5.0 Alternatives Analysis

The California Environmental Quality Act (CEQA), Section 15126.6, requires an Environmental Impact Report (EIR) to describe a reasonable range of alternatives to a project or to the location of a project which could feasibly attain its basic objectives and evaluate the comparative merits of the alternatives. This section discusses a range of alternatives to the Rail Spur and Crude Unloading Project (Rail Spur Project), including the "No Project Alternative." Criteria used to evaluate the range of alternatives and remove certain alternatives from further consideration are addressed. State CEQA Guidelines Section 15126.6 provides direction for the discussion of alternatives to the proposed Project. This section requires:

A description of "...a range of reasonable alternatives to the project, or to the location of a 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, and evaluate the comparative merits of the alternatives" [15126.6(a)].

A setting forth of alternatives that "...shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project" [15126.6(f)].

A discussion of the "No Project" alternative, and "...If the environmentally superior alternative is the "No Project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives" [15126.6(e)(2)], even if the proposed project is the next environmentally preferable option.

A discussion and analysis of alternative locations "…that would substantially lessen any of the significant effects of the project need to be considered for inclusion in the EIR" [15126.6(f)(2)(B)].

This document has used an alternative screening analysis to select the alternatives evaluated in detail in the EIR. The alternative screening analysis provides the detailed explanation of why some of the alternatives were rejected from further analysis and assures that only the environmentally preferred alternatives are evaluated and compared in the EIR.

This screening methodology also uses the *"rule of reason"* approach to alternatives as discussed in State CEQA Guidelines (Section 15126.6(f)). The rule of reason approach has been defined to require that EIRs address a range of feasible alternatives that have the potential to diminish or avoid adverse environmental impacts. The State CEQA Guidelines state:

The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effect of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project. (Section 15126.6(f))

In defining feasibility of alternatives the State CEQA Guidelines state:

Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (Section 15126.6(f)(1)).

If an alternative was found to be technically infeasible, then it was dropped from further consideration. This was the primary feasibility factor that was used to eliminate an alternative without further screening analysis. In addition, CEQA states that alternatives should "…*attain most of the basic objectives of the project* ..." (Section 15126.6(a)). If an alternative was found to not obtain the basic objective, then it was also eliminated.

The use of a screening analysis for the alternatives ensures that the full spectrum of environmental concerns is adequately represented, and that a reasonable choice of alternatives is selected for evaluation in the EIR. The screening criteria are discussed in the Alternatives Screening Analysis section.

Given the CEQA mandates listed above, the remainder of this chapter covers: (1) a brief description of a range of reasonable alternatives to the Rail Spur Project; (2) a screening analysis that summarizes and compares the environmental effects of each alternative; (3) an environmental analysis of the alternatives that were selected for further consideration in the EIR; and (4) a discussion of the environmentally superior alternative for the Rail Spur Project.

5.1 Description of Alternatives

The screening analysis considered a variety of alternatives to the Rail Spur Project. The alternatives have been divided into five different groups, each containing individual specific alternatives, which are:

- No Project Alternative.
- Crude Transportation Alternatives.
  - Trucking
  - Marine Transport
  - Pipelines
- Alternative Rail Unloading Sites.
- Alternative Rail Unloading Facility Configuration.
- Reduced Rail Deliveries.

The following sections summarize alternatives within each of these groups.

5.1.1 No Project Alternative

CEQA requires an evaluation of the No Project Alternative so that decision makers can compare the impacts of approving the project with the impacts of not approving the project. According to CEQA Guidelines §15126.6(3)(B), for a development project the No Project Alternative is the circumstances under which the project does not proceed. If disapproval of the project under consideration would result in predictable actions by others, such as the proposal of some other project, this "no project" consequence should be discussed.

Under the No Project Alternative, the predictable action would be for crude oil to continue to be delivered to the refinery by pipeline and truck (trucks deliver crude to the Santa Maia Pump Station (SMPS) where it is then sent via pipeline to the Santa Maria Refinery (SMR). Since the delivery of crude to the SMR is primarily from local sources via pipeline, in the long-term, if local supplies were to decline, then the amount of crude processed at the SMR could decline under the No Project Alternative. However, new local sources of crude oil could be developed in the future that would offset any decline.

Under the No Project Alternative, it is possible that crude oil shipments via truck to the Santa Maria Pump Station (SMPS) could increase. Crude oil shipments via truck to the SMPS have averaged about 6,800 barrels per day. This could increase to 26,000 barrels per day, which is the current permitted Santa Barbara County APCD limit. This increase (19,200 barrels per day) could add about 100 truck trips per day of crude travelling to the SMPS for crude unloading.

The SMR is currently receiving Canadian crude that is trucked from the Paloma Rail Unloading Terminal in Bakersfield (see Project Description, Chapter 2.0, Section 2.6). Under the No Project Alternative it is likely that additional out of state crudes would be brought to various rail unloading terminals in California and transferred to trucks for delivery to the SMPS. The crude oil would then be moved via pipeline from the SMPS to the SMR.

The transfer from rail to truck could also occur at a number of locations within the State. There are a number of new rail unloading facilities that have been approved in the Bakersfield area, such as Alon and All American Pipeline Company (see Chapter 3.0, Cumulative Methodology and Project List, for a description of these facilities), as well as the existing Paloma Terminal, and the Kinder Morgan rail to truck facility in the Bay Area (see Chapter 3.0, Cumulative Methodology and Project List, for a description of this facility). While the Alon has been approved by Kern County, the approval has been appealed. Also, an expansion of the All American Terminal rail terminal has also been appealed.

Exactly what terminals might be used would depend upon available capacity and economics, and it is likely that crude would be delivered to multiple terminals and then trucked to the SMPS. Use of the All American Pipeline Company terminal would require the installation of truck loading facilities. The Alon facility is equipped with truck loading facilities, but some might have to be converted to crude service.

For the purposes of the No Project Alternative Analysis it has been assumed that crude oil unit trains would deliver the crude to one of the facilities near Bakersfield, transfer it to trucks, which would deliver it to the SMPS. The delivery of 19,200 barrels per day of crude (seven days per

week) would require 2.5 crude oil unit trains per week to be delivered to one of the rail unloading terminals near Bakersfield. The trucks would leave these terminals and travel to Santa Maria using State Highway 166, to Highway 101 and exit at the East Stowell Road ramp. They would then travel southeast on Stowell Road to Rosemary Road to East Battles Road to reach the SMPS. The travel distance for the trucks would be about 110 miles one-way.

In the long-run, as local crude oil supplies decline, it is possible that the SMR would process less oil then the current baseline, which would reduce some of the current impacts at the refinery. With less crude throughput, the air emissions at the SMR would be reduced and truck traffic for hauling of sulfur and coke would be reduced.

Because CEQA requires that the No Project Alternative be analyzed in the EIR, it has not been addressed in the screening analysis.

5.1.2 Crude Transportation Alternatives

The Rail Spur Project would be used to deliver up to five trains per week, with an annual maximum number of trains of approximately 250. Trains would arrive from different oilfields and/or crude oil loading points depending on market availability. In a unit train configuration, each train would be capable of delivering about 52,000 barrels of crude oil. With the delivery of five unit trains per week the average daily delivery of crude oil would be 37,142 barrels. This crude oil could also be delivered to the SMR via other transportation modes, which are discussed below.

5.1.2.1 Truck Transportation

The SMR currently receives all crude oil via pipeline. The pipeline network used to deliver crude oil to the SMR is shown in Figure 5-1. Crude oil is also currently trucked to the SMPS where it is off loaded into tanks and then moved via pipeline to the SMR. Truck delivery to the SMPS is limited to a permitted maximum of 26,000 barrels per day by the Santa Barbara County Air Pollution Control District.

An alternative to train deliveries would be to deliver crude via truck to one of the pump stations or directly to the SMR. The Rail Spur Project design basis for unit train offloading would be five unit trains per week of 80 railcars with a volume of 27,300 gallons per rail car, resulting in a weekly load up to 10,920,000 gallons of crude. An average tanker truck holds about 8,000 gallons resulting in 1,365 truck deliveries per week (195 truck trips per day assuming seven days per week) to equal the unit train delivery.

The crude oil is expected to be delivered from various North American sources and would place 2,730 trucks on the road per week (390 one-way truck trips per day assuming seven days per week) between the unloading station and the crude source since each truck will need to return to the oilfield for filling up. The trips could take three to five days depending upon the source of the crude oil.

Figure 5-1 Location of Pump Stations Servicing the Pipeline to the SMR

SMR-Santa Maria Refinery
AAPL-All American Pipeline
LOGP-Lompoc Oil and Gas Processing Facility
LFC-Las Flores Canyon
PS-Pump Station

It is also possible that crude could be barged or delivered by rail to other locations in California or other states. In these cases, the oil would be offloaded from barge or rail cars and then reloaded onto trucks for delivery to one of the pump stations or the SMR. This could shorten the number of miles trucks would need to travel, but would add additional miles for barge or rail deliveries.

A truck can be unloaded in approximately 30 minutes, including connecting and disconnecting. Since there are 10,080 minutes per week, a minimum of five truck unloading spots would be required. However, at some of the pump stations operations may be limited to 12 hours per day or unloading could only occur between the hours of 6 a.m. and 10 p.m. For these instances, seven to ten truck unloading spots would be needed.

Each truck unloading spot would require an area to place a concrete pad, a canopy, spill protection equipment, meters, and pumps. The crude oil would be pumped from the trucks into a crude oil storage tank.

Pump Stations

Each of the existing pump stations shown in Figure 5-1, except Sisquoc, contains a crude oil storage tank and pump for delivering crude to the pipeline. However, it is likely that a new 35,000 barrel crude oil storage tank would need to be built at the pump station that would be used for the truck unloading facility. The crude oil tank would be needed to handle the increased volume of oil from the truck deliveries. If the Sisquoc Pump Station was used, a new 1,000 gpm pump would be needed to deliver the crude to the pipeline.

Each truck lane would require a surface area of approximately 110 feet in width by 160 feet in length to accommodate one unloading spot and turnaround area. The width would increase as the number of lanes increase. For four lanes, the approximate area would be 440-feet by 160-feet, six lanes would be 660-feet by 160-feet, and seven (7) lanes would be 770-feet by 160-feet. These lengths would not include the entrance to the pump station as those would be site specific.

Spill protection would consist of either an underground storage tank, with piping, to contain the full contents of one full tanker truck or a berm to contain the contents of one full tanker truck. The underground storage tank would accommodate oily water and would have to be sent to a water treatment facility, which would need to be built at most of the pump stations.

Figure 5-2 provides aerial views of the pump stations and their surroundings. A brief description of each of the pump stations that could be used for a truck unloading facility is provided below.

Santa Maria Pump Station (SMPS)

The SMPS is located to the east of the City of Santa Maria. It is approximately 1.9 miles from the State Route 101 intersections of East Stowell Road from the north and East Betteravia Road from the south. From the north, trucks would travel east on Stowell Road to Rosemary Road to East Battles Road to reach the SMPS. From the south, trucks would travel east on Betteravia Road to Rosemary Road to East Battles Road to reach the SMPS. The site is surrounded by mostly agricultural fields. There is an existing truck unloading rack at this pump station, but there would need to be additional racks built at an alternate location to accommodate the number of trucks.

This site is surrounded by mainly agricultural fields and the old Battles Gas Plant is located just to the south. This is the largest of the pump station sites and has the greatest ability to be expanded to handle the additional truck unloading capacity. In addition, this site is already permitted to receive 26,000 barrels per day of crude oil via truck. Therefore, this pump station site has been evaluated further in the alternative screening analysis.

Figure 5-2 Views of Pump Stations and Their Surroundings

Santa Maria Pump Station

Summit Pump Station

Sisquoc Pump Station

Summit Pump Station

The Summit Pump Station located 0.5 miles off Highway 101, 5.75 miles south of Arroyo Grande and 4.1 miles north of the community of Nipomo. Access to Summit Station would be via the Highway 101 from the north and south and the north Thompson Avenue intersection. Trucks would travel west on Los Barros Road to Dale Avenue. The site is surrounded by residential homes in a wooded area that has some oak trees. The pump station has no existing truck unloading racks. The pump station site is small and would have to be expanded to accommodate truck deliveries of crude oil. Expansion at this site is unlikely due to the residential homes and the wooded areas that surround the site. Also, this pump station has none of the infrastructure needed to accommodate the truck unloading operations. Therefore, this pump station site has been dropped from further analysis as a potential alternative.

Sisquoc Pump Station

The Sisquoc Pump Station is located approximately 11 miles from Highway 101 and East Betteravia Road near the City of Santa Maria. Access to this pump station would be through Santa Maria via Highway 101 from the north and south. Trucks would exit at the Betteravia Road intersection, and then travel west of Foxen Canyon Road to Santa Maria Mesa Road. This pump station has no existing truck unloading racks. The site is surrounded by agricultural operations on three sides and open space hills to the west. This is a very remote site that has poor road access to the pump station. These roads would likely not be able to handle the large volume of truck traffic. The site is also small and has none of the infrastructure needed to accommodate the truck unloading operations. Therefore, this pump station site has been dropped from further consideration as a potential alternative.

Santa Maria Refinery

Use of the SMR for truck deliveries would require the construction of the truck unloading lanes and a spill protection system for the truck unloading area. It has been assumed that the truck unloading area would be located in the same general area as the rail unloading facility. A new pipeline would have to be built from the truck unloading area to the existing crude oil storage tanks. Trucks would exit Highway 101 at the Willow Road intersection and travel west on Willow Road to State Route 1 to the SMR. Given that SMR already has some of the infrastructure needed for truck unloading, and that the site could accommodate the unloading racks within the existing refinery property boundary, this site has been evaluated further in the alternative screening analysis.

5.1.2.2 Marine Transportation

Crude oil could also be delivered to the SMR by marine tanker. This alternative would require the construction of an offshore mooring system, and a pipeline from the mooring system to the SMR crude oil storage tanks. Crude oil would likely be delivered to the SMR via a 35,000 dead weight ton (DWT) marine tankers, which hold about 264,000 barrels (11,088,000 gallons). One marine tanker would arrive at the facility about one per week. In order to accommodate the volume of oil from a marine tanker, new crude oil storage would likely be needed at the SMR. As much as 100,000 to 150,000 barrels of new storage capacity could be needed.

The new offshore mooring system could be built directly off the coast from the SMR in State waters, or offshore Avila Beach in San Luis Obispo Bay, which a more protective site. The SMR use to use a marine terminal near Avila Beach for various loading and unloading operations. This marine terminal was shutdown and removed just prior to the Avila Beach Remediation Project. Tug boat service could also be required to support the marine tanker operations. This alternative has been evaluated further in the screening analysis.

5.1.2.3 Pipeline Transport

One possible alternative would be to construct a pipeline to the source or the oil, such as the Canadian tar sands in Alberta, or to construct a pipeline to connect with the proposed Keystone pipeline. This would involve construction of an approximate 1,500 mile pipeline. This pipeline would cross a number of states and it is speculative if Phillips 66 could obtain the necessary right-of-way. Also, for this type of pipeline to be economical, it would need to carry more oil than just what is required for the proposed Rail Spur Project.

In recent years, two companies tested the appetite for large crude oil pipelines, but both failed to generate enough interest to make the projects profitable. Kinder Morgan proposed the Freedom Pipeline, which would have carried crude oil from West Texas to refiners in Southern California. Last May, the company canceled the $2 billion project because it couldn't attract enough customers. Kinder Morgan first pitched the 277,000 barrel-a-day pipeline in April, hoping to entice West Coast refiners dependent on more expensive oil shipped in from Russia, Ecuador and about a dozen other countries. Refiners in the California market are eager to buy the same cheaper domestic crude that is already benefiting their competitors in the Midwest and Gulf Coast. But Valero Energy Corp., Tesoro Corp. and others operating on the West Coast turned Kinder Morgan's proposal down, saying railcars gave them more flexibility. Bringing crude oil via Freedom and its $5-a-barrel tariff would not be much cheaper than shipping crude oil via rail from the Bakken oil field in North Dakota but would restrict refiners to long-term pipeline contracts. That lack of interest forced Kinder Morgan to cancel plans for Freedom (http://www.rigzone.com/news/oil_gas/a/126837/Kinder_Morgan_Cancels_2B_California_Oil_Pipeline#sthash.QJ6YtUWh.dpuf).

A $1.8 billion pipeline proposal from Oneok Partners called the Bakken Crude Express suffered a similar fate. The pipeline would have carried 200,000 barrels per day of crude over 1,300 miles, from North Dakota to Cushing, Oklahoma. Oneok dropped the proposal in late 2012, saying it couldn’t secure enough long-term deals to cover the cost of the pipeline.

A 500 mile pipeline may cost anywhere from $400 million to $800 million to build depending on where the line would be located, and it may take two to three years from start to finish to construct once all the necessary permits are obtained. If considering rail, where existing track exists, in some cases, a rail loading facility can be built for approximately $30 million to $50 million. The difference is that once construction is complete, the transportation cost on a pipeline may be in the $1 to $3 range per barrel of incremental tariff. Rail is much cheaper to build, but transportation costs may be in the neighborhood of $12 to $15 a barrel.

In building a pipeline, in many cases, the pipeline owners – the people constructing it – will actually look for a 10-year commitment from the producer who wants the pipeline built. For rail,

there is a much smaller initial investment, a three- to five-year commitment is feasible (Southwest Economy 2013).

In addition, construction and operation of long-distance pipeline would require permits from a wide range of Federal, State, and local agencies, which are outside of the control of the County, and it is speculative if such permits could be obtained from these agencies across many states. The Keystone XL Pipeline project is an example of the difficulties that a long-distance pipeline project alternative would face. This alternative has been dropped from further consideration due to the speculative nature of this type of pipeline project, and that it would have to carry considerably more oil than what is required for the proposed Rail Spur Project to be economically feasible. Another possible alternative would be to construct a pipeline from the Sisquoc Pump Station to Kern County where it could connect with one of the rail unloading terminals such as All American Pipeline or Alon. Such a pipeline would likely follow the existing All American Pipeline that runs from Sisquoc to Kern County. This existing pipeline is used to move offshore oil produced in Santa Barbara County to refinery markets in Southern California. Phillips 66 does not own the land along this route and it is speculative if they could obtain the necessary right-of-way to construct such a pipeline. In addition, construction and operation of this pipeline would require permits from a various Federal, State, and local agencies, which are outside of the control of the County, and it is speculative if such permits could be obtained from these agencies. Therefore, this alternative has been dropped from further consideration.

5.1.3 Alternative Rail Unloading Sites

One of the main purposes of the Rail Spur Project is to deliver crude oil to the SMR. Any alternative rail unloading site would have to be able to get the oil to the SMR for processing. All three of the pump stations discussed above in Section 5.1.3 were looked at as possible alternative rail unloading sites. Given the large amount of land needed to accommodate a rail unloading facility (over a mile of straight track) only the SMPS could possibly be expanded to accommodate such a facility. The other two pump stations would not be able to accommodate such an expansion. Therefore, only the SMPS has been evaluated as an alternative site for a rail unloading facility.

Delivery of crude oil by rail to the SMPS could then be moved via the existing pipeline to the SMR for processing. Figure 5-1 shows location of the SMPS in relation to the existing UPRR tracks. There are no UPRR tracks in close proximity to the SMPS. Use of this site would require the installation of about six to seven miles of new rail track. The new track would have to run west from somewhere near the City of Guadalupe to the SMPS, and would have to cross State Route 101.

It has been assumed that if a rail unloading facility was to be built at the SMPS that it would be the same layout as for the Rail Spur Project. New siding tracks would have to be installed at a pump station along with an unloading facility, spill containment, and 55,000 barrels of crude oil storage.

Spill protection would consists of either an underground storage tank, with piping, to contain the full contents of one full tanker car or a berm to contain the contents of one full tanker car. The underground storage tank would accommodate oily water and would have to be sent to a water treatment facility, which would need to be built at this pump station.

