT and/or from the Vernon Terminal. However, the estimated peak

daily operational emissions for the proposed project assume, as a worst case, that all fuel ethanol is transported by tanker truck from SWT. Thus, indirect emissions for this alternative are the same as for the proposed project.

Alternative 2C - Conversion of Two Existing 1,500 – Barrel Storage Tanks and No New Ethanol Tank Construction for Fuel Ethanol Storage at Torrance Refinery

Alternative 2C would require less construction than the proposed project, primarily because the proposed new 40,000-bbl tank for fuel ethanol storage would not be built, and the proposed conversion of two 20,000-bbl tanks to fuel ethanol service would not occur. Construction emissions associated with this alternative would be less than the proposed project, and about the same as for Alternative 2B. Mitigated overall peak daily construction emissions for Alternative 2C are listed in Table 5.3-5.

Table 5.3-5
Overall Peak Daily Construction Emissions - Alternative 2C (Mitigated)

Source	CO (lb/day)	VOC (lb/day)	NO_X (lb/day)	SO_X (lb/day)	Exhaust PM_{10} (lb/day)	Fugitive PM_{10} (lb/day)	Total PM_{10} (lb/day)
Onsite Construction Equipment Exhaust	11,572.7	563.4	1,286.6	124.8	77.2	N/A	77.2
Mitigation Reduction (%)	0%	5%	5%	5%	5%	---	
Mitigation Reduction (lb/day)	0.0	-28.2	-64.3	-6.2	-3.9	---	-3.9
Remaining Emissions	**11,572.7**	**535.2**	**1,222.3**	**118.6**	**73.4**	---	**73.4**
Onsite Motor Vehicles	166.2	34.5	92.2	4.0	5.1	218.3	223.5
Mitigation Reduction (%)	0%	0%	0%	0%	0%	0%	
Mitigation Reduction (lb/day)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Remaining Emissions	**166.2**	**34.5**	**92.2**	**4.0**	**5.1**	**218.3**	**223.5**
Onsite Fugitive PM_{10}	N/A	N/A	N/A	N/A	N/A	5.0	5.0
Mitigation Reduction (%)	---	---	---	---	---	16%	
Mitigation Reduction (lb/day)	---	---	---	---	---	-0.8	-0.8
Remaining Emissions	---	---	---	---	---	**4.2**	**4.2**
Architectural Coating	N/A	896.7	N/A	N/A	N/A	N/A	N/A
Mitigation Reduction (%)	---	0%	---	---	---	---	---
Mitigation Reduction (lb/day)	---	0.0	---	---	---	---	---

Table 5.3-5 (Concluded)
Overall Peak Daily Construction Emissions - Alternative 2C (Mitigated)

Source	CO (lb/day)	VOC (lb/day)	NO_X (lb/day)	SO_X (lb/day)	Exhaust PM_{10} (lb/day)	Fugitive PM_{10} (lb/day)	Total PM_{10} (lb/day)
Remaining Emissions	---	**896.7**	---	---	---	---	---
Total Onsite	**11,738.9**	**1,466.4**	**1,314.5**	**122.5**	**78.5**	**222.6**	**301.1**
Offsite Motor Vehicles	353.7	52.4	235.8	0.0	5.3	232.3	237.6
Mitigation Reduction (%)	0%	0%	0%	0%	0%	0%	
Mitigation Reduction (lb/day)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Remaining Emissions	**353.7**	**52.4**	**235.8**	**0.0**	**5.3**	**232.3**	**237.6**
TOTAL	**12,092.6**	**1,518.8**	**1,550.2**	**122.5**	**83.8**	**454.9**	**538.7**
Significance Threshold	*550*	*75*	*100*	*150*	---	---	*150*
Significant? (Yes/No)	**Yes**	**Yes**	**Yes**	No	---	---	**Yes**
Note: Sums of individual values may not equal totals because of rounding.							