The rail spur and unloading area would need to be approximately 7,000 feet long by 270 feet wide, which is an area of about 43 acres. The new storage tanks and other support facilities would require an additional three to four acres of land. The reader is referred to Chapter 2 for more details on the design and layout of the rail spur and unloading facilities. Expansion of the site would require Phillips 66 to acquire about 50 acres of the adjacent agricultural land for construction of a rail unloading facility.

5.1.4 Alternative Rail Unloading Facility Configuration

The Rail Spur Project would use a linear track configuration for the delivery and unloading of the crude oil unit trains. One of the key issues looked at in developing alternative unloading configuration at the SMR was the location of CDFW sensitive habitat area and proximity to sensitive receptors. Figure 5-3 shows the location sensitive habitat in the buffer area west of existing SMR facilities. Moving the rail unloading facility to the north would still impact CDFW sensitive habitat and possibly a large dune structure. This would also move the rail lines closer to the sensitive receptors. There is not enough space on the Phillips 66 property going south to accommodate an 80 tank car unit train. Also moving the tracks south would bring the facility in close proximity to Little Oso Flaco Creek and the associated riparian habitat. Possible alternatives would be to use shorter unit trains, which would reduce the overall length of track needed at the SMR or to use an alternative track layout such as a loop configuration. Each of these alternatives is discussed below.

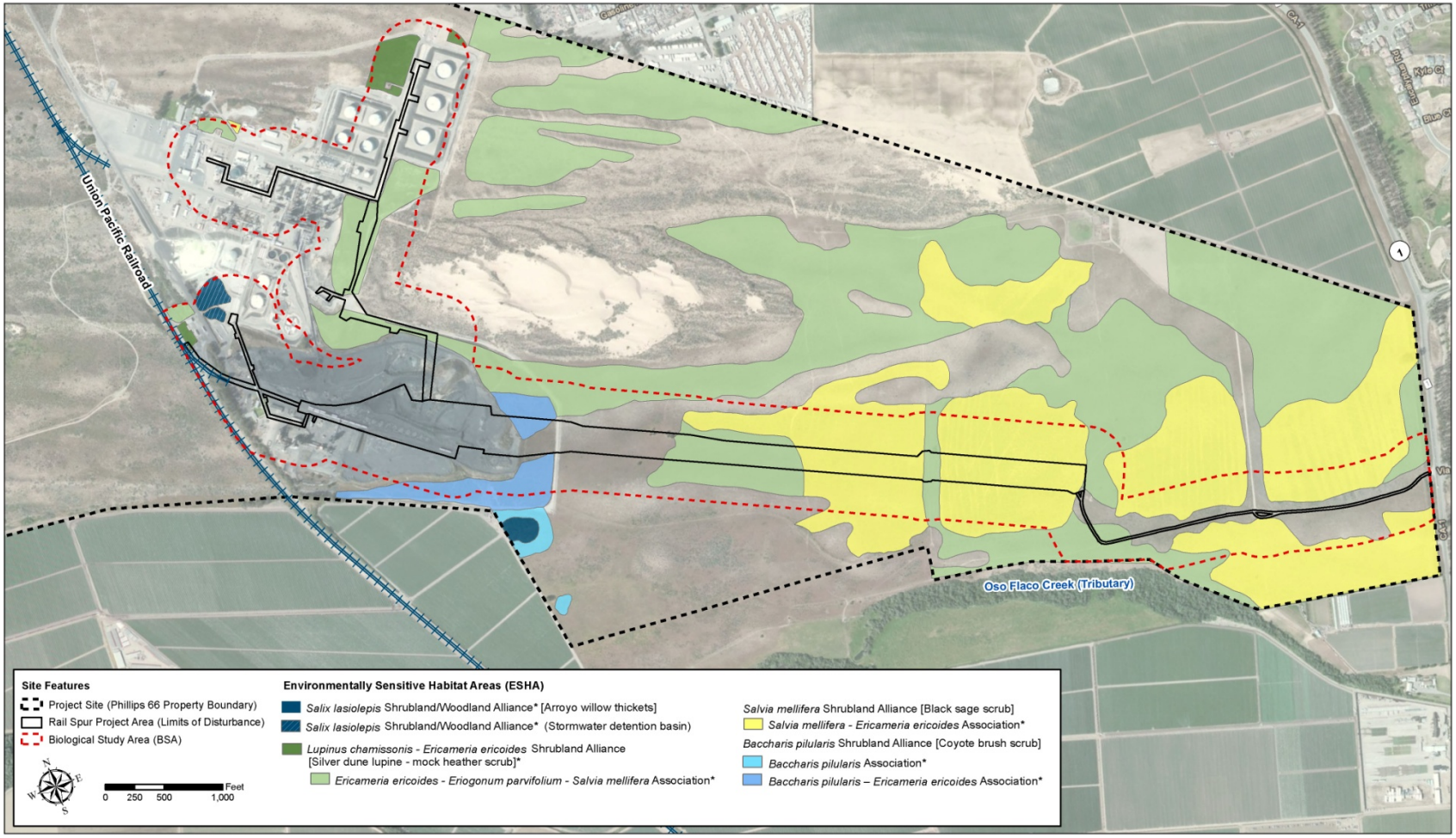
5.1.4.1 Shorter Unit Trains

A facility for handling shorter unit trains (30 to 40 tanker cars per train) would have a similar design as the proposed Rail Spur Project, but the length of track west of the unloading facility would be shorter by about 50 percent. For the purposes of this analysis it has been assumed that each unit train would contain 40 tanker cars and would be designed to handle 10 unit trains per week, with an annual maximum number of train deliveries of approximately 500. The track layout would be the same as the proposed Rail Spur Project and the facility would still use two unloading racks. The time to unload each unit train would be reduced by about 50 percent, but the number of trains unloaded would double over the proposed Rail Spur Project.

Construction of this alternative would reduce the cut and fill requirements by about 10-15 percent compared to the proposed Rail Spur Project and would reduce the overall construction requirements since less track would need to be installed east of the unloading racks.

The unloading facility would include an access platform and a system of pumps and meters, suction lines from the railcars, carbon beds for vapor treatment, and a common pipeline leading to the refinery's existing tank farm. The unloading system would be to the same as the Rail Spur Project (Figure 2-7 shows a simplified block flow diagram of the unloading system).

Figure 5-3 CDFW Sensitive Habitat Area in the Buffer Zone



Source: Adapted from Arcadis. 2015.
See Appendices C.6 and C.7 for more information on the Sensitive Vegetation at the SMR.

The access platform would run parallel to the track, with an individual gangway and safety cage at each rail car unloading station.

A new fire protection and safety system would be installed for the unloading rack, consisting of fire detection equipment, safety showers, eyewash stations, hydrants, controls and piping. The unloading rack would be equipped with a foam sprinkler deluge system and firewater monitors with foam generators at the unloading rack periphery. The foam spray system would require a foam concentrate storage tank. This would be the same fire protection system as the proposed Rail Spur Project.

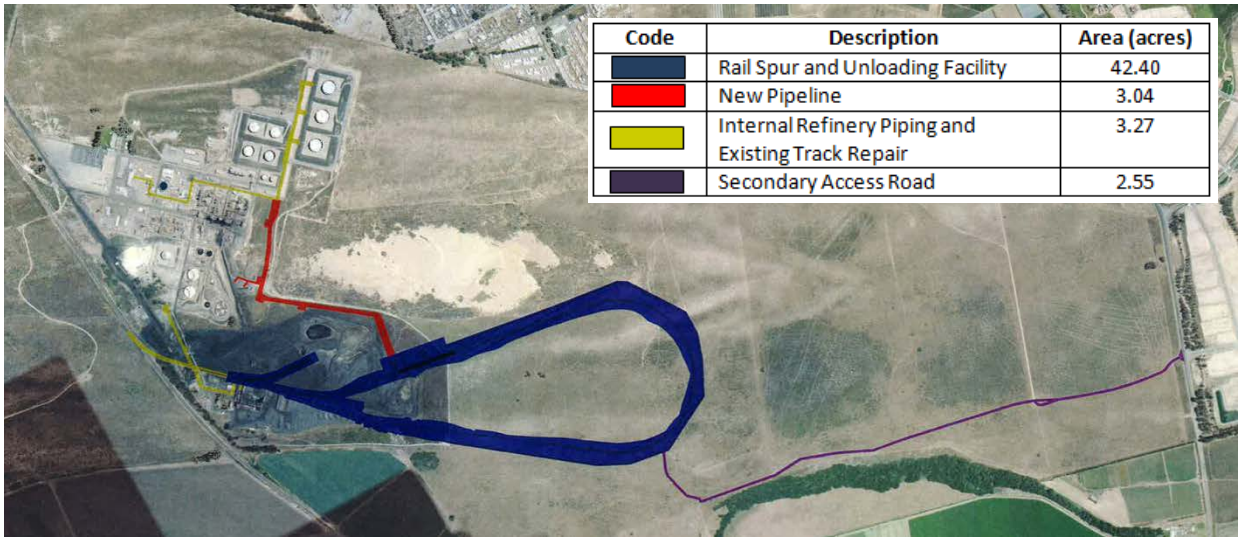
An eastern Emergency Vehicle Access route would be constructed from the eastern end of the tracks to State Route 1. The secondary access road would be covered with crushed miscellaneous base (most likely decomposed granite or comparable surfacing) to support emergency vehicles as prescribed by Cal Fire but would not be paved.

As required by the U.S. Department of Homeland Security, an extension of the existing eight-foot in height chain link fencing topped with barbed wire would be required around the periphery of the track. The security fence would not extend east around the perimeter of the secondary emergency access road. Additional lighting would also be required for the rail unloading facility similar to the proposed Rail Spur Project.

5.1.4.2 Loop Rail Configuration

Figure 5-4 shows a conceptual layout for the loop rail unloading track configuration.

Figure 5-4 Loop Rail Unloading Configuration



Source: Arcadis 2013

The Loop Rail Unloading Configuration would be designed to handle up to five unit trains per week, with an annual maximum number of unit trains of approximately 250. Each unit train

would consist of up to 80 tanker cars, which is the same as the Rail Spur Project. Each unit train would be capable of delivering about 52,000 barrels of oil to the SMR.

Construction of the Loop Rail Configuration Alternative would affect approximately 51.3 acres and would have an area of about 66.3 acres enclosed in the center of the loop. Due to the topography of the site approximately 350,000 cubic yards of cut and 218,000 cubic yards of fill would be required in order to provide level track and the required turn radius for the train. Approximately 80,000 cubic yards of excess cut may have to be trucked from the SMR, and the remainder of the excess cut could be used in other areas of the SMR.

The unloading facility would include an access platform and a system of pumps and meters, suction lines from the railcars, carbon beds for vapor treatment, and a common pipeline leading to the refinery's existing tank farm. The unloading system would be similar to the Rail Spur Project (Figure 2-7 shows a simplified block flow diagram of the unloading system). The access platform would run parallel to the track, with an individual gangway and safety cage at each rail car unloading station. The access platform and tracks would be supported by reinforced concrete construction. This area would provide structural support, spill containment and a clear, solid work surface for the operators.

It has been assumed that there would be two 10 car unloading systems. Each system would be equipped with an air eliminator, two flow meters, and two carbon beds. Upon exiting each of the unloading pumps the crude oil from each unloading systems would be commingled into a common pipeline that would flow to the air eliminator and then to the flow meters. Upon exiting the flow meters the crude oil from the two unloading systems would be comingled and transported via a new pipeline to the existing refinery crude oil storage tanks.

As the tanker cars are unloaded the train would be pulled around the loop until all 80 tanker cars have been unloaded. The total time needed or positioning, unloading, and departure of a unit train would be 10 to 12 hours. With this alternative an emergency access road would be constructed from the rail loop to State Route 1.

A new fire protection and safety system would be installed for the unloading rack, consisting of fire detection equipment, safety showers, eyewash stations, hydrants, controls and piping. The unloading rack would be equipped with a foam sprinkler deluge system and firewater monitors with foam generators at the unloading rack periphery. The foam spray system would require a foam concentrate storage tank. This would be the same fire protection system as the proposed Rail Spur Project.

An eastern Emergency Vehicle Access route would be constructed from the eastern end of the rail loop 3,000 feet to State Route 1. The secondary access road would be covered with crushed miscellaneous base (most likely decomposed granite or comparable surfacing) to support emergency vehicles as prescribed by Cal Fire but would not be paved.

As required by the U.S. Department of Homeland Security, an extension of the existing eight-foot in height chain link fencing topped with barbed wire would be required around the periphery of the new loop. The security fence would not extend east around the perimeter of the secondary

emergency access road. Additional lighting would also be required for the rail unloading facility similar to what is proposed for the Rail Spur Project.

5.1.4.3 Reduced Rail Deliveries

With this alternative the number of train deliveries to the SMR would be limited to a maximum of three per week (the Rail Spur Project is a maximum of five trains per week), with an annual total of 150 trains.

All other aspects of this alternative would be the same as the Rail Spur Project. The reader is referred to Chapter 2, Project Description, for a detailed description of the construction and operations of the rail spur.

5.2 Alternatives Screening Analysis

This section presents a screening analysis of the alternatives that were not dropped from further consideration above. The screening analysis has been used to determine which of the alternatives discussed above could meet the following criteria. Alternatives that meet the three criteria were carried forward for a more detailed analysis in the EIR.

- The alternative is feasible (capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors (CEQA Guidelines §15364);
- The alternative would lessen the potentially significant impacts of the proposed project or substantially reduce other environmental impacts of the proposed project; and
- The alternative would attain most of the basic objectives of the project.

Tables 5.1 and 5.2, which are at the end of Section 5.2.7, summarize the screening analysis for the alternatives. The Tables provide a rating of each of the alternatives relative to the Rail Spur Project for each issue area. The ratings of the various alternatives were developed based upon a review of the alternative description information provided above, and an assessment of the level of impacts that would occur if these alternatives were implemented. The impacts identified for each of the alternatives were then compared to the Rail Spur Project to determine if the impacts might be greater, the same, or less than the Rail Spur Project. The information in Table 5.1 and Table 5.2 was used as part of the screening analysis to determine which alternatives should be carried forward for a more detailed analysis in the EIR.

5.2.1 Trucking to the Santa Maria Pump Station

The information in Table 5.1 shows that this alternative would reduce the severity of some of the impacts associated with the operation of the Rail Spur Project. For some of the issue areas the operational impact would increase in severity. With this alternative most of the impacts in the vicinity of the SMR would be eliminated, but some of these impacts would be shifted to the area around the City of Santa Maria.

This alternative would reduce some the construction related impacts to biological and cultural resources since the expansion of the SMPS would occur on agricultural land, which has limited biological and cultural resources. However, all of the biological and cultural resource construction impacts for the Rail Spur Project would be less than significant with mitigation.

The visual impacts for this alternative would likely be less than for the Rail Spur Project given the location of the SMPS. However, all of the visual impacts for the Rail Spur Project would be less than significant with mitigation.

This alternative would increase operational air emissions since trucking would generate higher levels of air emissions. Truck transport of crude to the SMPS would generate about 1,089 tons of NO_x+ROG and 39 tons of PM_{10} emissions per year within California assuming a truck route from the Oregon state border to the SMPS. This compares with about 293 tons of NO_x+ROG and 8.6 tons of PM_{10} for the locomotives to deliver the crude to the SMR from the Oregon border. In all cases the air emissions would be substantially higher for this trucking alternative. On average, railroads are about four times more fuel efficient than trucks, which is one of the drivers in the reduction in air emissions (Association of American Railroad 2012).

Trucking to the SMPS would eliminate the cancer health risk impacts associated with the trains unloading at the SMR. However, the truck emission along the roads in the City of Santa Maria would likely result in significant cancer risk to the residences that are in close proximity to the roads. The PM_{10} emissions from trucking would be greater than for rail due to the large number of trucks needed to transport the crude to the Santa Maria Pump Station. Within the City of Santa Maria limits the annual PM_{10} emissions from trucks would be about 0.80 tons per year, which would be greater than the 0.73 tons per year that would occur at the SMR. Annual PM_{10} emissions along the portion of Highway 101 in SLO County (69 miles) from trucks would be 4.24 tons per year compared with 1.14 tons per year for trains along the mainline within SLO County. There are a large number of sensitive receptors along the truck routes that would likely be used for transporting crude via truck through the City of Santa Maria. This increase in PM_{10} emissions, in proximity to sensitive receptors in the City of Santa Maria, would likely result in a significant health risk impact.

This alternative could also have potentially significant impacts to biological and water resources from an oil spill due to a truck accident, depending upon the location of the spill along the truck route. Oil spill impacts from truck accidents would still be potentially significant depending upon the location of the spill. The spill volume would be less since a truck holds less oil than a rail tanker car. However, the probability of a spill would increase since trucks have a higher accident rate then trains. The net effect would be a higher risk of a spill from trucks, but in the event of a spill the area impacted would likely be smaller than for a rail spill.

Trucking would add 390 one-way trips per day to the local roads within the City of Santa Maria, assuming deliveries seven days per week. This would increase traffic impacts over the Rail Spur Project, and could lead to significant impacts to intersections in the City of Santa Maria particularly during peak hours. The intersections that could be impacted include the Highway 101 and Betteravia Road, Highway 101 and Stowell Road, and Stowell Road and Nicholson Ave.

The trucking to the SMPS would involve trucking the oil from the source of the crude oil to the SMPS. The crude oil is expected to be delivered from various North American sources and would place 2,730 trucks on the road per week (390 one-way truck trips per day assuming seven days per week) between the unloading station and the crude source since each truck will need to return to the oilfield for filling up. These trucks would pass through populated areas within California including possibly the Bay Area, Los Angeles Basin, and Sacramento. The exact populated areas that could be impacted by the trucking operations would depend upon the route taken to get to the SMPS. However, trucks would likely use Highway 101 from both the north and the south to get to the SMPS.

Class 3 hazardous material trucks have an estimated accident rate of 0.71 accidents per million miles (Battelle 2001). This is greater than the 0.51 to 0.39 derailment per million miles for the crude oil trains. Also, the probability of a Class 3 truck having a spill given an accident is about 35% (Battelle 2001). Delivery of crude to the SMPS via truck would require about 273 times more miles than delivery by unit train. The net result would be a substantial increase in the overall risk of an accident for truck then compared to rail. However, the volume of oil spilled from a truck accident would be smaller, which could reduce the consequence of a spill. While this would serve to reduce the overall consequences of a spill, the impact from a truck spill would likely be significant, and there would likely be more spills due to the higher accident rate and the substantial increase in overall miles traveled to transport the oil to the SMPS.

Class 3 truck accidents and incidents account for about 56 percent of all of the hazardous material truck accidents and incidents. Class 3 materials travel predominantly in bulk carriers. For the total number of enroute accidents, an estimated 88 percent of listed accidents involved cargo tanks (Battelle 2001).

This alternative would eliminate the noise impacts in the vicinity of the SMR, which was found to be less than significant with mitigation. The increase truck traffic on the local road in the City of Santa Maria would generate increase noise. This would be particularly true if trucks were traveling to the SMPS at night. The truck route through the City of Santa Maria would be mainly through agricultural land, but there are a few residences in close proximity to the roads.

Construction of the truck unloading facility at the SMPS would likely result in the permanent loss of prime agricultural land that is currently being used for row crops since the site would have to be expanded to accommodate the increase in truck unloading.

Construction and operation of an expanded truck unloading facility at the SMPS would require permits from Santa Barbara County and the Santa Barbara County Air Pollution Control District, which are outside of the control of the County, and it is speculative if such permits could be obtained from these agencies.

While trucking to the SMPS would eliminate some of the significant impacts in the vicinity of the SMR, it would shift these impacts to the area around the City of Santa Maria. Given that the trucking to the SMPS alternative would increase the severity of a number of impacts identified for the Rail Spur Project (e.g., agricultural resources, air quality, transportation and circulation, etc.), result in additional significant unavoidable impacts to traffic, and not eliminate any of the significant impacts associated with the Rail Spur Project, it has not undergone a more detailed

analysis in the EIR, and has been dropped from further consideration based upon the screening analysis.

5.2.2 Truck Transport to the SMR

The information in Table 5.1 shows that this alternative would not reduce any of the impacts associated with the operation of the Rail Spur Project. For some of the issue areas the operational impact would increase in severity.

This alternative would likely reduce some the construction related impact to biological, cultural, and agricultural resources since the area that would need to be developed at the SMR would be smaller. However, all of the biological, cultural, and agricultural resource construction impacts for the Rail Spur Project would be less than significant with mitigation.

This alternative would increase operational air emissions since trucking would generate higher levels of air emissions. Truck transport of crude to the SMR would generate about 1,070 tons of NO_x+ROG and 38 tons of PM_{10} emissions per year within California assuming a truck route from the Oregon state border to the SMR. This compares with about 293 tons of NO_x+ROG and 8.6 tons of PM_{10} for the locomotives to deliver the crude to the SMR. In all cases the air emissions would be substantially higher for this trucking alternative. On average, railroads are four times more fuel efficient than trucks, which is one of the drivers in the reduction in air emissions (Association of American Railroad 2012).

Trucking to the SMR would increase the cancer health risk impacts in the area of the SMR due to the increase truck traffic, which is already a major driver of the cancer risk at the SMR. This is due to the fact that the DPM emissions for the trucks would be greater than for the trains, and the fact that the PM_{10} emissions would occur closer to residential areas since most of the PM_{10} emissions would occur on Willow Road and Highway 1. Use of truck to transport crude to the SMR would increase the level of truck traffic in the vicinity of the refinery by a factor of about four. Given that higher diesel particulate matter emission associated with the trucking alternative, the health risk impact of this alternative would be greater than for the Rail Spur Project.

This alternative could also have potentially significant impacts to biological and water resources from an oil spill due to a truck accident, depending upon the location of the spill along the truck route. Oil spill impacts from truck accidents would still be potentially significant depending upon the location of the spill. The spill volume would be less since a truck holds less oil than a rail tanker car. However, the probability of a spill would increase since trucks have a higher accident rate then trains. The net effect would be a much higher risk of a spill from trucks, but in the event of a spill area impacted would likely be smaller than for a rail spill.

The trucking to the SMR would involve trucking the oil from the source of the crude oil to the SMPS. The crude oil is expected to be delivered from various North American sources and would place 2,730 trucks on the road per week (390 one-way truck trips per day assuming seven days per week) between the unloading station and the crude source since each truck would need to return to the oilfield for filling up. These trucks would pass through populated areas within California including possibly the Bay Area, Los Angeles Basin, and Sacramento. The exact populated areas that could be impacted by the trucking operations would depend upon the route

taken to get to the SMR. However, trucks would likely use Highway 101 from both the north and the south to get to the SMR.

Class 3 hazardous material trucks have an estimated accident rate of 0.71 accidents per million miles (Battelle 2001). This is greater than the 0.51 to 0.39 derailment per million miles for the crude oil trains. Also, the probability of a Class 3 truck having a spill given an accident is about 35% (Battelle 2001). Delivery of crude to the SMPS via truck would require about 273 times more miles than delivery by unit train. The net result would be a substantial increase in the overall risk of an accident for truck then compared to rail. However, the volume of oil spilled from a truck accident would be smaller, which could reduce the consequence of a spill. While this would serve to reduce the overall consequences of a spill, the impact from a truck spill would likely be significant, and there would likely be more spills due to the higher accident rate and the substantial increase in overall miles traveled to transport the oil to the SMR.

Class 3 truck accidents and incidents account for about 56 percent of all of the hazardous material truck accidents and incidents. Class 3 materials travel predominantly in bulk carriers. For the total number of enroute accidents, an estimated 88 percent of listed accidents involved cargo tanks (Battelle 2001).

Trucking would add 390 one-way trips per day to Willow Road and State Route 1, assuming deliveries seven days per week. This would increase traffic and hazards impacts over the Rail Spur Project, and could lead to a significant impact at the Willow Road/State Route 1 intersection particularly during peak hours.

Noise impacts would likely increase due to the constant truck traffic that would be traveling to the SMR along Willow Road. This would be particularly true during the nighttime hours. There would also be some noise at the SMR due to the truck unloading operation, but it would likely be less than for the Rail Spur Project.

Given that the trucking to the SMR alternative would increase the severity of a number of impacts identified for the Rail Spur Project (e.g., air quality, noise, transportation and circulation, etc.), would not eliminate any of the significant impacts, and could result in additional significant unavoidable impacts to traffic, it has not undergone a more detailed analysis in the EIR, and has been dropped from further consideration based upon the screening analysis.

5.2.3 Marine Transportation

The information in Table 5.1 shows that this alternative would result in an increase in the severity of the majority of the impacts identified for the Rail Spur Project. While it would reduce or eliminate some of the onshore impacts (risk to the public from rail accidents, impacts to onshore biological/agricultural/water resources), these would be more than offset by the introduction of a large number of marine related impacts that would not exist for the Rail Spur Project. A number of the marine oil spill related impacts would be significant and unavoidable (i.e., marine biology, marine water quality, recreation, etc.). With this alternative a number of the impacts would be shifted from onshore areas to offshore areas.

Recommended ocean conditions for sitting marine terminals suggest a maximum significant wave height of between 1.2 and 2.0 meters and a wind speed of between 11 and 18 meters per second depending upon the activity (i.e., berthing, unloading, disconnect of cargo arms, unberthing, etc.) (Shu 2000). In the area offshore the SMR wave heights exceeding 2.0 meters occurred about 30% of the time, and waves exceeding 1.0 m occurred about 80% of the time. Winds exceeding 10 meter/second occurred about 16% of the time (USACE 2015). This data would indicate that a marine terminal located directly offshore the SMR would likely not be feasible due to the sea state conditions.

While use of San Luis Obispo Bay offshore Avila Beach would be more protective and allow for sea states that could accommodate a marine terminal, Policy 6 of the San Luis Obispo County Coastal Plan Policies states that no new marine terminal facilities shall be constructed along the coast of San Luis Obispo County north of Shell Beach. Therefore, a new marine terminal in San Luis Obispo Bay offshore Avila Beach would not be allowed based upon the County's coastal polices.

This alternative would not meet any of the objectives of the project, and in particular it would not allow access to North American crudes, would not be consistent with San Luis Obispo Local Coastal Program, and would not maximize use of the existing infrastructure and resources. The marine alternative would only be capable of providing foreign or Alaskan crudes to the SMR.

The marine option would increase the severity of a number of impacts identified for the Rail Spur Project (e.g., aesthetics and visual resources, air quality, recreation, etc.), and would introduce marine impacts, some of which would be significant and unavoidable. The peak day hoteling and crude unloading emissions from a 35,000 DWT tanker would be about 372.9 lbs of NO_x, 402,8 of ROG, and 38.2 lbs of PM_{10} (CSLC 2010). These emissions would be greater than the peak day rail unloading emissions at the SMR (243.1 lbs of NO_x, 34.1 lbs ROG, and 10.7 lbs of PM_{10}.

Based upon United State Coast Guard (USCG) spill data for marine vessels (CSLC 2010), marine tankers servicing the SMR would be expected to have a spill of any size once every 2.2 years and a spill of more than 1,000 gallons once every 29 years. These are higher spill probabilities then for the proposed rail project. An oil spill of 12,090 barrel of heavy crude could impact about 26 miles of coastline (CSLC 2010).

A marine terminal would not be consistent with the San Luis Obispo County Local Coastal Program. In addition, construction and operation of a marine terminal would require permits from a wide range of Federal and State agencies, which are outside of the control of the County, and it is speculative if such permits could be obtained from agencies such as the California State Land Commission and the California Coastal Commission.

While a marine terminal alternative would eliminate some of the onshore significant impacts associated with the Rail Spur Project, it would generate a number of new significant impacts particularly associated with the marine environment. In addition, a marine terminal alternative could probably not be "feasibly accomplished in a successful manner" considering the environmental and technological factors discussed above. Therefore, the marine terminal

alternative has not undergone a more detailed analysis in the EIR, and has been dropped from further consideration based upon the screening analysis.

5.2.4 Rail Unloading at the Santa Maria Pump Station

As shown in Table 5.2, this alternative would increase the severity of impacts in all issue areas with the exception of recreation and population and housing. This alternative would require building a new rail line from near the City of Guadalupe west through the City of Santa Maria to the SMPS. This would likely be technically infeasible due to the large number of street crossings that would have to occur. Separated grade crossings would need to be installed at all of the street crossings. It is likely that permitting of this new rail line through the City of Santa Maria would not be feasible, and would likely require permits from the City of Guadalupe, County of Santa Barbara, and the City of Santa Maria, which are outside of the control of the County, and it is speculative if such permits could be obtained from these agencies.

Given that this alternative would not reduce the severity of any of the significant impacts of the Rail Spur Project, would generate a number of new potentially significant impacts, and is likely to be infeasible, it has not undergone a more detailed analysis in the EIR, and has been dropped from further consideration based upon the screening analysis.

5.2.5 Shorter Unit Trains

This alternative would reduce the length of the unit trains delivered to the SMR refinery, but more trains would be needed to deliver the same amount of crude. If the unit trains were reduced to 40 tank cars, twice as many trains would need to be delivered to the SMR to maintain the same crude delivery rate. The information in Table 5.1 shows that this alternative would reduce a number of the construction related impacts compared to the proposed project since less track would need to be installed east of the unloading area. Construction of a shorter track would reduce, but not eliminate the impacts to CDFW sensitive habitat. For a 40 tanker unit train the impacts to CDFW sensitive habitat would be reduced by about 10 acres.

This alternative would increase the severity of a number of operational impacts such as air emissions, risk of spills for the unloading facility and mainline tracks, and health risk along the mainline tracks and at the SMR. A 40 car unit train would almost double the air and GHG emissions since twice as many trains would be needed to deliver the same amount of crude oil to the SMR. This would substantially increase the severity of the air quality significant Class I impacts.

Also it is likely that the overall accident rate associated with running a higher number of shorter trains would increase as compared to running fewer longer trains (Schafer. 2008). The estimated spill volumes would remain about the same as for the Rail Spur Project. This would increase the risk of oil spill impacting biological, water, cultural, and agricultural resources, which was found to be a significant (Class I) impact. The risk of injuries and fatalities would also increase with shorter unit trains due to the overall higher accident rate associated with running an increased number of shorter trains. This would increase the severity of the significant (Class I) hazard impact.

Given that this alternative would not reduce the severity of any of the significant impacts of the Rail Spur Project, and would increase the severity of a number of significant operational impacts, it has not undergone a more detailed analysis in the EIR, and has been dropped from further consideration based upon the screening analysis

5.2.6 Loop Rail Unloading Configuration

This alternative would use a different track layout at the SMR for unloading of crude oil. As discussed in Table 5.2, all of the operational impacts for this alternative would likely be the same as for the Rail Spur Project with the exception of air quality, noise, and visual resources. This alternative could reduce the air emissions associated with the switching operations at the SMR since fewer movements of the tanker cars may be needed. Visual impacts would likely increase since the trains would be more visible from State Route 1 and other sensitive view areas.

Construction impacts would increase for most of the issue areas (i.e., biology, cultural, agricultural, geology, water, etc.) since a larger area would need to be disturbed. In addition, a larger amount of cut and fill would be needed to implement this alternative. There would also be excess cut material that would need to be hauled off site via truck. This alternative would increase traffic and air emissions associated with construction and could impact additional biological and cultural resources.

Given that this alternative has the potential to reduce air emissions associated with the rail unloading operations at the SMR, and would meet all of the objectives of the project, it has been selected for further evaluation in the EIR.

5.2.7 Reduced Rail Deliveries

This alternative would be identical to the Rail Spur Project except that it would only have three trains per week delivered to the SMR versus five. For all the issue areas other than air quality and hazards the impacts would be essentially the same as the proposed project. This alternative would reduce the annual criteria pollutant air emissions from the project, but the peak day criteria pollutant emissions would remain the same. Annual toxic air emissions would be reduced since fewer trains would serve the facility. Reducing the train deliveries to three per week would reduce the annual emissions.

The peak day emissions would still remain the same and would be significant and unavoidable (Class I). It is likely that toxic air emissions at the SMR could be reduced to less than significant with mitigation with the reduction in the number of annual train deliveries reduced from 250 to 150.

The hazard impacts associated with train accidents would be reduce since fewer trains would be delivered to the SMR. However, the impact would remain significant and unavoidable. The oil spill risk associated with biology and water resources would be reduced compared with the Proposed Project. With the reduction in rail deliveries to the SMR the probability of an oil spill would be reduce. However, the impact to water and biological resources would remain the same in the event of an oil spill since the spill volumes from a rail tanker car would remain the same.

If the County is preempted from applying mitigation to the UPRR mainline air emissions, then this alternative would serve to reduce the severity of the significant and unavoidable air quality impact associated with criteria pollutants and GHG emissions. It also could reduce the severity of the health risk impacts at the SMR from significant and unavoidable to less than significant with mitigation. This alternative would also reduce the risk of an oil spill since fewer trains would be traveling to the SMR. This would reduce the severity of the significant hazard impact. Therefore, this alternative has been selected for further evaluation in the EIR.

5.3 Environmental Analysis of Selected Alternatives

Based on the screening analysis presented above, three alternatives were selected for further evaluation in the EIR. State CEQA Guidelines Section 15126.6(d) states:

The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the Rail Spur Project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be caused by the Rail Spur Project, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the proposed Project.

In accordance with State CEQA Guidelines Section 15126.6(d) as presented above, this EIR provides sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the Rail Spur Project and the other alternatives. It should be noted that assumptions made regarding the alternatives' descriptions could differ from actual proposals and the analyses are not presented to a project-level of detail. Different alternative Project configurations and a project-level environmental analysis could result in different conclusions from those presented herein.

The remainder of this section further analyzes the environmental impacts of the selected alternatives. The alternatives selected in Section 5.2 for more detailed analysis include:

- The No Project Alternative;
- Loop Rail Unloading Configuration; and
- Reduced Rail Deliveries.

Table 5.1 Comparison of Transportation Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project			Comments
	Trucking to SMPS	Trucking to SMR	Marine Terminal	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.			
Aesthetics and Visual	-	0	+	***Trucking to SMPS –*** The SMPS would have to be expanded and new unloading racks and tanks would need to be installed. This would result in an expansion of an industrial facility that would affect the visual character of the surrounding area. However, the SMPS is surrounded by agricultural operations and is not near any scenic roads. There would also be an increase in the nighttime glare from the facility, which could impact surrounding areas, but most of the surrounding areas are agricultural. ***Trucking to SMR –*** A truck unloading facility at the SMR would be smaller in scale than the rail unloading facility, but it would still be visible from some of the surrounding areas. It would also have similar nighttime lighting as the rail facility. ***Marine –*** The presence of a marine tanker offshore from the SMR would significantly affect the visual quality of the coast and the view from the ODSRVA.
Agricultural Resources	+/0	-/0	-	***Trucking to SMPS –*** The SMPS would have to be expanded and new unloading racks and tanks would need to be installed. The expansion would likely occur on agricultural land that is currently being used for row crop production. This agricultural land would be lost to production. ***Trucking to SMR –*** A truck unloading facility at the SMR would be smaller in scale than the rail unloading facility, and would therefore impact less agricultural land. ***Marine –*** The only onshore impacts associated with this alternative would be the construction of the pipeline from the mooring system to the SMR. This could temporarily impact agricultural land, but would not result in any permanent loss.
Air Quality and GHG	-/+	-/+	+	***Trucking to SMPS –*** The SMPS would have to be expanded and new unloading racks and tanks would need to be installed. This would result in construction air emissions that would likely be similar to the Rail Spur Project. The operational emissions associated with the trucks would be greater than for the Rail Spur Project due to the large number of trucks need to deliver the crude. There would also be increased air emissions associated moving the crude from the SMPS to the SMR via pipeline. ***Trucking to SMR –*** The construction emissions would likely be similar to that for the Rail Spur Project. The operational emissions associated with the trucks would be greater than for the Rail Spur Project due to the large number of trucks need to deliver the crude. ***Marine –*** Construction of an offshore marine terminal would generate significant air emissions due to marine barges and support tugs and the installation of an offshore pipeline. The operational emissions

Table 5.1 Comparison of Transportation Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project			Comments
	Trucking to SMPS	Trucking to SMR	Marine Terminal	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.			
				would be substantially greater due to the crude oil tanker and tug boat emissions.
Biological Resources	-/0	-/0	+	***Trucking to SMPS –*** The SMPS would have to be expanded and new unloading racks and tanks would need to be installed. However, the expansion would likely occur on agricultural land that has minimal biological resources so the construction related impacts would be less. Oil spill impacts from truck accidents would still be potentially significant depending upon the location of the spill. The spill volume would be less since a truck holds less oil than a rail tanker car. However, the probability of a spill would increase since trucks have a higher accident rate then trains. The net effect would be a much higher risk of a spill from trucks, but in the event of a spill area impacted would likely be smaller than for a rail spill. ***Trucking to SMR –*** A truck unloading facility at the SMR would be smaller in scale than the rail unloading facility, so it would likely have less biological impacts due to construction. Oil spill impacts from truck accidents would still be potentially significant depending upon the location of the spill. The spill volume would be less since a truck holds less oil than a rail tanker car. However, the probability of a spill would increase since trucks have a higher accident rate then trains. The net effect would be a much higher risk of a spill from trucks, but in the event of a spill area impacted would likely be smaller than for a rail spill. ***Marine –*** Construction of an offshore marine terminal could have significant impacts to marine biological resources. An oil spill from a marine tanker would also have significant impacts to marine resources. The terminal would be located in known habitat area for the California Sea Otter, a Federally threatened species. Construction of the pipeline from the offshore mooring to the SMR would pass though areas of sensitive biological resource, which could be significantly impacted.
Cultural Resources	-/0	-/0	-	***Trucking to SMPS –*** The SMPS would have to be expanded and new unloading racks and tanks would need to be installed. However, the expansion would likely occur on agricultural that would likely have limited cultural resources since the land has been so heavily disturbed. ***Trucking to SMR –*** A truck unloading facility at the SMR would be smaller in scale than the rail unloading facility, do it would likely have less cultural impacts. ***Marine –*** Construction of an offshore marine terminal could have significant impacts to offshore cultural resources, depending upon the location of the mooring facility. Construction of the pipeline

Table 5.1 Comparison of Transportation Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project			Comments
	Trucking to SMPS	Trucking to SMR	Marine Terminal	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.			
				from the offshore mooring to the SMR would pass though areas of sensitive cultural resource, which could be significantly impacted.
Geological Resources	0	0	+	***Trucking to SMPS –*** The SMPS would have to be expanded to accommodate the additional truck unloading capacity. This expansion would occur on flat agricultural land. As such, the geological resource impacts associated with construction would be similar to the Rail Spur Project. ***Trucking to SMR –*** A truck unloading facility at the SMR would include a number of truck unloading racks. These would be subject to the same types of geological impacts as the Rail Spur Project. As such, the geological resource impacts associated with construction would be similar to the Rail Spur Project. ***Marine –*** Installation of an offshore mooring system and pipeline would raise offshore geological issues associated with design of the pipeline and mooring system to handle seismic events.
Hazards and Hazardous Materials	0	0	+	***Trucking to SMPS –*** The risk of an oil spill and accident would increase with the use of trucks. Trucks have a higher accident rate per mile than trains. However, the volume of oil spilled from a truck accident would be smaller, which could reduce the consequence of a spill. Even with the reduction in spill volume, the impacts of an accident and spill from truck transportation would likely be significant. The combination of increase frequency of accident but a lower level of consequence would likely result in a similar level of risk between truck and rail. The risk of one or more fatalities or injuries would be greater with truck transportation, but the risk of multiple fatalities or injuries would likely be lower. ***Trucking to SMR –*** The risk of an oil spill and accident would increase with the use of trucks. Trucks have a higher accident rate per mile than trains. However, the volume of oil spilled from a truck accident would be smaller, which could reduce the consequence of a spill. Even with the reduction in spill volume, the impacts of an accident and spill from truck transportation would likely be significant. The combination of increase frequency of accident but a lower level of consequence would likely result in a similar level of risk between truck and rail. The risk of one or more fatalities or injuries would be greater with truck transportation, but the risk of multiple fatalities or injuries would likely be lower. ***Marine –*** The risk associated with a marine tanker accident and associated large spill of oil to the marine environment would likely be significant. The spill volumes with marine transportation could

Table 5.1 Comparison of Transportation Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project			Comments
	Trucking to SMPS	Trucking to SMR	Marine Terminal	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.			
				be substantially larger than with rail transportation.
Noise and Vibration	0	+	+	***Trucking to SMPS –*** The increase truck traffic on the local road in the City of Santa Maria would generate increase noise. This would be particularly true if trucks were traveling to the SMPS at night. The truck route through the City of Santa Maria would be mainly through agricultural land, but there are a few residences in close proximity to the roads. The noise impacts at the SMPS would be less than the noise impacts at the SMR from the Rail Spur Project since the site in not located near any sensitive receptors. This alternative would eliminate any noise impact in the vicinity of the SMR. ***Trucking to SMR –*** The increase truck traffic on the local road around the SMR would generate increase noise. This would be particularly true if trucks were traveling to the SMR at night. The noise impacts of the unloading operations would likely be similar to the Rail Spur Project due to the constant flow of trucks moving through the unloading racks. ***Marine –*** The presence of a marine tanker offshore from the SMR could generate noise that would be heard at the ODSRVA, particularly at night. There is also the potential for noise impacts to marine mammals from the tanker engines.
Population and Housing	0	0	0	None of the alternative would be expected to generate large numbers of employees that would impact housing and population.
Public Services and Utilities	+	0	+	***Trucking to SMPS –*** The SMPS site is further away from emergency response and fire stations. This would increase the overall response time to the facility. Also, the SMPS does not have a dedicated fire brigade, which would serve to increase the demand on fire services. The addition of new infrastructure would increase demand on emergency response and fire services. Demand for emergency response along the highways would increase due to the likely increase in truck accident associated with transporting the crude oil. The risk of an accident for truck transportation would be higher than for rail, but the spill size in the event of an accident would be smaller. Spills of crude oil from trucks would require similar emergency response capabilities as for rail, but the extent of the response would likely be smaller due to the reduced spill size. However, with truck transportation the higher accident rate would result the need for more response to accidents. Therefore, the overall demand on emergency services would be similar between truck and rail, and would likely remain significant. ***Trucking to SMR –*** This alternative would have the same public services impacts as the Rail Spur Project since the operation of the facility would be essentially the same with trucks replacing trains.