Direct operational VOC emissions for this alternative would decrease by 1.8 lb/day at the Torrance Refinery because there would not be a new 40,000-bbl tank, but would increase by 7.7 lb/day due to the additional fuel ethanol storage in the two converted 1,500-bbl tanks. Thus, Alternative 2C is anticipated to have 5.9 lb/day more direct VOC emissions than the proposed project.

Operationally, the primary differences between Alternative 2C and the proposed project would relate to the significantly decreased fuel ethanol storage capacity at the Torrance site. There would be no truck deliveries of fuel ethanol to other terminals from Torrance. However, the estimated peak daily operational emissions for the proposed project assume, as a worst case, that all fuel ethanol is transported by tanker truck from SWT. Thus, indirect emissions for Alternative 2C are the same as for the project.

Alternative 3A – Conversion of Existing Stabilizer at Torrance Refinery Instead of Constructing New C4/C5 Splitter

Alternative 3A would involve conversion of an idle, existing stabilizer at the Torrance Refinery to serve as a C4/C5 splitter. Refurbishing the idle stabilizer would involve similar construction activities as a new splitter, because of the extensive modifications to the stabilizer that would be required. Approximately 600 feet of additional piping runs would be required for this alternative, compared to the proposed new splitter. However, there would be no need to demolish an existing Bender Tower and associated support equipment, as would be the case under the proposed project.

Operation of the refurbished splitter and the associated emissions would be essentially the same as for a new splitter. Modifications to the debutanizer and upgrades to the deisobutanizer would be the same as for the proposed new C5/LSR splitter. The same new tank spheres for temporary storage would be required as for the proposed project, as well as the same additional railcar loading/unloading spots at the LPG rack. Thus, both direct and indirect emissions are anticipated to be the same for this alternative as the proposed project.

Alternative 3B – Routing C5/LSR Stream at the Refinery Directly to Storage Instead of Constructing New C4/C5 Splitter

Alternative 3B would involve less construction than the proposed project as a new splitter would not be required. Thus, the heaters, pumps, and condensers associated with the new splitter would not be needed, and there would be a reduction in the amount of project steam and cooling water demand. Emissions associated with demolition and earthwork activities would be eliminated, and peak daily emissions associated with the other activities for construction of a new C4/C5 splitter, with the exception of painting, would be reduced by about 50 percent under this alternative. Mitigated overall peak daily construction emissions for this alternative are listed in Table 5.3-6.

Table 5.3-6
Overall Peak Daily Construction Emissions - Alternative 3B (Mitigated)

Source	CO (lb/day)	VOC (lb/day)	NO_X (lb/day)	SO_X (lb/day)	Exhaust PM_{10} (lb/day)	Fugitive PM_{10} (lb/day)	Total PM_{10} (lb/day)
Onsite Construction Equipment Exhaust	11,570.9	564.1	1,267.9	120.8	77.6	N/A	77.6
Mitigation Reduction (%)	0%	5%	5%	5%	5%	---	
Mitigation Reduction (lb/day)	0.0	-28.2	-63.4	-6.0	-3.9	---	-3.9
Remaining Emissions	**11,570.9**	**535.9**	**1,204.5**	**114.7**	**73.7**	**---**	**73.7**
Onsite Motor Vehicles	165.1	34.3	122.2	5.3	5.3	225.1	230.4
Mitigation Reduction (%)	0%	0%	0%	0%	0%	0%	
Mitigation Reduction (lb/day)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Remaining Emissions	**165.1**	**34.3**	**122.2**	**5.3**	**5.3**	**225.1**	**230.4**
Onsite Fugitive PM_{10}	N/A	N/A	N/A	N/A	N/A	5.0	5.0
Mitigation Reduction (%)	---	---	---	---	---	16%	
Mitigation Reduction (lb/day)	---	---	---	---	---	-0.8	-0.8
Remaining Emissions	**---**	**---**	**---**	**---**	**---**	**4.2**	**4.2**

Table 5.3-6 (Concluded)
Overall Peak Daily Construction Emissions - Alternative 3B (Mitigated)

Source	CO (lb/day)	VOC (lb/day)	NO_X (lb/day)	SO_X (lb/day)	Exhaust PM_{10} (lb/day)	Fugitive PM_{10} (lb/day)	Total PM_{10} (lb/day)
Architectural Coating	N/A	896.7	N/A	N/A	N/A	N/A	N/A
Mitigation Reduction (%)	---	0%	---	---	---	---	---
Mitigation Reduction (lb/day)	---	0.0	---	---	---	---	---
Remaining Emissions	---	**896.7**	---	---	---	---	---
Total Onsite	**11,736.0**	**1,466.8**	**1,326.7**	**120.1**	**79.0**	**229.3**	**308.4**
Offsite Motor Vehicles	353.7	52.4	235.8	0.0	5.3	232.3	237.6
Mitigation Reduction (%)	0%	0%	0%	0%	0%	0%	
Mitigation Reduction (lb/day)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Remaining Emissions	**353.7**	**52.4**	**235.8**	**0.0**	**5.3**	**232.3**	**237.6**
TOTAL	**12,089.7**	**1,519.2**	**1,562.4**	**120.1**	**84.4**	**461.6**	**546.0**
Significance Threshold	*550*	*75*	*100*	*150*	---	---	*150*
Significant? (Yes/No)	**Yes**	**Yes**	**Yes**	No	---	---	**Yes**
Note: Sums of individual values may not equal totals because of rounding.							

Direct operational VOC emissions would decrease by 8.5 lb/day since the new C4/C5 splitter would not be constructed. The two boilers would have a decrease in CO, VOC, NO_x, SO_x, and PM_{10} emissions, since less steam would be required for this alternative, as compared to the project. Indirect emissions are not anticipated to change for this alternative, as compared to the proposed project.

Alternative 4 – Transport Fuel Ethanol from SWT Through Existing Pipeline instead of by Truck

This alternative would not require construction of a new loading rack or vapor destruction unit at SWT. Construction at the other sites would be the same as under the proposed project. Thus, the emissions associated with these construction activities at SWT would not occur, and overall construction-phase emissions would be lower for this alternative than for the proposed project. Mitigated overall peak daily construction emissions for this alternative are listed in Table 5.3-7.

Table 5.3-7
Overall Peak Daily Construction Emissions - Alternative 4 (Mitigated)

Source	CO (lb/day)	VOC (lb/day)	NO_X (lb/day)	SO_X (lb/day)	Exhaust PM_{10} (lb/day)	Fugitive PM_{10} (lb/day)	Total PM_{10} (lb/day)
Onsite Construction Equipment Exhaust	9,526.2	485.3	1,298.4	126.7	77.9	N/A	77.9
Mitigation Reduction (%)	0%	5%	5%	5%	5%	---	
Mitigation Reduction (lb/day)	0.0	-24.3	-64.9	-6.3	-3.9	---	-3.9
Remaining Emissions	**9,526.2**	**461.0**	**1,233.5**	**120.3**	**74.0**	**---**	**74.0**
Onsite Motor Vehicles	162.9	34.0	92.1	4.0	5.1	218.5	223.7
Mitigation Reduction (%)	0%	0%	0%	0%	0%	0%	
Mitigation Reduction (lb/day)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Remaining Emissions	**162.9**	**34.0**	**92.1**	**4.0**	**5.1**	**218.5**	**223.7**
Onsite Fugitive PM_{10}	N/A	N/A	N/A	N/A	N/A	4.9	4.9
Mitigation Reduction (%)	---	---	---	---	---	16%	
Mitigation Reduction (lb/day)	---	---	---	---	---	-0.8	-0.8
Remaining Emissions	**---**	**---**	**---**	**---**	**---**	**4.1**	**4.1**
Architectural Coating	N/A	791.7	N/A	N/A	N/A	N/A	N/A
Mitigation Reduction (%)	---	0%	---	---	---	---	---
Mitigation Reduction (lb/day)	---	0.0	---	---	---	---	---
Remaining Emissions	**---**	**791.7**	**---**	**---**	**---**	**---**	**---**
Total Onsite	**9,689.1**	**1,286.7**	**1,325.6**	**124.3**	**79.2**	**222.6**	**301.8**
Offsite Motor Vehicles	319.9	47.2	207.0	0.0	4.5	199.7	204.2
Mitigation Reduction (%)	0%	0%	0%	0%	0%	0%	
Mitigation Reduction (lb/day)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Remaining Emissions	**319.9**	**47.2**	**207.0**	**0.0**	**4.5**	**199.7**	**204.2**
TOTAL	**10,009.0**	**1,333.9**	**1,532.6**	**124.3**	**83.7**	**422.3**	**506.0**
Significance Threshold	*550*	*75*	*100*	*150*	---	---	*150*
Significant? (Yes/No)	**Yes**	**Yes**	**Yes**	No	---	---	**Yes**
Note: Sums of individual values may not equal totals because of rounding.							