Table 5.1 Comparison of Transportation Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project			Comments
	Trucking to SMPS	Trucking to SMR	Marine Terminal	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.			
				Demand for emergency response along the highways would increase due to the likely increase in truck accidents associated with transporting the crude oil. The risk of an accident for truck transportation would be higher than for rail, but the spill size in the event of an accident would be smaller. Spills of crude oil from trucks would require similar emergency response capabilities as for rail, but the extent of the response would likely be smaller due to the reduced spill size. However, with truck transportation the higher accident rate would result the need for more response to accidents. Therefore, the overall demand on emergency services would be similar between truck and rail, and would likely remain significant. ***Marine –*** The presence of a marine tanker offshore from the SMR would increase the demand on the Coast Guard to provide emergency services in the event of an incident. Also demand on other emergency resource agencies would increase in the event of an offshore oil spill. Use of marine tankers would increase the demand for offshore oil spill cleanup equipment and resources.
Recreation	0	0	+	***Trucking to SMPS –*** This would have similar recreational impacts as the Rail Spur Project. ***Trucking to SMR –*** This would have the similar recreational impacts as the Rail Spur Project. ***Marine –*** The presence of a marine tanker offshore from the SMR would be visible from the ODSRVA, which could affect the experience of people using the park. In the event of an offshore oil spill the ODSRVA could be closed to public for cleanup operations. This would be a significant recreational impact. Offshore San Luis Obispo Bay the terminal would be visible from Avila Beach recreational area, and in the event of a spill could close this areas to the public.
Transportation and Circulation	+	+	0	***Trucking to SMPS –*** This alternative would add a 390 one-way truck trips per day (assuming seven days per week) to the local roads in the City of Santa Maria. This would likely have a significant impact to a few of intersections particularly during peak hours. ***Trucking to SMR –*** This alternative would add a 390 one-way truck trips per day (assuming seven days per week) to Willow Road and State Route 1. This would likely have a significant impact to the intersection of Willow Road and State Route 1 during the peak afternoon hours. ***Marine –*** This alternative would be expected to have similar traffic impacts as the Rail Spur Project.
Water Resources	-/0	-/0	+	***Trucking to SMPS –*** This alternative would have similar construction related water resource impacts as the Rail Spur Project since construction and operation of the facility would be essentially the same with trucks replacing trains. Oil spill impacts from truck accidents would still be potentially

Table 5.1 Comparison of Transportation Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project			Comments
	Trucking to SMPS	Trucking to SMR	Marine Terminal	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.			
				significant depending upon the location of the spill. The spill volume would be less since a truck holds less oil than a rail tanker car. However, the probability of a spill would increase since trucks have a higher accident rate then trains. The net effect would be a much higher risk of a spill from trucks, but in the event of a spill area impacted would likely be smaller than for a rail spill. ***Trucking to SMR –*** This alternative would have similar water resource impacts as the Rail Spur Project since the construction and operation of the facility would be essentially the same with trucks replacing trains. Oil spill impacts from truck accidents would still be potentially significant depending upon the location of the spill. The spill volume would be less since a truck holds less oil than a rail tanker car. However, the probability of a spill would increase since trucks have a higher accident rate then trains. The net effect would be a much higher risk of a spill from trucks, but in the event of a spill area impacted would likely be smaller than for a rail spill. ***Marine –*** Construction of the offshore mooring and pipeline would have marine water quality impacts due to the anchoring of barges and other offshore construction activities. In the event of an offshore oil spill there would be significant marine water quality impacts.

For issue areas marked with two scores, the first one represents changes from the proposed project for construction and the second one represents changes from the proposed project for operations.

Table 5.2 Comparison of Rail Related Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project				Comments
	Rail Unloading at SMPS	Loop Rail Unloading Configuration	Reduced Rail Deliveries	Reduced Unit Train Size	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.				
Aesthetics and Visual	+	+	-	-	***Rail Unloading at SMPS –*** New rail tracks would have to be installed through the City of Santa Maria, which would affect the visual character of the surrounding areas. The SMPS would have to be expanded and new rail and unloading facilities and tanks would need to be installed. This would result in a major expansion of an industrial facility that would affect the visual character of the surrounding area. There would also be an increase in the nighttime glare from the facility, which could impact surrounding areas. ***Loop Rail –*** The loop rail configuration would be substantially larger than the proposed linear design. Due to the topography of the site, the southern end of the loop would have to be raised to maintain a level grade. This would increase the visual impacts of the project over the proposed linear design, since the track and trains would be more visible for residential areas, and State Route 1. ***Reduced Deliveries –*** This would have the same visual impacts as the Rail Spur Project since the design and track layout of the alternative would be the same. Trains would be at the SMR less often, which would reduce to some level the visual impacts of the trains, but would not affect the visual impacts of the rail facilities. ***Reduced Unit Train Size –*** The length of the rail spur track east of the refinery would be reduced, which would serve to reduce the visual impacts of the onsite railroad tracks. The visual impact of the unloading area would remain the same as the proposed project.
Agricultural Resources	+	+	0/-	-/+	***Rail Unloading at SMPS –*** Installation of the new rail line to the SMPS would likely pass through agricultural lands, which would be permanently removed from agricultural production. In addition, increased train traffic in close proximity of agricultural lands could impact crop productivity. The SMPS would have to be expanded and new rail and unloading facilities and tanks would need to be installed. The expansion would likely occur on agricultural land that is currently being used for row crop production. This agricultural land would be lost to production. ***Loop Rail –*** The loop rail configuration would be substantially larger than the proposed linear design and would impact a larger area of agricultural land. Plus

Table 5.2 Comparison of Rail Related Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project				Comments
	Rail Unloading at SMPS	Loop Rail Unloading Configuration	Reduced Rail Deliveries	Reduced Unit Train Size	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.				
					the loop design would preclude grazing on a large portion of the site. ***Reduced Deliveries –*** This would have the same agricultural impacts as the Rail Spur Project for construction since the design and layout of the facilities at the refinery would be the same. This alternative would have a lower spill probability due to the reduction in the number of trains that would be needed to service the refinery. Impacts of a spill would remain the same as the proposed project in the event of an oil spill, but the risk of a spill impacting agricultural resources would decrease. ***Reduced Unit Train Size –*** The length of the rail spur tracks east of the loading area would be reduced by about 50 percent. This would reduce the level of construction impacts to agricultural resources since less area would be removed from grazing operations. This alternative would have higher spill probabilities due to the increase number of trains that would be needed to be delivered to the refinery. While the impacts of an oil spill would remain the same as the proposed project in the event of a spill, the risk of a spill impacting agricultural resources would increase.
Air Quality and GHG	+	+/-	0/-	0/+	***Rail Unloading at SMPS –*** Substantial air emissions would occur due to the construction of the new rail line to the SMPS. The SMPS would have to be expanded to accommodate the rail lines and unloading facilities. These construction emissions would be greater than for the Rail Spur Project since more new infrastructure would need to be built. The operational emissions associated with the trains would be greater than for the Rail Spur Project due to the longer travel distance particularly if the trains came from the north. There would also be increased air emissions associated moving the crude from the SMPS to the SMR via pipeline. ***Loop Rail –*** Air emissions due to construction would be greater than for the Rail Spur Project since more area would need to be graded and more cut and fill would be needed. There would also be a need to export soil from the construction site, which would increase offsite truck emissions. The operational emissions at the SMR could be slightly lower since the loop design would likely require less switching time for the locomotives since fewer sections of the train would need to

Table 5.2 Comparison of Rail Related Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project				Comments
	Rail Unloading at SMPS	Loop Rail Unloading Configuration	Reduced Rail Deliveries	Reduced Unit Train Size	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.				
					be moved to different sections of the track. However, the rail track would be located closer to the sensitive receptors located north of the SMR and this could increase the health risk impacts from air toxic emissions. ***Reduced Deliveries –*** The construction emissions would be the same as the Rail Spur Project. The annual operational emissions would be lower since fewer trains would be delivered to the SMR. The peak day emissions would be the same as for the Rail Spur Project. Toxic emission impacts would likely be lower since the annual emissions would be less. ***Reduced Unit Train Size –*** Since less track would need to be installed at the refinery construction air emissions would be lower than the proposed project. This alternative would require more trains to deliver the same amount of crude to the refinery. A train length of 40 tanker cars would result in almost a two-fold increase in operational emissions along the mainline track. The emissions at the refinery would increase slightly due to more arrival and departure emissions. The unloading emissions would be essentially the same as for the proposed project. The unloading emissions for each train would be cut in about half for a 40 car unit train, but there would be twice as many train unloaded.
Biological Resources	+	+	0/-	-/+	***Rail Unloading at SMPS –*** Installation of the new rail line to the SMPS would likely pass through area with sensitive biological resources. The new rail line may have to cross a number of wetland areas that would result in increased biological impacts. The SMPS would have to be expanded and new rail and unloading facilities and tanks would need to be installed. However, the expansion would likely occur on agricultural land that has minimal biological resources. ***Loop Rail –*** The loop rail configuration would be substantially larger than the proposed linear design. Due to the topography of the site, the southern end of the loop would have to be raised to maintain a level grade. This would increase the biological impacts associated with construction. The sensitive open dune habitat directly east of the refinery would also be impacted with the construction of this alternative. ***Reduced Deliveries –*** This would have the same biological impacts as the Rail Spur Project for construction since the design and layout of the facilities at the

Table 5.2 Comparison of Rail Related Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project				Comments
	Rail Unloading at SMPS	Loop Rail Unloading Configuration	Reduced Rail Deliveries	Reduced Unit Train Size	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.				
					refinery would be the same. With the reduction in rail deliveries to the SMR the probability of an oil spill would be reduce. While the impact to biological resources would remain the same as the proposed project in the event of an oil spill, the overall risk on an oil spill impacting biological resources would be reduced. ***Reduced Unit Train Size –*** The length of the rail spur tracks east of the loading area would be reduced by about 50 percent. This would reduce the level of construction impacts to biological resources since less area would be impacted. This alternative would eliminate about eight acres of impact to CDFW sensitive biological habitat that occurs near the end of the proposed project rail lines. This alternative would have higher spill probabilities due to the increase number of trains that would be needed to be delivered to the refinery. While the impacts of an oil spill would remain the same as the proposed project in the event of a spill, the risk of a spill impacting biological resources would increase.
Cultural Resources	+	+	0/-	-/+	***Rail Unloading at SMPS –*** Installation of the new rail line to the SMPS would likely pass through culturally sensitive areas given the length of the line required. The SMPS would have to be expanded and new rail and unloading facilities and tanks would need to be installed. However, the expansion would likely occur on agricultural that would likely have limited cultural resources since the land has been so heavily disturbed. ***Loop Rail –*** The loop rail configuration would be substantially larger than the proposed linear design. Due to the topography of the site, the southern end of the loop would have to be raised to maintain a level grade. This would increase the potential for cultural impacts associated with construction. ***Reduced Deliveries –*** This would have the same cultural impacts as the Rail Spur Project construction since the design and layout of the facilities at the refinery would be the same. This alternative would have a lower spill probability due to the reduction in the number of trains that would be needed to service the refinery. Impacts of a spill would remain the same as the proposed project in the event of an oil spill, but the risk of a spill impacting cultural resources would decrease. ***Reduced Unit Train Size –*** This alternative would have less cultural resources

Table 5.2 Comparison of Rail Related Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project				Comments
	Rail Unloading at SMPS	Loop Rail Unloading Configuration	Reduced Rail Deliveries	Reduced Unit Train Size	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.				
					impacts than the proposed project since less cut and fill would be needed due to the reduction in the overall track length east of the loading area. This would reduce the potential for impacting cultural resources. This alternative would have higher spill probabilities due to the increase number of trains that would be needed to be delivered to the refinery. While the impacts of an oil spill would remain the same as the proposed project in the event of a spill, the risk of a spill impacting cultural resources would increase.
Geological Resources	+	+	0	-	***Rail Unloading at SMPS –*** Installation of the new rail line to the SMPS would increase the potential for erosion impacts along the route. The SMPS would have to be expanded and new rail and unloading facilities and tanks would need to be installed. This expansion would occur on flat agricultural land. As such, the geological impacts associated with construction at the SMPS would be similar to the Rail Spur Project. ***Loop Rail –*** Construction of the Loop Rail would be subject to the same types of geological impacts as the Rail Spur Project. However, the increase level of cut and fill would increase the potential for erosion over the proposed Rail Spur Project. ***Reduced Deliveries –*** This would have the same geological impacts as the Rail Spur Project since the design and layout of the alternative would be the same. ***Reduced Unit Train Size –***This alternative would have less geological impacts than the proposed project since less cut and fill would be needed due to the reduction in the overall track length east of the loading area.
Hazards and Hazardous Materials	+	0	-	+	***Rail Unloading at SMPS –*** New rail tracks would have to be installed through the city of Santa Maria, which would increase the risk of train accidents within this populated area. The hazards associated with a spill of oil at the SMPS would be similar to that for the Rail Spur Project. ***Loop Rail –*** This would have the same hazard impacts as the Rail Spur Project since the number of trains delivered to the SMR would remain the same. ***Reduced Deliveries –*** The overall risk associated with the trains servicing the SMR would decrease with this alternative since fewer trains would be delivered to the SMR.

Table 5.2 Comparison of Rail Related Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project				Comments
	Rail Unloading at SMPS	Loop Rail Unloading Configuration	Reduced Rail Deliveries	Reduced Unit Train Size	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.				
					Reduced Unit Train Size –The risk of an oil spill would increase over the proposed project both for mainline operations as well as for the unloading operations. The overall accident rate along the main line associated with running a higher number of shorter trains would increase as compared to running fewer longer trains. The number of unloading operations that would have to occur at the refinery would increase, which would increase the probability of an accident.
Noise and Vibration	+	+	-	0	***Rail Unloading at SMPS –*** New rail tracks would have to be installed through the city of Santa Maria, which could substantially increase noise level near a number of sensitive receptors. This would be particularly true for trains moving to the SMPS at night. The SMPS would have to be expanded and new rail and unloading facilities and tanks would need to be installed. The noise impacts at the SMPS would be less than the Rail Spur Project since the site in not located near any sensitive receptors. ***Loop Rail –*** The loop rail configuration would generate noise levels similar to the Rail Spur Project since trains would still be needed to move the tanker cars during the unloading process. However, the rail track would be located closer to the sensitive receptors to the north and this could result in increased noise impacts in this area. ***Reduced Deliveries –*** This would have the same noise impacts as the proposed Rail Spur Project for each unloading operation since the trains would operate in the same manor. However, the frequency of the unloading operations would be reduced. ***Reduced Unit Train Size –*** With a reduced unit train size the hours of noise associated with each train unloading operations would be less since each unlading operation would take less time. However, the hourly noise levels would remain the same. In additions, there would be more trains delivered to the refinery so the noise from unloading would occur more frequently, but for less duration for each unloading operation. The net effect would be similar noise to the proposed project.
Population and Housing	0	0	0	0	None of the alternative would be expected to generate large numbers of employees that would impact housing and population. Construction labor for the

Table 5.2 Comparison of Rail Related Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project				Comments
	Rail Unloading at SMPS	Loop Rail Unloading Configuration	Reduced Rail Deliveries	Reduced Unit Train Size	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.				
					Rail Unloading at SMPS alternative would be greater due to the need to construct the new rail line. However, this would be a temporary increase in employment that would not be expected to impact population and housing. Therefore, impacts would be similar to the Rail Spur Project.
Public Services and Utilities	+	0	0/-	0/+	***Rail Unloading at SMPS –*** The SMPS site is further away from emergency response and fire stations. This would increase the overall response time to the facility. Also, the SMPS does not have a dedicated fire brigade, which would serve to increase the demand on fire services. ***Loop Rail –*** This would have the same public services impacts as the Rail Spur Project since the operation of the alternative would be essentially the same as the Rail Spur Project. ***Reduced Deliveries –*** This would have the same public services impacts except for Fire Protection and Emergency Responses as the Rail Spur Project since the operation of the alternative would be essentially the same as the Rail Spur Project. Fire Protection and Emergency Response requirements would remain the same in the event of an oil spill, but the probability of a spill would be reduced since few trains would be needed to move crude oil to the SMR, which would reduce the likelihood that emergency response would be required. ***Reduced Unit Train Size –*** This would have the same public services impacts except for Fire Protection and Emergency Responses as the Rail Spur Project since the operation of the alternative would be essentially the same as the Rail Spur Project. Fire Protection and Emergency Response requirements would remain the same in the event of an oil spill, but the probability of a spill would be increased. The overall accident rate along the main line associated with running a higher number of shorter trains would increase as compared to running fewer longer trains. The number of unloading operations that would have to occur at the refinery would increase, which would increase the probability of an accident.
Recreation	0	0	0	0	***Rail Unloading at SMPS –*** This would have the same recreational impacts as the Rail Spur Project. ***Loop Rail –*** This would have the same recreational impacts as the Rail Spur Project.