Direct operational emissions would decrease by 0.1 lb/day for NO_x and 0.1 lb/day for CO, since there would not be a new vapor combustor. Further, VOC emissions would be reduced by 9.4 lb/day, since new truck loading racks would not be constructed. Under this alternative, there would be no truck transport of ethanol from SWT directly to any distribution terminals. However, the estimated peak daily operational emissions for the proposed project assume, as a worst case,

that all fuel ethanol is transported by tanker truck from SWT. Thus, indirect emissions for Alternative 4 would be the same as for the proposed project.

5.3.2 Cultural Resources

As is the case for the proposed project, the alternatives would be expected to have no significant adverse impacts on prehistoric or historic cultural resources. Ground surface areas that could be affected at the Torrance site and Atwood Terminal are already largely disturbed from past Mobil activities, and there are no known cultural resources at or near these locations. The SWT site is heavily disturbed and also is located on manmade fill, which greatly reduces the potential for the presence of cultural resources. The Vernon Terminal site also is heavily disturbed and there are no known cultural resources at the site. Because there are expected to be no significant impacts from the project as proposed, there would be no significant impacts to cultural resources from the alternatives.

5.3.3 Energy

As would be the case under the proposed project, the alternatives' energy requirements would be small, and not significant compared to existing energy use at the Mobil facilities, or to overall regional energy demand. There would be no substantial differences in energy use between the alternatives and the proposed project.

5.3.4 Geology/Soils

Neither the proposed project nor any of the alternatives would be expected to pose significant adverse geology or soils impacts. All changes associated with the various alternatives and the proposed project would occur within the confines of the existing Mobil facilities' properties. There also would be no substantial differences in geology and soils impacts between any of the alternatives and the proposed project.

5.3.5 Hazards and Hazardous Materials

This section evaluates the effects of the project alternatives on the risk of upset estimates. As discussed below, there would be small differences in hazard impacts between the proposed project and Alternatives 2C and 3B; impacts would be essentially the same between the proposed project and the other alternatives. However, both the proposed project and the alternatives would have significant impacts, as they would create risks for people outside the project sites.

Alternative 1 – Alternative Fuel Ethanol Receiving Location at Torrance Refinery

Under this alternative, the new spur and unloading facilities would be developed at a location east of Prairie Avenue, roughly 1,000 feet east of the proposed location. The unloading facilities themselves (e.g., unloading pumps) would be the same as in the proposed project. This alternative would require relocating a storage pad used for short-term hazardous waste storage, and demolition of a diesel fuel additive tank. None of these changes would cause an incremental off-site risk. Moving the receiving location east of Prairie Avenue would put it slightly further inside the Torrance Refinery, and thus further away from the property boundary. The hazards of Alternative 1 would be essentially the same as the proposed project; both would have significant impacts.

Alternative 2A – Construction of Second New 40,000 – Barrel Storage Tank for Fuel Ethanol Storage at Torrance Refinery

Under the proposed project, fuel ethanol will be stored in a new 40,000-bbl internal floating roof storage tank constructed for this project, and in two adjacent, existing out-of-service 20,000-bbl tanks that will be converted to fuel ethanol service. This alternative would involve demolishing the two existing 20,000-bbl tanks, and constructing a second 40,000-bbl internal floating roof tank at the site of the two demolished 20,000-bbl tanks. Under the proposed project, it is unlikely that 20,000-bbl tanks would fail simultaneously, so the failure of the new 40,000-bbl fuel ethanol tank under Alternative 2A was compared to the failure of one proposed project 20,000-bbl fuel ethanol tank.

For a catastrophic failure resulting in a BLEVE, the impact endpoint distance for the alternative 40,000-bbl fuel ethanol tank failure was estimated at 1,350 meters. Compared to the endpoint distance for the 20,000-bbl project ethanol tank failure (1,030 meters), this is an increase in the hazard endpoint of approximately 35 percent. Both the proposed project and this alternative's impacts would be significant. For a contained pool fire, the impact endpoint distance under Alternative C for an ethanol fire is 170 meters compared to the 140 meters for the project, an increase of approximately 20 percent. Again, both the project and Alternative 2A's impacts would be significant. This is because the impacts could extend offsite, since the tanks are near the facility boundary. The differences between the proposed project's and this alternative's impacts are small, and within the inherent uncertainties in the modeling technique.

Alternative 2B – Conversion of Two Existing 20,000 – Barrel Tanks and No New Storage Tank Construction for Fuel Ethanol Storage at Torrance Refinery

Alternative 2B would involve converting the two existing 20,000-bbl tanks to fuel ethanol service with internal floating roofs (which is the same as under the proposed project), but not constructing the proposed new 40,000-bbl tank for fuel ethanol storage. Operationally, this alternative would be similar to the proposed project. The primary differences would relate to the decreased onsite fuel ethanol storage capacity at the Torrance Refinery.

This alternative eliminates construction of the project 40,000-bbl fuel ethanol storage tank. There would be no change in hazard from the conversion of the two 20,000-bbl storage tanks, since both the proposed project and Alternative 2B would involve identical tank conversions to fuel ethanol service. The reduced fuel ethanol storage at the Torrance Refinery would reduce the hazards associated with fuel ethanol storage. The reduced storage capacity would not be expected to substantially increase the total number and distance of the truck and train deliveries, so the accident likelihood under Alternative 2B would remain comparable with the proposed project. In summary, the overall hazards associated with the alternative would be comparable to the proposed project.

Alternative 2C – Conversion of Two Existing 1,500 – Barrel Storage Tanks and No New Tank Construction for Fuel Ethanol Storage at Torrance Refinery

Alternative 2C would involve converting two existing 1,500-bbl tanks for fuel ethanol storage; these two tanks are currently used for storing a diesel fuel additive (octylnitrate). The fire and explosion risk of failure of a 1,500-bbl fuel ethanol storage tank was compared with the baseline risk of failure of a 1,500-bbl diesel fuel additive storage tank.

The most critical physical parameter required for estimating impacts of a chemical due to fires and explosions is the heat of combustion. The distance to the end point for a pool fire is proportional to the heat of combustion, while the distance to end point for an explosion is proportional to the cube root of the heat of combustion. After extensive effort, including contact with the manufacturer, discussion with refinery personnel, and review of various chemical references, no data were found defining the heat of combustion of octylnitrate.

Based on a comparison of the heats of combustion of the straight-chain organic molecules ethane and propane with their respective nitrate, the addition of the nitrate group appears to reduce the heat of combustion by approximately 10 percent to 15 percent. The heat of combustion of ethanol is approximately one-third that of hexane, the base chain in an octylnitrate molecule. Assuming that octylnitrate has a heat of combustion that is only 10 percent to 15 percent less than hexane, the fire and explosion risk associated with conversion of a 1,500-bbl octylnitrate tank to ethanol service would be expected to be substantially reduced (up to a factor of three).