Table 5.2 Comparison of Rail Related Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project				Comments
	Rail Unloading at SMPS	Loop Rail Unloading Configuration	Reduced Rail Deliveries	Reduced Unit Train Size	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.				
					Reduced Deliveries – This would have the same recreational impacts as the Rail Spur Project. ***Reduced Unit Train Size –*** This would have the same recreational impacts as the Rail Spur Project.
Transportation and Circulation	+	+	0/-	-/+	***Rail Unloading at SMPS –*** Construction impacts would be greater with this alternative due to the increase traffic associated with the construction of the new rail line to the SMPS. This alternative would have the same operational traffic impacts as the Rail Spur Project. ***Loop Rail –*** Construction traffic would be greater with this alternative since more trucks would be need to export the excess cut material from the SMR. This alternative would have the same operational traffic impacts as the Rail Spur Project. ***Reduced Deliveries –*** This alternative would have the same traffic impacts as the Rail Spur Project since the construction and operation would be the same. With reduced rail deliveries the potential impacts of train traffic impacting at grade crossing would be reduced. ***Reduced Unit Train Size –*** This alternative would have reduced traffic impacts associated with construction since less track would need to be installed west of the loading area. Operational trucking requirements would remain about eh same as the proposed project. With shorter unit trains there would be more train deliveries to the refinery, which would increase the potential impacts of train traffic impacting at grade crossings.
Water Resources	+	+	0/-	-/+	***Rail Unloading at SMPS*** – Use of water during construction would be greater as a result of construction of the new rail line to the SMPS. The increase in water use would be primarily for control of fugitive dust. The rail line may also have to pass through a number of wetlands which could impact water quality in these areas. The operational water use would be similar to the Rail Spur Project. ***Loop Rail –*** Use of water during construction would be greater since a larger area would need to be graded. The increase in water use would be primarily for control of fugitive dust. The operational water use would be the same as the Rail Spur Project.

Table 5.2 Comparison of Rail Related Alternatives with Proposed Project

Issue Area	Impact Comparison to Rail Spur Project				Comments
	Rail Unloading at SMPS	Loop Rail Unloading Configuration	Reduced Rail Deliveries	Reduced Unit Train Size	
	Alternative Lessens or Avoids Impacts (–), Result in Increased or Additional Impacts (+) or Remain About the Same (0) when compared to the Proposed Project.				
					Reduced Deliveries – This alternative would have the same water resource construction impacts as the Rail Spur Project since the same facilities would be built. With the reduction in rail deliveries to the SMR the probability of an oil spill would be reduce. While the impact to water resources would remain the same in the event of an oil spill, the overall risk of an oil spill impacting water resources would be reduced. ***Reduced Unit Train Size –*** The length of the rail spur tracks east of the loading area would be reduced by about 50 percent. This would reduce the level of construction impacts to water resources since less area would be impacted. This alternative would have higher spill probabilities due to the increase number of trains that would be needed to be delivered to the refinery. While the impacts of an oil spill would remain the same as the proposed project in the event of a spill, the risk of a spill impacting water resources would increase.

For issue areas marked with two scores, the first one represents changes from the proposed project for construction and the second one represents changes from the proposed project for operations.

5.3.1 No Project Alternative

The Rail Spur Project would involve the construction and operation of crude oil rail unloading facility at the SMR. With the No Project Alternative, the rail unloading facility would not be constructed or operated. The SMR would continue to receive crude oil from the existing pipeline network and via truck from the SMPS.

Under the No Project Alternative, it is possible that crude oil shipments via truck to the SMPS could increase. Crude oil shipments via truck to the SMPS could increase by about 19,200 barrels per day without exceeding the permitted truck unloading limit specified in the Santa Barbara APCD permit.

The SMR is currently receiving Canadian crude that is trucked from a rail unloading facility in Bakersfield (see Project Description, Chapter 2.0). Under the No Project Alternative it is likely that additional out of state crudes would be brought to one of the rail unloading facilities near Bakersfield or in the Bay Area and transferred to trucks for delivery to the SMPS. The crude oil would then be moved via pipeline from the SMPS to the SMR.

Since the SMR is currently receiving out of state crude from trucks via a rail facility near Bakersfield, it has been assumed that for the No Project Alternative, that crude oil unit trains would deliver the crude to an unloading facility near Bakersfield, transfer it to trucks, which would deliver it to the SMPS. The delivery of 19,200 barrels per day of crude (seven days per week) would require 2.5 crude oil unit trains per week to be delivered a rail unloading facility near Bakersfield and 100 truck trips per day from Bakersfield to the SMPS.

No new permits would be required from San Luis Obispo County for the No Project Alternative so it would not be possible for the County to apply mitigation to the impacts identified below.

Under the No Project Alternative all of the construction impacts and most of the operational impacts at the SMR that are associated with the Rail Spur Project would not occur. This is because no new facilities would be built at the refinery, and crude would continue to only be delivered via pipeline.

Issue areas where there would be modified impacts or the impact location would change with the No Project Alternative are discussed below. If an operational impact is not listed then it would remain the same as the Rail Spur Project. None of the construction impacts at the SMR would occur with the No Project Alternative so none of the construction impacts are discussed below.

Agricultural Resources

Impact AR.3 (Dust, Spill Impacts to Agricultural Resources at the SMR) would be relocated from the SMR to the rail unloading facility and the SMPS. This impact would be eliminated from the SMR. The rail unloading facility and SMPS are surrounded by agricultural operations. The increase in rail traffic to the rail unloading facility and truck traffic to the pump station (an additional 100 trucks per day), would generate dust and other air emissions that could affect the adjacent agricultural operations at both sites. Spills of oil from trucks or rail cars during unloading operations could also impact the adjacent agricultural operations. Existing spill

containment at the facilities would serve to reduce the potential for this impact. Existing dust control measures and the facilities Spill Prevention, Control and Countermeasure Plans (SPCCP) would serve to likely reduce this impact to less than significant (Class III).

Impact AR.5 (UPRR Mainline Spills) would be similar to the proposed project and would remain significant and unavoidable (Class I). With the No Project Alternative this risk would be shifted away from the Coastal Route and into the San Joaquin Valley (if one of the rail unloading facilities was used near Bakersfield) where the mainline rail route traverse more agricultural areas, particularly if the train is coming from the north. While the probability of a spill would be reduced due to few train trips per week, in the event of a spill the impacts on agricultural operations could be more severe than the Rail Spur Project given the high density of agricultural areas in the San Joaquin Valley. There would also be an increased potential for oil spills along the truck route from Bakersfield to the SMPS, which runs through some agricultural areas. Most of the truck route would be along State Highway 166 through San Luis Obispo County. While the spill volumes from trucks would be smaller than from a train, the accident rate for trucks is higher than for rail. For the portion of the rail route past Roseville to the California Border and beyond, the impacts to agricultural resources from mainline rail spills would remain significant. However, the probability of a spill would be reduced due to fewer train trips per week.

Air Quality and Greenhouse Gases

Impact AQ.2 (Operational Emissions in SLO County) would remain a significant Class I impact. Table 5.3 provides an estimate of the peak day and annual emissions for the onsite operational activities at the rail and truck facilities for the No Project Alternative. Peak day emissions would be higher than for the Rail Spur Project due to more train movements for the unloading operations and the addition of the truck loading and unloading operations. Annual emissions would be lower due to less annual train traffic, but a portion of this reduction is offset by the annual truck emissions. The severity of the impact could be less since the overall annual emissions would be less than that for the Rail Spur Project.

Table 5.3 No Project Alternative Onsite Operational Emissions, Peak Day and Annual

Source	Peak Day Emissions, lbs/day					
	ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
Crude Oil Truck Loading and Unloading	1.0	0.3	1.3	0.0	0.7	0.1
Rail Unloading	34.1	24.2	243.0	3.0	10.0	9.2
Total	***35.1***	***24.5***	***244.3***	***3.0***	***10.7***	***9.3***
Source	**Annual Emissions, tons/year**					
	ROG	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Crude Oil Truck Loading and Unloading	0.2	0.0	0.2	0.0	0.1	0.0
Rail Unloading	1.6	1.5	11.4	0.2	0.4	0.3
Total	***1.8***	***1.6***	***11.6***	***0.2***	***0.5***	***0.3***

Notes: Assumes 2.5 trains per week are unloaded at a rail terminal near Bakersfield.
Assumes 100 trucks per day are loaded at a terminal near Bakersfield and unloaded at the SMPS.

Impact AQ.3 (Mainline Rail Emissions) would remain the same as the Rail Spur Project (Class I). Table 5.4 provides the estimated peak day and annual emissions for the offsite mainline rail and truck transportation. The mainline rail emissions would exceed the SLOCAPCD thresholds for ROG, NO_x and DPM. Peak day emissions would be higher than for the Rail Spur Project due

to the addition of the truck emissions. Annual emissions would be lower due to less annual train traffic, but a portion of this reduction is offset by the annual truck emissions. The majority of the truck emissions would occur in SLOC since most of truck route along State Highway 166 is in SLOC. The severity of the impact could be less since the overall annual emissions would be less that for the Rail Spur Project.

Impacts AQ.4 (Toxic Air Emissions at the SMR) would be substantially reduced at the SMR since no trains would come to the facility for unloading. The only increase in toxic air emissions would be due to the change in crude slate. However, air toxic emissions would increase at the rail unloading facilities near Bakersfield and at the SMPS.

Table 5.4 No Project Alternative Offsite Operational Emissions, Peak Day and Annual

Source	Peak Day Emissions, lbs/day					
	ROG	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Trains	129.5	157.8	1,603.1	7.4	74.0	71.8
Trucks	21.5	114.1	556.9	0.0	20.6	19.0
Total	***150.9***	***271.9***	***2,160.0***	***7.4***	***94.6***	***90.8***
Source	**Annual Emissions, tons/year**					
	ROG	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Trains	3.0	9.9	65.4	0.5	2.0	1.9
Trucks	3.9	20.8	101.6	0.0	3.8	3.5
Total	***6.9***	***30.7***	***167.0***	***0.5***	***5.8***	***5.4***

Notes: Assumes 2.5 trains per week between a rail terminal near Bakersfield and Roseville.
Assumes 100 trucks per day between a rail terminal near Bakersfield and SMPS.

The rail unloading facility would have similar cancer risk contours as discussed below for the three trains per day alternative, but since the terminals near Bakersfield not located near any sensitive receptors, the health risk impacts of the train unloading operations would likely be less than significant (Class III).

The addition of 100 trucks per day using the SMPS would increase DPM at the faculty and along the roads between Bakersfield and the City of Santa Maria. The trucks would all have to travel through the portions of the City of Santa Maria, and this increase in truck traffic could result in a significant (Class I) health impact to sensitive receptors in close proximity to the route. This is based upon the health risk analysis done for the trucks along the road near the SMR, which indicate that at less than 100 trucks per day the 10.0 in a million cancer threshold is exceeded at sensitive receptors in close proximity to the road.

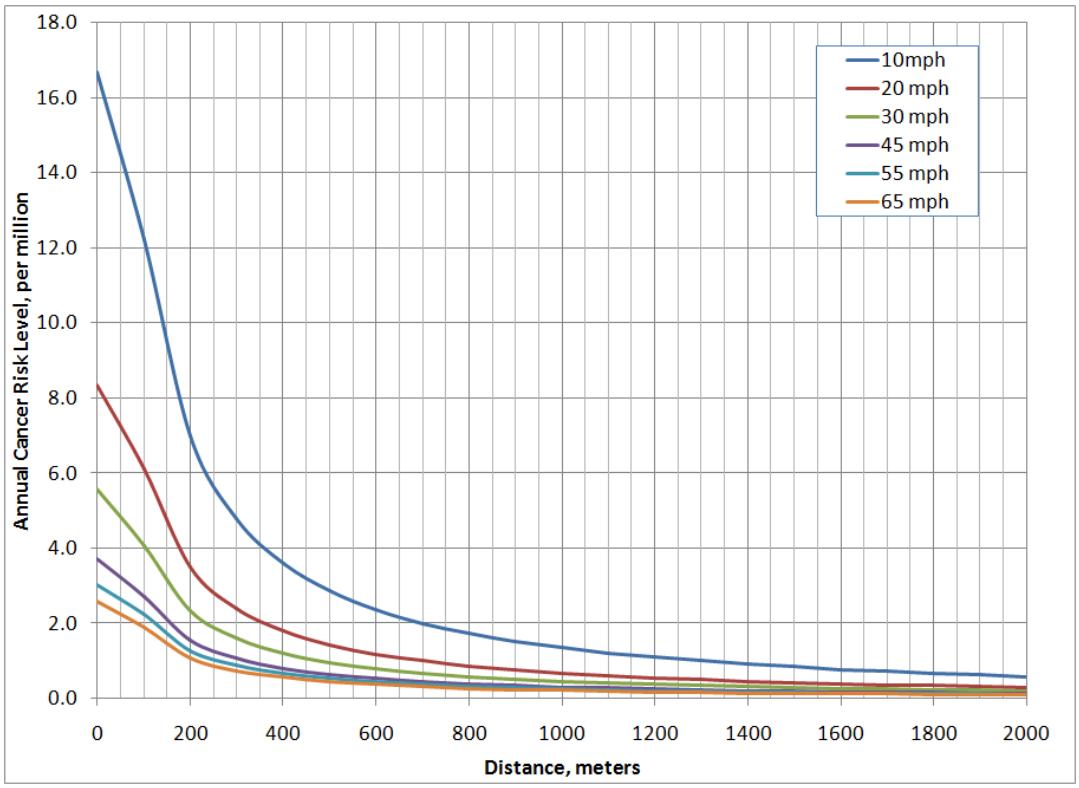
Impact AQ.5 (Mainline Rail Toxic Emissions) would remain the same as the Rail Spur Project (Class I), but the severity of the impact would be reduced. Figure 5-5 shows the cancer health risk curves as a function of train speed. This figure shows that for areas where the train is moving faster than 10 miles per hour, the cancer health risk impacts would be less than significant. However, there are areas along the mainline rail route that have speed restriction of 10 miles per hour or less, such as in the City of Davis.

These areas could experience cancer risks that are above the 10.0 in a million threshold. Given that the speed at which a train could cause excess cancer risk above the threshold is lower for the

No Project Alternative, the severity of the impact would be less since fewer areas would be affected.

Impact AQ.6 (GHG Emissions) would remain a significant (Class I) impact but would increase in severity. The estimated GHG emissions for the No Project Alternative would be about 18,250 metric tons per year of CO_2e emissions per year. This is greater than the Rail Spur Project. The increase in GHG emissions is driven by the truck trips from Bakersfield to the SMPS, which would produce about 14,083 metric tons of CO_2e emissions per year. The mainline rail emissions would be reduced by more than half from the Rail Spur Project due to fewer annual train trips and the shorter distance from Roseville to the Santa Maria Refinery.

Figure 5-5 Mainline Locomotive Cancer Risk, by speed and distance from Mainline (2.5 trains per week



Notes: Based on 3 locomotives per train, 250 round train trips per year, Nipomo meteorological dataset (1994-1996) and 70 year average locomotive emission factor (as per EPA). Includes OEHHA adjustment factors.

Impact AQ.7 (Odors) would be shifted from the SMR to the rail unloading facilities near Bakersfield and the SMPS. The impact at the SMR would not occur. Given that the rail unloading facilities and the SMPS are not located near any sensitive receptors, the odor impact would be less than significant (Class III).

Impact AQ.8 (Cumulative Air Emissions at SMR) would remain Class II, but would be reduced in severity since less new crude would be delivered to the refinery. This would result in a smaller change in the overall refinery crude slate.

Biological Resources

Impact BIO.7 (Onsite Oil Spills) would be shifted from the SMR to the truck unloading facility at the SMPS and at the rail unloading terminals. This impact would be eliminated from the SMR. The SMPS are surrounded by agricultural operations, and do not have habitat that would likely support sensitive plant and animal species. There are also no wetlands in close proximity to the pump station. The substantial increase in truck traffic to the pump station (an additional 100 trucks per day), would increase the potential for oil spills during unloading. Existing spill containment at these facilities and their Spill Prevention, Control and Countermeasure Plans (SPCCP) would serve to likely reduce this impact to less than significant (Class III).

Impact BIO.11 (UPRR Mainline Oil Spills) would be similar to the proposed project and would remain significant and unavoidable (Class I). With the No Project Alternative this risk would be shifted away from the Coastal Route and into the San Joaquin Valley where the mainline rail route traverse other biologically sensitive areas. While the probability of a spill would be reduced due to fewer train trips per week, in the event of a spill the impacts on biological resources could be significant and the spill volumes would remain the same. There would also be an increased potential for oil spills along the truck route from Bakersfield to the SMPS, which runs through some sensitive biological areas. Most of the truck route would be along State Highway 166 through San Luis Obispo County. While the spill volumes from trucks would be smaller than from a train, the accident rate for trucks is higher than for rail. For the portion of the rail route past Roseville to the California Border and beyond, the impacts to biological resources from mainline rail spills would remain significant. However, the probability of a spill would be reduced due to few train trips were week.

Impact BIO.12 (Mainline Rail Impacts to Wildlife) would remain Class III but would be reduced in severity since there would be less train trips per year for this alternative, which would reduce the probability of trains impacting wildlife on the mainline.

Cultural Resources

Impact CR.6 (UPRR Mainline Oil Spills) would be similar to the proposed project and would remain significant and unavoidable (Class I). With the No Project Alternative this risk would be shifted away from the Coastal Route and into the San Joaquin Valley. While the probability of a spill would be reduced due to fewer train trips per week, in the event of a spill the impacts on cultural resources associated with the cleanup efforts could be significant. There would also be an increased potential for oil spills along the truck route from Bakersfield to the SMPS. A spill along the truck route could also impact cultural resources as part of the cleanup effort. Most of the truck route would be along State Highway 166 through San Luis Obispo County. While the spill volumes from trucks would be smaller than from a train, the accident rate for trucks is higher than for rail.

Hazards and Hazardous Materials

Impact HM.1 (Risk of Accidents at Unloading Facility) would be similar to the Rail Spur Project, and would remain less than significant (Class III). This risk would shift from the SMR to the rail unloading facilities near Bakersfield and the SMPS. This impact would be eliminated from the SMR. The hazard zones for the rail unloading facility would be similar to the Rail Spur Project, and would not extend to areas that have sensitive receptors. There is a possibility of a truck spill during the unloading process, which could result in a spill of 8,000 gallons of oil. This

could result in a potential fire at the SMPS. The maximum flammable hazard zones would be about 250 feet, which would not extend off of the pump station site.

Impact HM.2 (UPRR Mainline Accidents) would likely remain the same as the Rail Spur Project, significant (Class I). The risk of injury and fatality would be shifted from the Bay Area and the Coastal Route to the San Joaquin Valley. While the probability of a spill would be reduced due to fewer annual train trips and the shorter distance between Roseville and Bakersfield, the route would still pass through heavily populated areas such as Sacramento, Davis, Stockton, Fresno, Bakersfield, etc. It is these heavy populated areas that drive the risk for injuries and fatalities. These changes would likely not be sufficient to reduce the risk of injury and fatality, and therefore, the impact would remain significant. For the portion of the rail route past Roseville to the California Border and beyond, the impacts associated with public safety risk from mainline rail incidents would remain significant. However, the probability of an incident would be reduced due to fewer train trips per week.

The No Project Alternative would increase the risk of one or more fatalities and injuries due to the increased trucking operations. Class 3 hazardous material trucks have an estimated accident rate of 0.71 accidents per million miles (Battelle 2001). This is greater than the 0.51 to 0.39 derailment per million miles for the crude oil trains. Also, the probability of a Class 3 truck having a spill given an accident is about 35% (Battelle 2001). This would result in an increase in the overall risk of an accident for truck then compared to rail. However, the volume of oil spilled from a truck accident would be smaller, which could reduce the consequence of a spill.

Impact HM.3 (Crude Slate Changes at SMR) would remain Class III, but would be reduced in severity since less new crude would be delivered to the refinery. This would result in a smaller change in the overall refinery crude slate.

Recreation

Impact REC.2 (Oil Spills Affecting Access) would likely remain the same as the Rail Spur Project, less than significant (Class III), but would be reduced in severity. The risk of an oil spill impacting access to recreational areas would be shifted from the Bay Area and the Coastal Route to the San Joaquin Valley. The probability of a spill would be less due to fewer annual train trips and the shorter distance between Roseville and Bakersfield. There would also be the added risk of an oil spill along the truck route from Bakersfield to the SMPS. An oil spill along this route could also affect access to recreational areas during the clean-up process. However, the maximum spill volume would be limited to 8,000 gallons, which is smaller than for the mainline rail, and would take less time to clean up.