There would be a reduction in hazard with the conversion of the tanks to fuel ethanol storage from the more hazardous diesel additive octylnitrate, particularly because the total amount of octylnitrate storage at the Torrance Refinery would be reduced. In addition, the elimination (compared to the proposed project) of the new 40,000-bbl and the two converted 20,000-bbl fuel ethanol storage tanks would reduce fuel ethanol storage-related risks. Overall, when compared to the proposed project, Alternate 2C would have somewhat lower risks.

Alternative 3A – Conversion of Existing Stabilizer at Torrance Refinery instead of Constructing New C4/C5 Splitter

Alternative 3A would involve conversion of an idle, existing stabilizer at the Torrance Refinery to serve as a C4/C5 splitter. Operation of the refurbished splitter would be essentially the same as for the proposed new splitter. The size of the towers and the general location are similar. The risks with this alternative would be comparable to the proposed project.

Alternative 3B – Routing C5/LSR Stream at the Refinery Directly to Storage instead of Constructing New C4/C5 Splitter

Under Alternative 3B, the C5/LSR stream, which is composed primarily of C5, would be sent directly to storage at the Torrance Refinery for subsequent rail shipment off site. The C5/LSR alternative would require an additional 5,000 feet of new piping at the refinery to transfer the C5/LSR. A portion of this piping would pass near the eastern boundary of the Torrance Refinery.

The risk of a pipeline rupture followed by an explosion and a fire were considered for this alternative. The flow in the pipeline would be approximately 280 gpm. The impact assessment assumed the C5/LSR (assumed to be pentane) would be unchecked for 10 minutes after failure, producing an uncontained pool one centimeter deep, that then ignited. To assess the potential explosion hazard, the flow was assumed to be unchecked for two minutes, and 10 percent of the released pentane was assumed to vaporize and produce a fireball (BLEVE).

The project blast overpressure endpoint distance resulting from an explosion in the C4/C5 splitter was estimated at 510 meters. Under this alternative, the C4/C5 splitter would not be built and would be replaced with a new 5,000-foot pipeline carrying the C5/LSR directly to existing storage. The thermal exposure endpoint distance for a potential pipeline accident BLEVE was estimated at 50 meters, while that for a pool fire was 200 meters. The maximum endpoint distance therefore would be reduced by 60 percent under this alternative, while the worst-case risk would change from blast overpressure to thermal exposure. While somewhat lower than the proposed project, the alternative's risk would remain significant, since the impact could extend offsite in the case of a pipeline rupture near the property boundary, and there would be offsite receptors that potentially would be exposed to a new risk.

Alternative 4 – Transport Fuel Ethanol from SWT Through Existing Pipeline instead of by Truck

Alternative 4 would involve use of an existing Mobil pipeline to transfer fuel ethanol from the SWT to the Vernon Terminal. From Vernon, the fuel ethanol would be trucked to the other distribution terminals for blending. The existing pipeline that would be used for fuel ethanol transport would require no significant modifications. There would be no truck transport of fuel ethanol from SWT directly to any distribution terminals.

The risk of a pipeline rupture followed by an explosion and a fire were considered for this alternative. The flow in the pipeline would be approximately 2,100 gpm. The impact assessment assumed the pipeline flow would be unchecked for 10 minutes after failure, producing an uncontained pool one centimeter deep, that then ignited. To assess the potential explosion hazard, the flow was assumed to be unchecked for two minutes, and 10 percent of the released ethanol was assumed to vaporize and produce a fireball (BLEVE).

The impact endpoint distance for a potential pipeline accident BLEVE was estimated at 100 meters, while the distance for a pool fire was 210 meters. Both risks would be significant, as defined by the thermal exposure endpoint distance, since the releases could occur at any point along the pipeline. However, pipeline risks would be essentially unchanged from current (pre-project) conditions because an existing pipeline would be used that currently transports hydrocarbons between SWT and Torrance.

The pipeline would reduce truck transport from SWT to the Vernon Terminal, but this is a relatively small portion of the overall project tanker truck traffic. The endpoint distance for a tanker truck accident resulting in a pool fire was estimated at 130 meters, while the blast overpressure endpoint distance for a tanker truck accident involving 8,500 gallons of ethanol resulting in an explosion was 430 meters. Overall tanker truck traffic volume for Alternative 4 would not be substantially different from the proposed project, and thus overall tanker truck risk associated with the alternative would not be substantially different. Overall risk under Alternative 4 would be comparable to the proposed project.

5.3.6 Hydrology/Water Quality

All alternatives except Alternative 3B, which would not include constructing a C4/C5 splitter, would result in little or no change in water use or water quality compared to the proposed project. Except for Alternative 3B, all the alternatives would be expected to use similar amounts of water during construction and operation. Because of decreased steam and cooling water requirements for Alternative 3B, water use would decrease from 244 gpm to 106 gpm. However, there would be no significant hydrology/water quality impact from the project as proposed, there would be no significant impacts to water resources from any of the alternatives, and there would be no substantial differences in impacts between the project and the alternatives.

5.3.7 Land Use and Planning

As with the proposed project, no significant impacts to land use would be expected to occur from implementation of any of the project alternatives. The alternatives would be located within existing facility boundaries, and no acquisition of additional land or changes to existing land use would be required. Thus, land use impacts of the alternatives would be similar to each other and to the proposed project.

5.3.8 Public Services

As with the proposed project, none of the project alternatives would create a demand for workers that could not be met by the existing population in the region. Therefore, no significant adverse impact on schools, police services, or medical facilities would be expected.

With respect to fire protection, neither the alternatives nor the proposed project would create significant additional demand on the existing Mobil fire services or local fire stations in any of the affected jurisdictions. There would be no significant differences in demand for fire services between any of the alternatives and the proposed project. Thus, no significant impacts to fire protection services would be expected as a result of the proposed project or alternatives.

5.3.9 Solid/Hazardous Waste

Neither the proposed project nor any of the alternatives would involve significant impacts related to the generation, management or disposal of hazardous and non- hazardous wastes during either construction or operations. There also would be no substantial differences in impacts between the alternatives and the proposed project.

The primary source of hazardous waste during construction would be contaminated soil, contaminated concrete, and oily residue from demolition and cleanup of an oil storage tank that was destroyed by fire. This activity would occur at the site of the proposed new storage spheres for C5, which would be constructed under all alternatives.

Construction debris generation during construction would be slightly less for several alternatives than for the proposed project. Alternative 1 would involve demolition of two small existing storage tanks and the associated demolition waste generation; this would not be required for the project as proposed. Alternative 2A would involve demolition of two existing 20,000-bbl tanks that otherwise would not be demolished, and this would increase the amount of construction wastes somewhat, compared to the proposed project. Alternative 2C would generate slightly less construction wastes than the proposed project because there would be no debris associated with construction of a new 40,000-bbl tank for fuel ethanol storage. Alternatives 3A and 3B, neither of which involves construction of a new C4/C5 splitter, would not involve the debris associated with demolition of a Bender Tower and support equipment at the Torrance Refinery. Alternative 4 would not require construction of new truck loading facilities and a vapor destruction unit at SWT, and thus would generate slightly less construction debris.

For the alternatives, as well as for the proposed project, about 1,500 cubic yards (of the estimated maximum of 2,500 cubic yards) of petroleum-contaminated wastes generated during construction would be treated and disposed of at existing Torrance Refinery land treatment facilities that have ample capacity to handle the incremental quantities. The remaining 1,000 cubic yards of petroleum-contaminated waste would be transported for disposal to appropriately permitted facilities such as the Kettleman Hills site in Kern County; the Kettleman facility also would not be affected by this incremental waste quantity. As with the proposed project, non-hazardous construction wastes associated with the project alternatives that can be recycled (e.g., concrete and masonry, scrap steel) would be recycled either onsite or at commercial recycling facilities. Thus, the quantities of construction wastes that would require disposal at a municipal landfill for the alternatives as well as the proposed project would be very small (e.g., a total of 20 to 30 truckloads of wood debris), and would have no significant impacts.