Noise and Vibration

Impact N.2 (Operational Unloading) would shift from the SMR to the SMPS. There would be no operational noise impact at the SMR. The operational noise at the SMPS would be associated with trucks entering and exiting the facility. With the No Project Alternative an additional 100 trucks per day would be entering and exiting the facility, which would increase operational noise. There would be operational noise associated with the train unloading operations in Bakersfield. However, these terminals do not have any sensitive receptors located in close proximity to the sites so the operational noise impacts would be less than significant (Class III).

Impact N.3 (UPRR Mainline Noise) would likely remain the same as the Rail Spur Project, less than significant (Class III) since the 24-hour CNEL would not change. However, the noise impact would be shifted from the Bay Area and the Coastal Route to the San Joaquin Valley. With fewer trains the overall exposure to the noise would be less, but the 24 CNEL would remain the same as for the Rail Spur Project.

Public Services and Utilities

Impact PS.2 (Electrical Use) would shift from the SMR to the rail unloading facilities near Bakersfield and to the SMPS. There would be no increase in electrical use at the SMR. Electrical use at the rail unloading facilities near Bakersfield would be similar to the Rail Spur Project on a per train basis, but the annual electrical use would decrease since fewer trains would be unloaded. There would be an increase in electrical use at the SMPS for unloading the trucks and pumping the additional crude via pipeline to the SMR. It would be expected that these levels of electrical use could be supplied by the local utilities so impacts would be less than significant (Class III).

Impact PS.3 (Increase Demand for Fire Protection and Emergency Response at the SMR) would shift demand for these services from the SMR to the rail unloading facilities near Bakersfield and the SMPS. This impact would be eliminated from the SMR. There is a probability of a rail car spill during unloading similar to that for the Rail Spur Project. There is also a possibility of a truck spill during the unloading process, which could result in a spill of 8,000 gallons of oil. These spills could result in a potential fire at either one of these facilities. The Fire Protection Plans and SPCCP plans at each of these facilities would serve to reduce this impact to less than significant (Class III).

Impact PS.4 (Increase Demand for Fire Protection and Emergency Response along Mainline Rail) would likely remain the same as the Rail Spur Project, significant (Class I). The risk of an oil spill would be shifted from the Bay Area and the Coastal Route to the San Joaquin Valley. While the probability of a spill would be reduced due to fewer annual train trips and the shorter distance between Roseville and Bakersfield, a spill of oil and resultant fire and explosion would place an increased demand on fire protection and emergency responders. There would also be an increased demand for these services along the truck route from the rail unloading facility to the SMPS in the event of a spill or fire. Most of the truck route is along State Highway 166, which is in a remote area. In the event of a fire, it is possible that a wildland fire could result due to the distance from emergency response locations. This would be considered a significant (Class I) impact.

Impact PS.5 (Police Services) would likely remain the same as the Rail Spur Project (Class III). The demand for these services would be shifted from the SMR to the rail unloading facilities near Bakersfield and the SMPS.

Transportation and Circulation

Impact TR.2 (Operational Traffic) would be shifted from the SMR to areas along the truck route between Bakersfield and the SMPS, which would add 100 round trips per day (200 one-way trips per day) along the truck route. These additional truck trips could impact a number of intersections including State Highway 166/Highway 101 and Stowell Road/Highway 101. The Stowell Road/Highway 101, is controlled by a stop sign and has a P.M. peak hour level of

service rating of D. The control delay at this intersection is 31.4 seconds during the Peak P.M. hours, which is just below the maximum 35.0 for an LOS D rating (City of Santa Maria 2011). If one assumes that the trucks are spaced out evenly during a 24 hour period, a total of about four truck per would use the Stowell Road/Highway 101 interchange, which would likely keep the control delay time to just under 35 seconds. Therefore, the impact would be less than significant (Class III).

Impact TR.3 (At Grade Crossings) would remain the same as the Rail Spur Project, less than significant (Class III). The potential impacts to at grade crossings would be shifted from the Bay Area and Coastal Route to the San Joaquin Valley. Impacts to traffic flow in the vicinity of at grade crossings would be limited to about six times per week, and the extent of the delay would be based upon the speed of the train. Given the limited number of trains per week, the impact to traffic flow would be less than significant.

Impact TR.4 (Rail Traffic) would remain the same as the Rail Spur Project (Class III). However, use of this route would avoid any impact to trains traveling along the Coast Route and for some of the passenger trains in the Bay Area. With fewer trains per week the potential for interference with passenger trains would be reduced.

Water Resources

Impact WR.2 (Onsite Oil Spills) would be shifted from the SMR to the truck unloading facility at the SMPS and at the rail unloading facilities near Bakersfield. This impact would be eliminated from the SMR. The SMPS is surrounded by agricultural operations and drainage ditches supporting the agricultural operations. There are also no wetlands in close proximity to the pump station or terminals near Bakersfield. The substantial increase in truck traffic to the pump station (an additional 100 trucks per day), would increase the potential for oil spills during unloading. Existing spill containment at these facilities and their Spill Prevention, Control and Countermeasure Plans (SPCCP) would serve to likely reduce this impact to less than significant (Class III).

Impact WR.3 (UPRR Mainline Oil Spills) would be similar to the proposed project and would remain significant and unavoidable (Class I). With the No Project Alternative this risk would be shifted away from the Coastal Route and into the San Joaquin Valley where the mainline rail route traverse other surface water bodies. While the probability of a spill would be reduced due to fewer train trips per week, in the event of a spill the impacts on water resources could be significant, and spill volumes would remain the same. There would also be an increased potential for oil spills along the truck route from Bakersfield to the SMPS, which crosses a number of water bodies including Twitchell Reservoir. Most of the truck route would be along State Highway 166 through San Luis Obispo County. While the spill volumes from trucks would be smaller than from a train, the accident rate for trucks is higher than for rail. For the portion of the rail route past Roseville to the California Border and beyond, the impacts to water resources from mainline rail spills would remain significant. However, the probability of a spill would be reduced due to fewer train trips per week.

5.3.2 Loop Rail Unloading Configuration

This alternative would have the rail track at the SMR in a loop configuration as opposed to the linear configuration for the Rail Spur Project. The same number of trains would be delivered to the SMR as the Rail Spur Project (five trains per week).

Under this alternative, impacts in the following issue areas would remain the same as the Rail Spur Project.

- Hazards and Hazardous Materials,
- Population and Housing,
- Public Services and Utilities, and
- Recreation.

All of the impacts and mitigation measures identified for the Rail Spur Project in these issue areas would also apply to this alternative. The reader is referred to Chapter 4 of the EIR for a description of the impacts and mitigation measures for each of the issue areas listed above.

Issue areas where the impacts would be different than the Rail Spur Project are discussed below. If an impact is not listed then it would remain the same as the Rail Spur Project and any mitigation measures identified for the impacts would apply to this alternative.

Aesthetics and Visual Resources
With the rail track in a loop configuration the track would be closer to State Route 1 and other sensitive view areas. Due to the topography of the site, the southern end of the loop would have to be raised to maintain a level grade which would make the trains more visible when they were at the SMR. Both of these facts would increase the visual impacts of the loop design over the proposed linear track design.

Impact AV.2 (Visual Character) would remain a Class II impact, but would increase in severity. Mitigation measures associated with impact AV.2 for the Rail Spur Project would apply to this alternative, with the exception of AV-1a, which requires construction of a berm. Given the circular nature of the loop track design, the berm would not be feasible. The landscape and Revegetation Plan would be considerably more involved for this alternative given the size of the rail loop.

Impact AV.3 (Night Lighting and Glare) would be the same as for the Rail Spur Project (Class II). The security fence for the facility would remain in about the same location and the number and size of the security lights would remain the same. The lighting for the unloading area would be the same as the Rail Spur Project. Mitigation measures associated with impact AV.3 for the Rail Spur Project would apply to this alternative.

Impact AV.4 (Train Lights) would remain a Class II impact, but could increase in severity since the trains would be in closer proximity to sensitive view areas on portions of the loop. Mitigation measures associated with impact AV.4 for the Rail Spur Project would apply to this alternative.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Agricultural Resources

Construction of the loop track configuration would increase the amount of land that would be disturbed by about four acres. In addition about 66 acres of land within the loop would be unavailable for cattle grazing. This increase disturbance would increase impacts to agricultural resources.

Impacts AR.2 (Conversion of Prime Agricultural Land) would remain Class III, but would increase in severity since more agricultural land would be needed for the loop configuration.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Air Quality and Greenhouse Gases

Construction of the loop track configuration would increase the amount of land that would be disturbed by about four acres, but would increase the amount of cut and fill needed to construct the loop track. The loop alternative would require trucking of excess cut and fill offsite. These additional construction activities would increase the construction related air emission by about 10-20 percent. Operation of the loop configuration would reduce the amount of switching the locomotive would need to do while at the SMR since less movement of tanker cars would be needed as part of the unloading operations. This alternative would have about one-hour less of locomotive engine switching time (20% reduction in switching time from the Rail Spur Project).

This would serve to reduce the total onsite locomotive emissions by about four tons per year of NO_x and 0.3 tons per year of ROG. This represents about an 18 percent reduction in NO_x and ROG emissions at the SMR. DPM emissions from the locomotive at the SMR would be reduced by about 0.1 tons per year. The air emissions associated with locomotives traveling on the UPRR mainline would remain the same as the Rail Spur Project.

Impact AQ.1 (Construction Criteria Pollutants) would remain the same as the Rail Spur Project (Class II), but would increase in severity due to the increased construction activities. Mitigation measures associated with impact AQ.1 for the Rail Spur Project would apply to this alternative.

Impact AQ.2 (Operational Emissions in SLO County) would remain a significant (Class I) impact but would decrease in overall severity due to the reduction in NO_x, ROG, and DPM emissions at the SMR site. Mitigation measures associated with impact AQ.2 for the Rail Spur Project would apply to this alternative. The NO_x and ROG, emissions from the Rail Spur Project in SLO County were found to be less than significant with mitigation. However, the County may be preempted by Federal law from applying mitigation to the UPRR mainline emissions, so it was considered a significant and unavoidable (Class I) impact. DPM emissions would remain significant and unavoidable (Class I).

Impacts AQ.4 (Toxic Air Emissions at the SMR) would remain a significant (Class I) impact but would decrease in overall severity due to the reduction in DPM emissions at the SMR site associated less locomotive switching time. Mitigation measures associated with impact AQ.4 for the Rail Spur Project would apply to this alternative.

AQ.6 (GHG Emissions) would remain the same as the Rail Spur Project (Class I) but there would be a decrease in GHG emissions at the SMR due to less switching time for the locomotives, which would be about 154 metric tons of CO_2E per year. Mitigation measures associated with impact AQ.6 for the Rail Spur Project would apply to this alternative. The GHG emissions from the Rail Spur Project were found to be less than significant with mitigation. However, the County may be preempted by Federal law from applying mitigation to the UPRR mainline GHG emissions, so it was considered a significant and unavoidable (Class I) impact.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Biological Resources

Construction of the loop track configuration would increase the amount of land that would be disturbed by about four acres, which would increase the biological impacts associated with construction. Construction of the loop configuration would bring the rail tracks in closer proximity to little Oso Flaco Creek. It would also impact about 23.72 acres of CDFW sensitive habitat as shown in Figure 5-6. Portions of the emergency access road would also pass through CDFW sensitive habitat. This alternative would increase impacts to CDFW sensitive habitat by about 2.84 acres compared to the Rail Spur Project. In addition, the sensitive open dune habitat directly east of the refinery would also be impacted with the construction of this alternative.

Impacts BIO.1 (Listed Plant Species), BIO.2 (Sensitive Plant Species), BIO.3 (Sensitive Wildlife Species), BIO.4 (American Badger), BIO.5 (Central Dune Scrub), BIO.6 (Coast Live Oak), BIO.8 (Bird Species), and BIO.9 (Invasive Plants) would all remain Class II impacts, but could increase in severity due to the larger area of disturbance. Mitigation measures associated with these impacts for the Rail Spur Project would apply to this alternative.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Cultural Resources

Construction of the loop track configuration would increase the amount of land that would be disturbed by about four acres, which could increase the cultural impacts associated with construction.

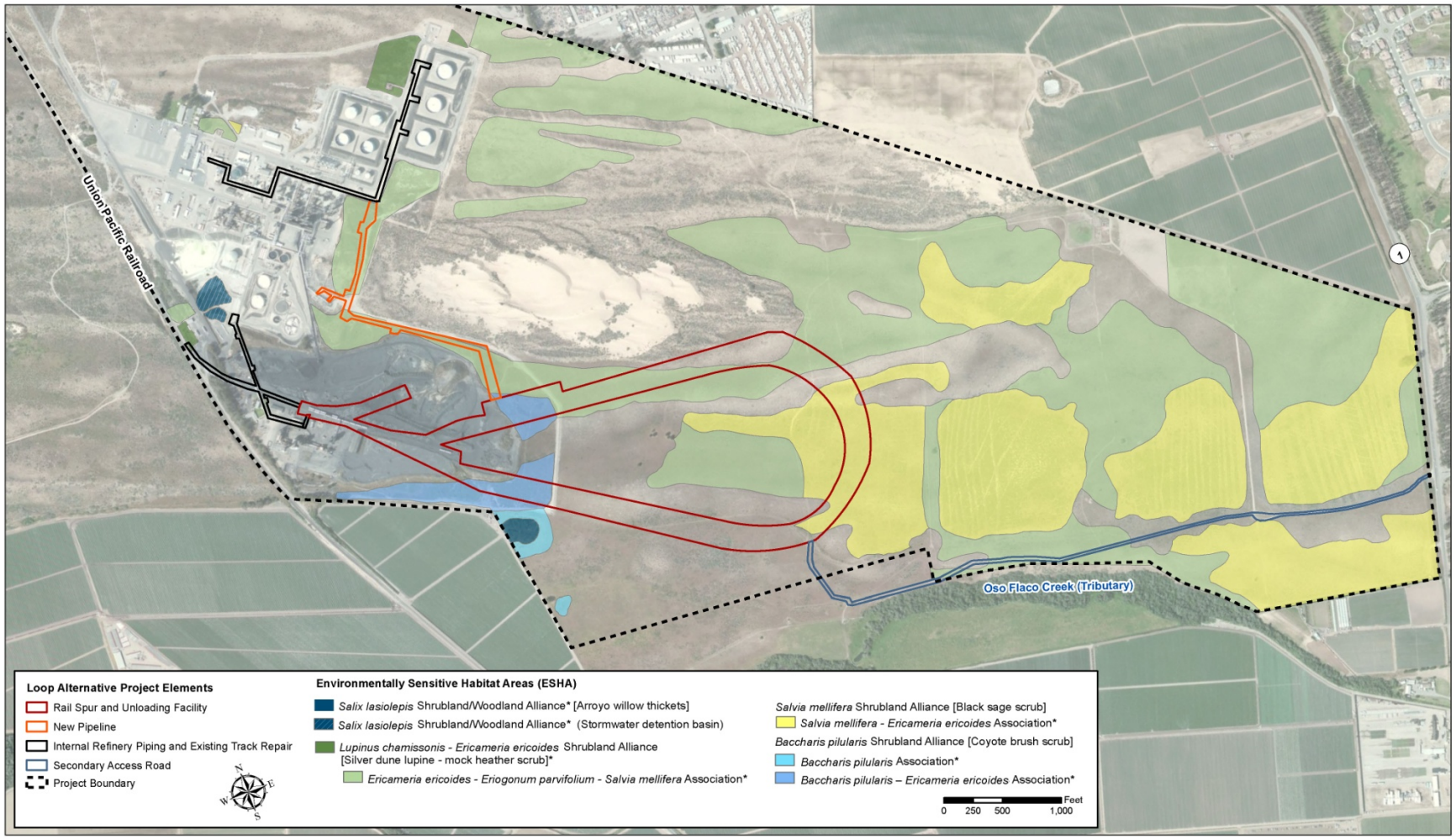
Impacts CR.2 (Unknown Archeological Resources), CR.3 (Human Remains), and CR.5 (Paleontological Resources) would all remain Class II impacts, but could increase in severity due to the larger area of disturbance. Mitigation measures associated with these impacts for the Rail Spur Project would apply to this alternative.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Geological Resources

The increase in grading and cut and fill for this alternative would change the topography of the site. Due to the topography of the site, the southern end of the loop would have to be raised to maintain a level grade for the trains. This would serve to increase the geological impacts associated with construction.

Figure 5-6 CDFW Sensitive Habitat Areas Impacted by Loop Rail Alternative



CDFW sensitive habitat areas adapted from Arcadis 2015.
See Appendices C.6 and C.7 for more information on the Sensitive Vegetation at the SMR

Impacts GR.2 (Unstable Slopes) and GR.3 (Expansive Soils) would remain a Class II impacts, but could increase in severity due to the larger area of disturbance, increased cut and fill and change in topography of the site. Mitigation measures associated with these impacts for the Rail Spur Project would apply to this alternative.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Noise and Vibration

Impact N.2 (Operational Activities at the SMR) would remain the same as the Rail Spur Project (Class II) but the noise contours shown in Figure 4.9-3 would shift to the north by about 300 feet increasing the noise levels in this area, which would slightly increase the severity of the impact. Even with this shift, the noise levels would remain Class II. Mitigation measures identified for this impact would apply to this alternative.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Transportation and Circulation

Construction of the Loop track would require additional cut and fill to raise the southern end of the loop in order to maintain a level grade for the trains. This additional grading work would generate about 80,000 cubic yards of excess cut that would need to be trucked from the SMR. This would require about 4,500 truck trips, which would increase the level of traffic during construction.

Impact TR.1 (Construction Traffic) would remain a Class II impacts, but could increase in severity due to increased volume of trucks needed to haul excess soil. Mitigation measures associated with TR.1 for the Rail Spur Project would apply to this alternative.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Water Resources

This alternative would involve more grading and cut and fill work on the site, which as the potential to degrade surface and groundwater quality. Impact WR.1 (Construction Surface and Groundwater) would remain a Class II impacts, but could increase in severity due to increased grading activities. Mitigation measures associated with WR.1 for the Rail Spur Project would apply to this alternative. All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

5.3.3 Reduced Rail Deliveries

This alternative would be exactly the same as the Rail Spur Project in terms of construction and operation with the exception that only three trains per week (150 trains per year) would be delivered to the SMR instead of the proposed five per week (250 trains per year).

Under this alternative, impacts in the following issue areas would remain the same as the Rail Spur Project.

- Visual and Aesthetic Resources,
- Geological Resources, and
- Population and Housing

All of the impacts and mitigation measures identified for the Rail Spur Project in these issue areas would also apply to this alternative. The reader is referred to Chapter 4 of the EIR for a description of the impacts and mitigation measures for each of the issue areas listed above.

Issue areas where the impacts would be different than the Rail Spur Project are discussed below. If an impact is not listed then it would remain the same as the Rail Spur Project and any mitigation measures identified for the impacts would apply to this alternative.

Agricultural Resources

Impact AR.3 (Dust, Spill Impacts to Agricultural Resources at the SMR) would remain Class II, but the probability of an oil spill would decrease since fewer trains would be delivering crude to the SMR. However, in the event of an oil spill the potential impacts would remain the same as for the Rail Spur Project. Mitigation measures associated with AG.3 for the Rail Spur Project would apply to this alternative.

Impact AG.5 (UPRR Mainline Spills) would remain Class I, but the probability of an oil spill would decrease along the entire rail route since fewer trains would be delivering crude to the SMR. However, in the event of an oil spill that impacted agricultural resources the potential impacts would remain the same as for the Rail Spur Project. Mitigation measures associated with AG.5 for the Rail Spur Project would apply to this alternative.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Air Quality and Greenhouse Gas

By reducing the number of train deliveries to the SMR the annual air emissions would be reduced since fewer trains would be delivering crude to the SMR. However, the peak day emissions would remain the same. Construction emissions would remain the same since the same facilities would need to be built.