There would be minimal amounts of hazardous or non-hazardous wastes generated during operations under the proposed project or any of the alternatives. Chemicals such as spent alumina would be shipped off-site for recycling; elemental sulfur generated by activities required to comply with the CARB Phase 3 requirement to reduce gasoline sulfur content would be sold for use by others, and thus cannot be considered wastes.

5.3.10 Transportation/Traffic

None of the alternatives would have substantially different traffic impacts from the proposed project. For the proposed project and the various alternatives, there would be no significant impacts on the ICU values at intersections in the vicinities of Mobil's Torrance, Vernon, Southwestern, or Atwood facilities during either construction or operations.

During the construction phase, Alternatives 1 and 3A employment levels and traffic volumes would be essentially the same as the proposed project. Alternative 2A would involve slightly higher employment and traffic levels than the proposed project because of the additional construction work for a new tank compared to refurbishing existing tanks, and because of the demolition of two existing tanks. The other alternatives would involve slightly less construction than the proposed project, and thus slightly lower construction employment levels and traffic volumes. Because no significant traffic impacts are expected under the proposed project, none would be expected with any of the alternatives.

As with the proposed project, during project operations, the alternatives would require no or negligible additional operational employment and resulting employee vehicle traffic at any of the Mobil facilities involved in the project. Under Alternative 4, there would be less truck traffic in and out of SWT compared to the proposed project, because there would be no fuel ethanol tank truck traffic at all. However, project fuel ethanol transport would be spread throughout the day and would not cause significant traffic impacts for the proposed project. Thus, the difference in

impacts under Alternative 4 would be minimal. There would be no substantial differences in traffic impacts between the proposed project and any of the alternatives.

5.4 Conclusion

None of the alternatives are expected to create substantially different impacts to the environment from the proposed project.

Peak daily construction emissions would be the same for Alternatives 1 and 3A as for the proposed project. Peak daily construction emissions would be higher for Alternative 2A than for the proposed project, while peak daily construction emissions from the other alternatives would be lower than for the proposed project. Alternative 4 would have the lowest construction emissions.

Peak daily operational emissions would be the same for Alternatives 1 and 3A as for the proposed project. Peak daily operational emissions would be higher for Alternative 2C than for the proposed project. Peak daily operational emissions from the other alternatives are anticipated to be lower than the proposed project, with Alternative 4 having the lowest operational emissions. However, the differences in operational emissions are small between the proposed project and the various alternatives.

The risk of upset hazard for Alternatives 1, 2A, 2B, 3A, and 4 are comparable to those for the proposed project. The risk of upset hazard for Alternatives 2C and 3B would be somewhat less than those for the proposed project. However, the differences in risk between these alternatives and the proposed project are small and not considered significant.

As with the proposed project, these alternatives would create significant hazard impacts, because the proposed project and the alternatives pose risks to people outside the project sites, which is a criterion for significant impacts. The small risk reductions that would occur under Alternatives 2C and 3B are not considered sufficient to demonstrate their environmental superiority over the proposed project.

As stated above, Alternative 4 would have somewhat lower air quality impacts than the proposed project, although these differences would be small, particularly during operations. Mobil does not propose to implement Alternative 4 for technical and operational reasons. This alternative would require use of a non-dedicated pipeline to transfer ethanol from SWT to Mobil's Vernon Terminal, which would involve risks of ethanol contamination with water. There are no proven technologies or operational procedures currently available that could avoid this risk in non-dedicated pipelines. Mobil considers these ethanol quality risks too great at present to consider this alternative as its proposed project.