Impact AQ.2 (Operational Emissions in SLOC) would remain a (Class I) impact but would decrease in overall severity due to the reduction in annual NO_x and ROG emissions within SLOC. Table 5.5 provides the operational air emissions within SLOC for this alternative. Table 2.6 shows the emissions in SLOC compared with the SLOCAPCD thresholds. The reduction in emissions is due to fewer trains that would deliver crude to the SMR (3 vs. 5 per week). Mitigation measures associated with impact AQ.2 for the Rail Spur Project would apply to this alternative. The NO_x and ROG emissions from the Rail Spur Project were found to be less than significant with mitigation, which would also apply to this alternative. The mitigation measure would require emission reduction credits though the SLOCAPCD for the ROG and NO_x emissions within SLOC.

Table 5.5 Reduced Rail Delivery Alternative Operational Emissions within SLOC, Peak Day and Annual (unmitigated)

Source	Peak Day Emissions, lbs/day					
	ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
Fugitive Dust	-	-	-	-	1.32	0.20
Fugitives	4.00	-	-	-	-	-
Canister	2.24	-	-	-	-	-
Locomotives Onsite	24.18	21.18	214.05	2.92	8.15	9.07
Locomotives Offsite within SLOC	36.79	44.85	455.55	2.10	21.03	20.39
Vehicles (autos and trucks and additional sulfur trucks)	0.12	1.65	2.11	0.00	0.07	0.07
Total Emissions at the SMR	*30.43*	*21.18*	*214.05*	*2.92*	*9.47*	*8.10*
Total Emissions within SLOC	***67.34***	***67.69***	***671.71***	***5.02***	***30.57***	***28.56***
Source	**Annual Emissions, tons/year**					
	ROG	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Fugitive Dust	-	-	-	-	0.17	0.03
Fugitives	0.73	-	-	-	-	-
Canister	0.17					
Locomotives Onsite	0.78	1.59	12.15	0.22	0.33	0.32
Locomotives Offsite within SLOC	1.02	3.36	22.29	0.16	0.68	0.66
Vehicles (autos and trucks and additional sulfur trucks)	0.01	0.19	0.15	0.00	0.01	0.00
Total Emissions at the SMR	*1.68*	*1.59*	*12.15*	*0.22*	*0.51*	*0.35*
Total Emissions within SLOC	***2.72***	***5.14***	***34.59***	***0.38***	***1.19***	***1.02***

Table 5.6 Reduced Rail Delivery Alternative Operational Emissions within SLOC (unmitigated) and Thresholds

Pollutant	SLOCAPCD Thresholds		Project Daily (lbs)	Project Annual (tons)
	Daily	Annual		
ROG + NO_x	25 pounds	25 tons	739.05	37.30
Diesel Particulate Matter	1.25 pounds	-	30.45	-
Fugitive Dust (PM_{10})	25 pounds	25 tons	1.32	0.17
CO	550 pounds	-	67.69	-

However, the County may be preempted by Federal law from applying mitigation to the UPRR mainline emissions and therefore these emissions were considered significant (Class I). The County could apply the mitigation to all of the ROG and NO_x emissions within the SMR site. DPM emissions would remain significant (Class I) since the SLOCAPCD does not have an emissions reduction program for DPM, and there is in sufficient DPM reductions that could occur at the existing SMR operations to offset the Rail Spur DPM emissions. The daily average DPM emission reduction that could occur for the existing SMR operations would be about 0.2 pound per day. This assume that the 13 existing diesel engines would be converted to natural gas.

Impact AQ.3 (Mainline UPRR Emissions) would remain a Class I impact since the mainline emissions would exceed the SLOCAPCD thresholds. The mainline emissions are shown in Table 5.7 outside of SLO County to the Roseville and Colton rail yards. Table 5.8 shows the mainline air emissions beyond the Roseville and Colton rail yards.

Table 5.7 Reduced Rail Delivery Alternative Mainline Rail Emissions, Peak Day and Annual (unmitigated)

Route/Air District	Peak Day Emissions, lbs/day					
	ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
Northern Route Via Oakland						
Placer	0.38	0.46	4.65	0.02	0.21	0.21
Sacramento Metro	6.44	7.85	79.69	0.37	3.68	3.57
Yolo Solano	13.41	16.35	166.05	0.77	7.66	7.43
Bay Area	57.82	70.49	715.87	3.30	33.04	32.05
Monterrey Bay	47.37	57.74	586.43	2.71	27.07	26.25
Total	***125.41***	***152.88***	***1,552.70***	***7.17***	***71.66***	***69.51***
Northern Route Via Stockton						
Placer	0.38	0.46	4.65	0.02	0.21	0.21
Sacramento Metro	15.83	19.29	195.94	0.90	9.04	8.77
San Joaquin Valley	20.95	25.54	259.34	1.20	11.97	11.61
Bay Area	37.50	45.72	464.34	2.14	21.43	20.79
Monterrey Bay	47.37	57.74	586.43	2.71	27.07	26.25
Total	***122.02***	***148.75***	***1,510.71***	***6.97***	***69.73***	***67.63***
Southern Route						
Santa Barbara	45.19	55.09	559.54	2.58	25.83	25.05
Ventura	24.13	29.42	298.80	1.38	13.79	13.38
South Coast	36.79	44.85	455.55	2.10	21.03	20.39
Total	***106.12***	***129.37***	***1,313.89***	***6.06***	***60.64***	***58.82***
Route/Air District	**Annual Emissions, tons/year**					
	ROG	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Northern Route Via Oakland						
Placer	0.01	0.03	0.23	0.00	0.01	0.01
Sacramento Metro	0.18	0.59	3.90	0.03	0.12	0.12
Yolo Solano	0.37	1.23	8.12	0.06	0.25	0.24
Bay Area	1.61	5.29	35.02	0.25	1.07	1.04
Monterrey Bay	1.32	4.33	28.69	0.20	0.88	0.85
Total	***3.49***	***11.47***	***75.96***	***0.54***	***2.33***	***2.26***
Northern Route Via Stockton						
Placer	0.01	0.03	0.23	0.00	0.01	0.01
Sacramento Metro	0.44	1.45	9.59	0.07	0.29	0.29
San Joaquin Valley	0.58	1.92	12.69	0.09	0.39	0.38
Bay Area	1.04	3.43	22.72	0.16	0.70	0.68
Monterrey Bay	1.32	4.33	28.69	0.20	0.88	0.85
Total	***3.40***	***11.16***	***73.91***	***0.52***	***2.27***	***2.20***
Southern Route						
Santa Barbara	1.26	4.13	27.37	0.19	0.84	0.81
Ventura	0.67	2.21	14.62	0.10	0.45	0.43
South Coast	1.02	3.36	22.29	0.16	0.68	0.66
Total	***2.96***	***9.70***	***64.28***	***0.45***	***1.97***	***1.91***

Annual emissions within each route assume all 150 trains per year use that route.

Table 5.8 Reduced Rail Delivery Alternative Mainline Rail Emissions Past the Roseville and Colton Rail Yards, Peak Day and Annual (unmitigated)

Route/Air District	Peak Day Emissions, lbs/day					
	ROG	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
Roseville to Nevada						
Placer	36.9	45.0	456.6	2.1	21.1	20.4
Nevada	12.3	15.0	152.6	0.7	7.0	6.8
Total	***49.2***	***60.0***	***609.2***	***2.8***	***28.1***	***27.3***
Roseville to Oregon						
Placer	9.3	11.4	115.4	0.5	5.3	5.2
Feather River	11.0	13.4	136.2	0.6	6.3	6.1
Butte	19.1	23.3	236.2	1.1	10.9	10.6
Tehama	16.9	20.7	209.8	1.0	9.7	9.4
Shasta	30.0	36.6	371.9	1.7	17.2	16.7
Siskiyou	37.3	45.5	462.1	2.1	21.3	20.7
Total	***123.7***	***150.8***	***1,531.7***	***7.1***	***70.7***	***68.6***
Colton to Nevada						
South Coast	8.9	10.8	109.8	0.5	5.1	4.9
Mojave	83.9	102.2	1,038.4	4.8	47.9	46.5
Total	***92.7***	***113.1***	***1,148.3***	***5.3***	***53.0***	***51.4***
California Border to Canadian Border	***200.5***	***244.4***	***2,482.3***	***11.5***	***114.6***	***111.1***
Route/Air District	**Annual Emissions, tons/year**					
	ROG	**CO**	**NO_x**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Roseville to Nevada						
Placer	1.0	3.4	22.3	0.2	0.7	0.7
Nevada	0.3	1.1	7.5	0.1	0.2	0.2
Total	***1.4***	***4.5***	***29.8***	***0.2***	***0.9***	***0.9***
Roseville to Oregon						
Placer	0.3	0.9	5.6	0.0	0.2	0.2
Feather River	0.3	1.0	6.7	0.0	0.2	0.2
Butte	0.5	1.7	11.6	0.1	0.4	0.3
Tehama	0.5	1.5	10.3	0.1	0.3	0.3
Shasta	0.8	2.7	18.2	0.1	0.6	0.5
Siskiyou	1.0	3.4	22.6	0.2	0.7	0.7
Total	***3.4***	***11.3***	***74.9***	***0.5***	***2.3***	***2.2***
Colton to Nevada						
South Coast	0.2	0.8	5.4	0.0	0.2	0.2
Mojave	2.3	7.7	50.8	0.4	1.6	1.5
Total	***2.6***	***8.5***	***56.2***	***0.4***	***1.7***	***1.7***
California Border to Canadian Border	***24.43***	***80.20***	***531.30***	***3.76***	***16.29***	***15.80***

Annual emissions within each route assume all 150 trains per year use that route.
California border to Canadian Border assumes a hypothetical route via the Midwest.

The reduction in emissions would be due to fewer trains delivering crude to the SMR (3 vs. 5 per week). Mitigation measures associated with impact AQ.3 for the Rail Spur Project would apply to this alternative. However, the County may be preempted by Federal law from applying mitigation to the UPRR mainline emissions and therefore the emissions were considered significant (Class I).

Impacts AQ.4 (Toxic Air Emissions at the SMR) would be reduced to less than significant with mitigation (Class II). Figure 5-7 shows the cancer health risk contours or the reduced rail delivery alternative with partial mitigation (no Tier 4 locomotives). The cancer risk would be below the threshold established by the SLOCAPCD. Table 5.9 provides a summary of the cancer risk for this alternative for various receptor locations. Mitigation measures associated with impact AQ.4 for the Rail Spur Project would apply to this alternative.

As shown in Table 5.9, the cancer risk at the maximally exposed individual resident would be less than 10 in a million for both the mitigation and partial mitigation cases. The partial mitigation case does not include Tier 4 locomotives since the County may be preempted by Federal law from implementing this measure. However, even without the use of Tier 4 engines, the cancer risk with partial mitigation would be less than significant with mitigation. Mitigation measures associated with impact AQ.4 for the Rail Spur Project would apply to this alternative.

Impact AQ.5 (Mainline Rail Toxic Emissions) would remain the same as the Rail Spur Project (Class I), but the severity of the impact would be reduced. Figure 5-8 shows the cancer health risk curves as a function of train speed.

Figure 5-8 shows that for areas where the train is moving faster than 20 miles per hour, the cancer health risk impacts would be less than significant. However, there are areas along the mainline rail route that have speed restriction of 10 miles per hour or less, such as in the City of Davis. These areas could experience cancer risks that are above the 10.0 in a million threshold. Given that the speed at which a train could cause excess cancer risk above the threshold is lower for the Rail Spur Project, the severity of the impact would be less since fewer areas would be affected.

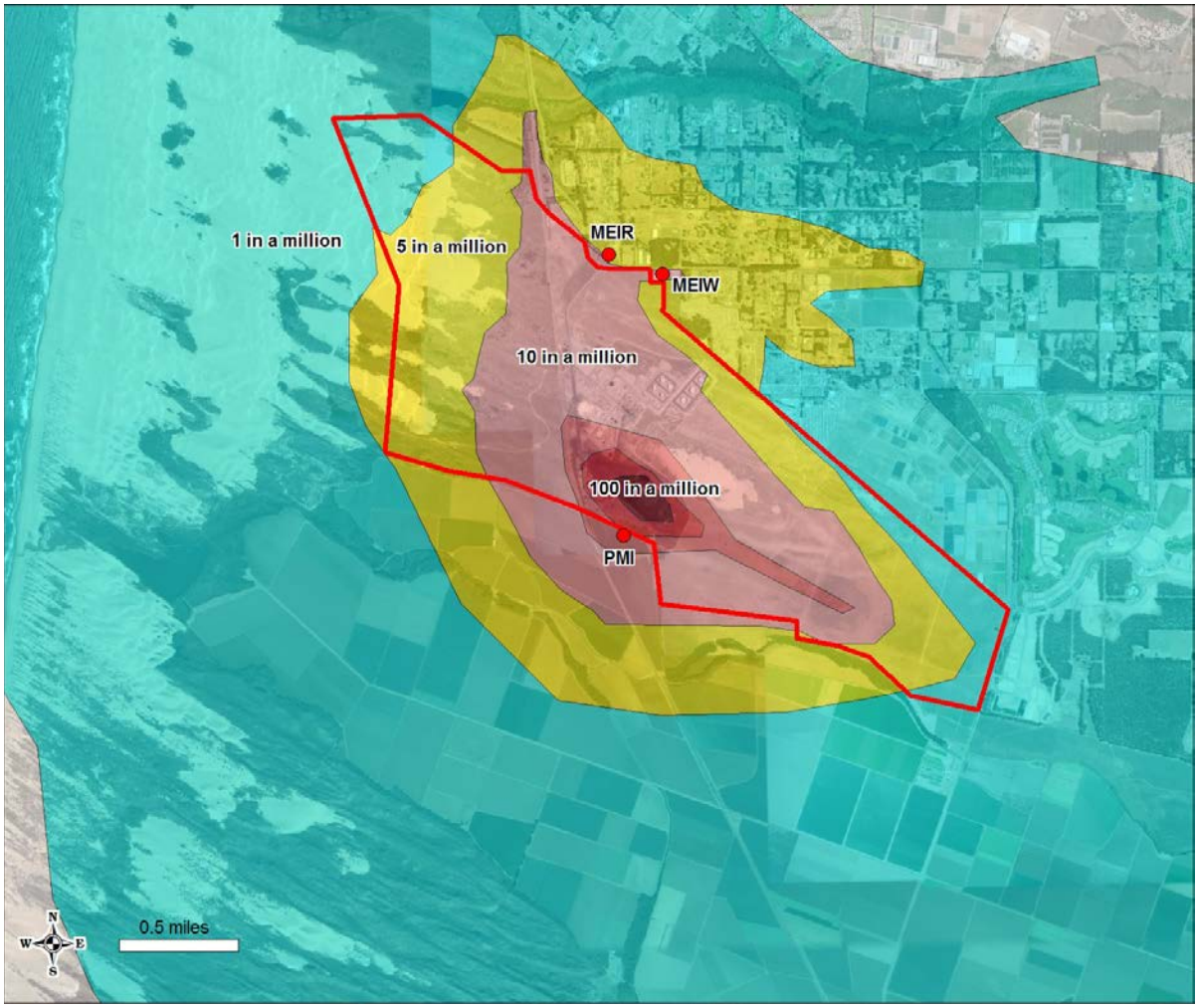
Impact AQ.6 (GHG Emissions) would remain a significant Class I impact but would decrease in severity since fewer trains would deliver crude to the SMR. Table 5.10 shows the estimated GHG emissions for this alternative. The reduction in emissions would be due to fewer trains delivering crude to the SMR (3 vs. 5 per week). Mitigation measures associated with impact AQ.6 for the Rail Spur Project would apply to this alternative. However, the County may be preempted by Federal law from applying mitigation to the UPRR mainline GHG emissions and therefore the emissions were considered significant (Class I).

Impact AQ.7 (Odors) would remain Class II, but would be reduced in severity. While any given odor event would likely be the same as the Rail Spur Project, there would be a reduction in the potential frequency of these events since fewer trains would unload at the SMR.

Impact AQ.8 (Cumulative Air Emissions at SMR) would remain Class II, but would be reduced in severity since less new crude would be delivered to the refinery. This would result in a smaller change in the overall refinery crude slate.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Figure 5-7 Partially Mitigated Reduced Rail Delivery Alternative Health Risk Contours - Cancer (150 Trains per Year)



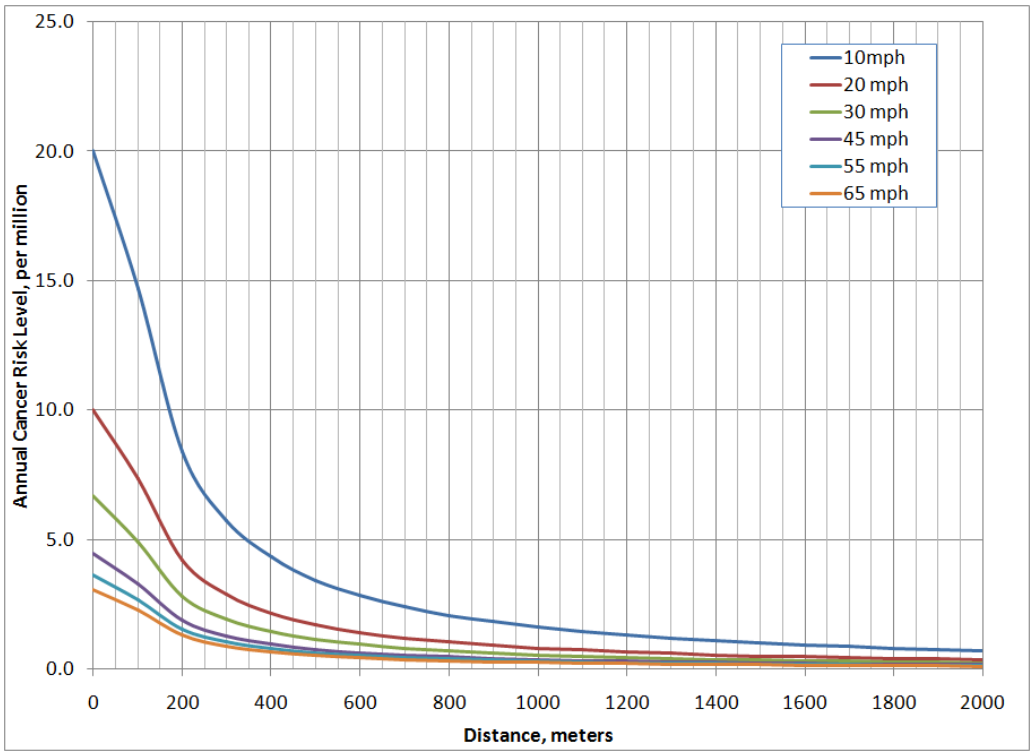
PMI-Point of Maximum Impact
MEIR- Maximally Exposed Individual Resident
MEIW- Maximally Exposed Individual Worker
Based upon HARP2 model version 15197.

Table 5.9 Reduced Rail Delivery Alternative Health Risk HARP Modeling Results: Cancer Risk (150 Trains per Year)

Scenario	PMI	MEIR	Worker	Louise Ln	Trilogy Prkwy	Monadella Street	Olivera Ave	Sig?
No Mitigation								
Scenario 1 - Rail Spur + SMR + trucks	85.8	26.5	1.16	3.7	3.0	22.0	17.8	Y
Scenario 2 - Rail Spur + SMR + trucks+ Mainline	88.5	27.3	1.26	3.8	3.1	25.1	18.8	Y
Mitigation: Tier 4 Locomotives, idling restrictions, clean trucks (AQ-2a, 2b and 4b)								
Scenario 1 - Rail Spur + SMR + trucks	18.1	5.5	0.23	1.0	0.9	4.4	2.8	N
Scenario 2 - Rail Spur + SMR + trucks+ Mainline	18.8	5.7	0.25	1.0	0.9	5.2	3.1	N
Partial Mitigation: idling restrictions, daytime unloading only and clean trucks (AQ-2b, 4b, 4c)								
Scenario 1 - Rail Spur + SMR + trucks	37.0	7.8	0.42	1.8	1.4	7.1	6.4	N
Scenario 2 - Rail Spur + SMR + trucks+ Mainline	39.0	9.5	0.46	1.9	1.5	9.5	7.1	N

See Appendix B for detailed emission calculations.
SMR emissions include the increased fraction of BTEX to 1.25% from 0.81%
Use of HARP2 model version 15197
PMI -Point of Maximum Impact, the highest value along the facility fenceline.
MEIR-Maximally Exposed Individual Resident

Figure 5-8 Reduced Rail Delivery Alternative Mainline Locomotive Cancer Risk, by speed and distance from Mainline (3 trains per week, 150 trains per year)



Notes: Based on 3 locomotives per train, 150 round train trips per year, Nipomo meteorological dataset (1994-1996) and 30 year average locomotive emission factor (as per EPA). Includes OEHHA adjustment factors.

Table 5.10 Reduced Rail Delivery Alternative Operational GHG Emissions, metric tonnes

Source	CO_2	CH_4	N_2O	$MTCO_2E$
Construction Amortized	38.4	0.01	0.00	38.6
Fugitives	0.0	0.01	0.00	0.3
Locomotives onsite	480.0	0.04	0.01	484.6
Locomotives along mainline within SLOC	1,160.7	0.09	0.03	1,171.7
Electricity	676.2	0.03	0.01	678.9
Vehicles (autos and trucks and sulfur trucks)	34.2	0.00	0.00	34.5
Project Total within SLOC	***2,389.5***	***0.18***	***0.05***	***2,408.7***
Route Totals (including SLOC emissions)				
Northern Route via Oakland	6,331.6	0.5	0.1	6,388.4
Northern Route via Altamont Pass	6,224.6	0.5	0.1	6,280.4
Southern Route	4,902.8	0.4	0.1	4,945.9
Within California[1]	10,234.6	0.8	0.2	10,328.6
Within United States[2]	39,749.1	3.1	1.0	40,128.4

1. Assumes northern route via Oakland to Washington State Boarder, which is the longest route.
2. Assumes a hypothetical route to the Canadian border via the Midwest, which would be the longest route.

$MTCO_2E$-metric tons CO_2 equivalent.

Biological Resources

Impact BIO.7 (Onsite Oil Spills) would remain Class II, and BIO.11 (UPRR Mainline Spills) would remain Class I. In both cases the probability of an oil spill would decrease at the SMR and along the entire rail route since fewer trains would be delivering crude to the SMR. However, in the event of an oil spill that affected biological resources the potential impacts would remain the same as for the Rail Spur Project. Mitigation measures associated with BIO.7 and BIO.11 for the Rail Spur Project would apply to this alternative.

Impact BIO.10 (Monarch Butterflies) would remain Class III but would be reduced in severity since there would be less annual emissions associated with the unloading operations due to fewer trains arriving at the SMR.

Impact BIO.12 (Mainline Rail Impacts to Wildlife) would remain Class III but would be reduced in severity since there would be less train trips per year for this alternative, which would reduce the probability of trains impacting wildlife on the mainline.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Cultural Resources

Impact CR.6 (UPRR Mainline Spills) would remain Class I, but the probability of an oil spill would decrease along the entire rail route since fewer trains would be delivering crude to the SMR. However, in the event of an oil spill that affected cultural resources the potential impacts would remain the same as for the Rail Spur Project. Mitigation measures associated with CR.6 for the Rail Spur Project would apply to this alternative. All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

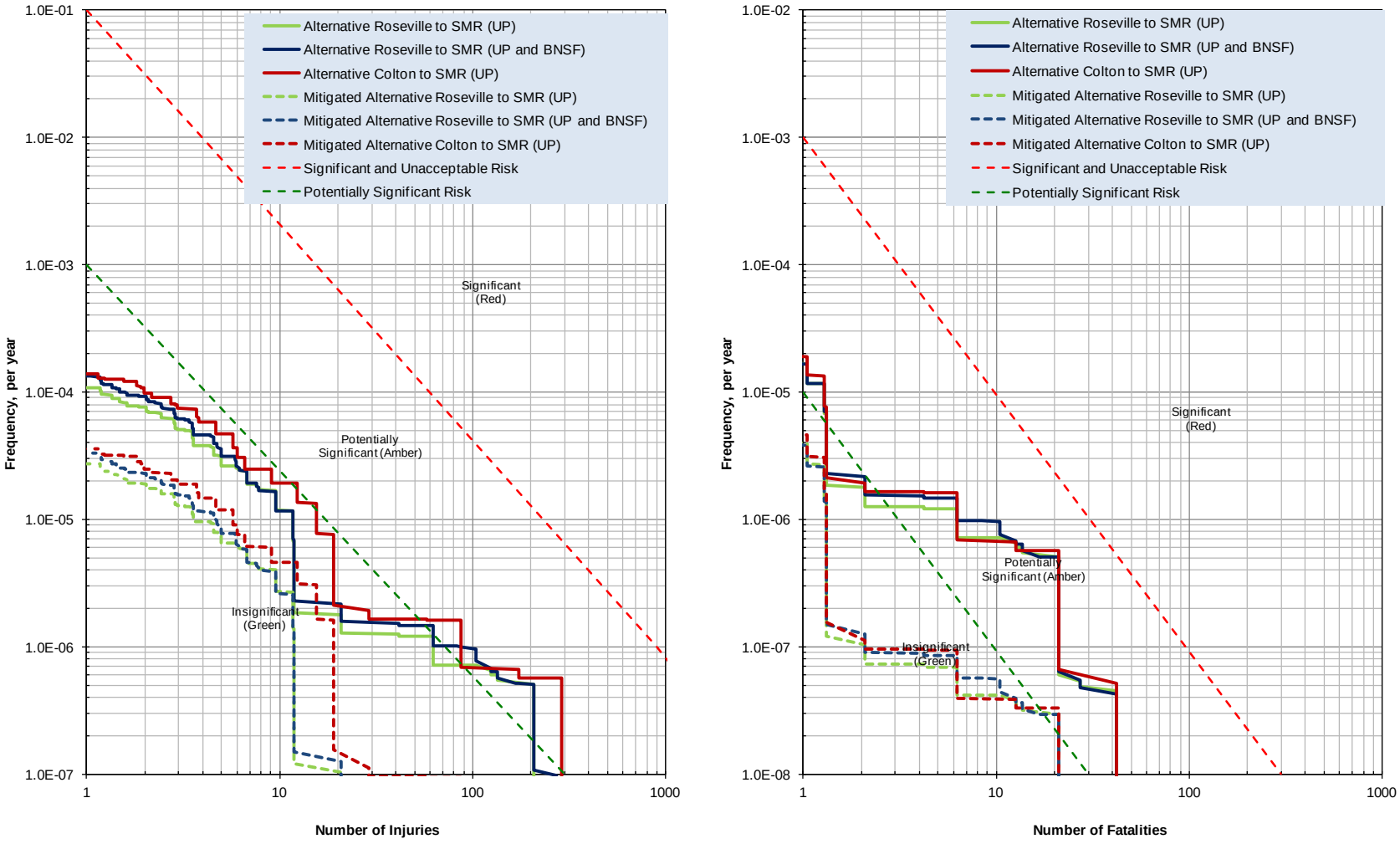
Hazards and Hazardous Materials

By reducing the number of train deliveries to the SMR, the probability of a train accident and resultant oil spill along the entire mainline route and at the SMR would be reduced by about 40 percent. This would serve to reduce the level of risk associated with a rail accident particularly along the entire mainline rail route.

Impact HM.1 (Risk of Spill/Fire at Unloading Facility) would remain Class III impacts since the maximum hazards zones would remain the same as for the Rail Spur Project, and would be within the boundaries of the SMR. The worst case spill volume is associated with a pipeline rupture between the rail unloading facility and the existing crude oil storage tanks. This spill volume would not change with this alternative.

Impact HM.2 (Risk of Spill/Fire on UPRR Mainline) would remain Class I, but the level of risk along the entire rail line would decrease since the probability of an oil spill incident would be reduced. Figure 5-9 shows the risk profiles for this alternative for the various routes between the SMR and the Roseville and Colton rail yards. The figure shows that the impacts would be significant (Class I).

Figure 5-9 Reduced Rail Delivery Alternative Risk Associated with Mainline Rail Crude Oil Unit Train Transportation



Even with the reduce annual train trips the potential consequences remain high since the route passes through a number of HTUA (Los Angeles Basin, Bay Area, Sacramento). With the mitigation identified for HM.2 for the Rail Spur Project, the impact would be reduced.

The County may be preempted by Federal law from applying mitigation to the UPRR mainline operations so the unmitigated risk is what is used to determine the significance of the impact. However, even with mitigation the risk would remain significant. Unmitigated, even one train per week would be a significant impact.

For the portion of the rail route past Roseville and Colton to the California Border and beyond, the impacts the public safety risk from mainline rail incidents would remain significant. However, the probability of an incident would be reduced due to few train trips per week.

Impact HM.3 (Crude Slate Changes at SMR) would remain Class III, but would be reduced in severity since less crude would be delivered to the refinery. This would result in a smaller change in the overall refinery crude slate.

Noise and Vibration

Impact N.2 (Operational Unloading) would remain the same as the Rail Spur Project (Class II), but fewer trains would be delivered to the SMR site, which would reduce the amount of time sensitive populations around the SMR are exposed to the noise from the unloading operations. However, this alternative would not reduce the peak hour noise levels associated with the train unloading operations, which is what is used to determine the significance of this noise impact. Mitigation measures identified for the Rail Spur Project would apply to this alternative.

Impact N.3 (UPRR Mainline) would remain the same as the Rail Spur Project (Class III), but fewer trains associated with the Rail Spur Project would use the mainline track, which would reduce the amount of time sensitive populations near the mainline tracks are exposed to train noise. However, this would not reduce the 24 hour CNEL noise level associated with trains on the mainline track, which is what is used to determine the significance of this noise impact.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Public Services and Utilities

Impact PS.2 (Electrical Use) would remain the same as the Rail Spur Project, less than significant (Class III). The amount of electrical use for the unloading operations would be reduced by about 40 percent due to fewer trains being unloaded at the SMR.

Impact PS.3 (Increase Demand for Fire Protection and Emergency Response at the SMR) would remain the same as the Rail Spur Project, less than significant with mitigation (Class II). The probability of a release at the loading terminal would be reduced since fewer trains would be unloaded per year. However, the spill volumes and types of incident would remain the same. In the event of an incident the demand for fire protection and emergency response services would be the same as for the Rail Spur Project. With lower probability of an incident, the probability of needing these services could be potentially reduced. Mitigation measures identified for the Rail Spur Project would apply to this alternative.

Impact PS.4 (Increase Demand for Fire Protection and Emergency Response along Mainline Rail) would remain the same as the Rail Spur Project, significant (Class I). The probability of a release along all portions of the mainline rail would be reduced since fewer trains would be traveling to the SMR. However, the spill volumes and types of incident would remain the same. In the event of an incident the demand for fire protection and emergency response services would be the same as for the Rail Spur Project. With lower probability of an incident, the probability of needing these services would be reduced. Mitigation measures identified for the Rail Spur Project would apply to this alternative.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Recreation

Impact REC.2 (Oil Spills Effecting Access) would likely remain the same as the Rail Spur Project, less than significant (Class III), but would be reduced in severity. The probability of a spill would be less due to fewer annual train trips to the SMR. All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Transportation and Circulation

Impact TR.3 (At Grade Crossings) would remain the same as the Rail Spur Project, less than significant (Class III). With fewer trains traveling to the SMR, the potential for traffic interference in the area of at grade crossings would be less, so the severity of the impact would be reduced.

Impact TR.4 (Rail Traffic) would remain the same as the Rail Spur Project (Class III). With fewer trains traveling to the SMR, the potential for interference with passenger train service would be less likely to occur, so the severity of the impact would be reduced.

All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

Water Resources

Impact WR.2 (Onsite Oil Spills) would remain Class II, and WR.3 (UPRR Mainline Spills) would remain Class I, but the probability of an oil spill would decrease at the SMR and along the entire rail route since fewer trains would be delivering crude to the SMR. However, in the event of an oil spill that effected water resources the potential impacts would remain the same as for the Rail Spur Project. Mitigation measures associated with WR.2 and WR.3 for the Rail Spur Project would apply to this alternative. All other impacts identified for the Rail Spur Project would remain the same, and their associated mitigation measures would apply to this alternative.

5.4 Environmentally Superior Alternative

This section summarizes the environmental advantages and disadvantages associated with the Rail Spur Project and the three alternatives evaluated above. Based upon this discussion, the environmentally superior alternative is selected as required by CEQA. The State CEQA Guidelines, Section 15126 (d) (2), state that if the environmentally superior alternative is the No

Project Alternative, then the next most environmentally preferred alternative must also be identified.

CEQA does not provide specific direction regarding the methodology of comparing alternatives and the proposed Project. Each Project must be evaluated for the issues and impacts that are most important; this will vary depending on the project type and the environmental setting. Issue areas with significant long-term impacts are generally given more weight in comparing alternatives. Impacts that are short-term (e.g., construction-related impacts) or those that are mitigable to less than significant levels are generally considered to be less important.

Table 5.11 (which is at the end of this section) provides a comparison between the Rail Spur Project and each of the alternatives for the impacts identified in each issue area. For impacts with the same classification, an increase or decrease in severity is denoted with an up or down arrow, respectively. The impacts in the table were identified as a result of the analysis provided in Chapter 4.0, Environmental Analysis, for the Rail Spur Project and Chapter 5.0 for the alternatives.

5.4.1 Rail Spur Project and the No Project Alternative

With the No Project Alternative, construction and operation of the Rail Spur Project would not occur. None of the construction impacts associated with the Rail Spur Project would occur at the SMR. With the No Project Alternative Phillips 66 could expand the use of trucking crude oil to the SMPS. Crude could be delivered to one of rail unloading facilities near Bakersfield and then loaded onto trucks and moved to the SMPS, where it would be unloaded and moved via pipeline to the SMR. Phillips 66 is currently using this method for delivering crude to the SMR.

The alternative could eliminate the Class I impact associated with air toxic emissions due to operations at the SMR (AQ.4). This impact would be shifted to the rail facilities near Bakersfield and the SMPS. However, there are no sensitive receptor sites in close proximity to these facilities so the impact of operational air toxic emission would be less than significant (Class III).

The No Project Alternative could also reduce the severity of three Class I air quality impacts identified as part of the Rail Spur Project (AQ.2 – Operational Emissions in SLOC, AQ.3 – Mainline Rail Emissions, and AQ.5 – Toxic Emission on Mainline Rail). All of these reductions in severity are a result of fewer train trips used to delivery crude (2.5 vs. 5 per week). However, some of the emission reduction associated with the fewer trains would be offset by the additional truck emissions from moving the oil from Bakersfield to the SMPS. Greenhouse gas emissions would remain Class I, but would increase in severity over the Rail Spur Project due to the additional trucking operations. This alternative would reduce the annual NOx, ROG, and DPM, emissions, but would increase the annual GHG emissions. Also, the peak day emissions of all pollutants would be higher for this alternative due to the trucking emissions.

As discussed in the Air Quality Section (Section 4.3) most of these Class I impacts could be mitigated to less than significant levels if the County is not preempted by Federal law from requiring mitigation on the UPRR mainline tracks and UPRR locomotives. Since the County may be preempted, the impacts have been classified as significant (Class I). If the County is not preempted then the NO_x, ROG, DPM, and GHG emissions can be mitigated and the impacts

would be Class II. Only in the case where the County is preempted, would the No Project Alternative reduce the severity of the NO_x, ROG, and DPM impacts associated with the Rail Spur Project.

This alternative would reduce the severity of HM.2-UPRR Mainline Accidents but would likely remain a significant Class I impact. The reduction in risk associated with train accidents for the No Project Alternative would be due to fewer trains per year traveling to Bakersfield, and the fact that the trains would not have to travel through the HTUAs of the Bay Area or Los Angeles. The risk from a train accident would be shifted from the Coastal Area, Bay Area, and Los Angeles area to the San Joaquin Valley. The trains would still pass through some heavily populated areas such as Sacramento, Davis, Bakersfield, Fresno, Stockton, etc., so the risk would likely remain significant (Class I). This alternative would add the risk of an oil spill due to a truck accident, but the truck route (State Highway 166) is not heavily populated. While the probability of a truck accident would be higher than for rail, the spill volume and associated hazards would be less.

The majority of the rail risk can be mitigated via use of safer rail tanker cars as discussed in Section 4.7 (Hazards and Hazardous Materials). However, the County may be preempted by Federal law from requiring mitigation on the UPRR mainline tracks, and may not be able to require the use of the safer tank car design. If the County is not preempted then the risk of a rail accident can be substantially reduced. Only in the case where the County is preempted, would the No Project Alternative likely reduce the severity of the UPRR mainline accident impacts associated with the Rail Spur Project.

The No Project Alternative would also reduce the probability of an oil spill from a train accident since fewer trains would be used to deliver crude to Bakersfield. This would reduce the probability that spill would impact biological, water, agricultural, and cultural resources. However, the spill volumes would remain the same. In the event of a spill that occurred in the vicinity of any of these resources, impacts BIO.11 (UPRR Mainline Oil Spills), WR.3 (UPRR Mainline Oil Spills), CR.6 (UPRR Mainline Oil Spills), and AR.5 (UPRR Mainline Oil Spills) could be significant and would remain significant (Class I). For agricultural resources more of the rail route through the San Joaquin Valley would be in close proximity to agricultural lands, this would increase the probability of a spill impacting these resources.

With the No Project Alternative there would be the added risk of an oil spill along the truck route between Bakersfield and the SMPS. While the spill volumes would be less for a truck than a train the probability of a spill would be higher since trucks have higher accident rates than trains. In the event of a spill impacts to any of these resources along the truck route impacts could be significant (Class I).

The No Project Alternative would meet most of the basic objectives of the Rail Spur Project. However, it may not allow the SMR to operate at its permitted throughput capacity since less crude oil could be available to the refinery. The determination of the environmentally superior alternative is somewhat complicated by the preemption issue. If the County is preempted from requiring mitigation of the impacts on the UPRR mainline track and locomotives, then the No Project Alternative would be environmentally superior since it would eliminate a Class I air

impact (AQ.4-Toxic Air Emissions at the SMR) and reduce the severity of five other Class I impacts as discussed above.

If the County is not preempted, the No Project Alternative would offer no advantage over the Rail Spur Project in terms of NO_x and ROG, emissions since these emissions could be mitigated for the proposed project. DPM emissions could be reduced for the Rail Spur Project with the use Tier 4 engines if the County is not preempted. Mainline rail hazard risks associated with the train operations would likely be greater for the No Project Alternative if the County is not preempted for implementing mitigation measures on the mainline rail operations. This is because the same mitigation could not be applied to the No Project Alternative since no permits would need to be issued by the County to implement the alternative. If mitigation could be applied by the County then overall probability of an oil spill would be less for proposed Rail Spur Project than for the No Project Alternative.

If the County is not preempted, then the Rail Spur Project would be environmentally preferred to the No Project Alternative since mitigation could be applied to the project to reduce the severity or eliminate most of the significant impacts. With the No Project Alternative, none of this mitigation could be applied since no permits would need to be issued by the County to implement the No Project Alternative. If the County is preempted, than the No Project Alternative would be considered environmentally preferred to the Rail Spur Project.

The No Project Alternative would meet most of the basic objectives of the Rail Spur Project. However, it may not allow the SMR to operate at its permitted throughput capacity since less crude oil could be available to the refinery.

5.4.2 Rail Spur Project and Loop Rail Unloading Configuration Alternative

This alternative would have the rail track at the SMR in a loop configuration as opposed to the linear configuration for the Rail Spur Project. The same number of trains would be delivered to the SMR as the Rail Spur Project (five trains per week). The operation of the unloading facility would essentially remain the same as the Rail Spur Project, with the exception of the way the tanker cars would be moved around the track during the unloading process.

This alternative would not reduce the impact classification of any of the impacts for the Rail Spur Project, and would not result in any new impacts that were not identified for the proposed project.

The alternative would reduce the severity of three air quality impact identified as part of the Rail Spur Project (AQ.2 – Operational Emissions in SLOC, AQ.4 – Toxic Air Emissions at the SMR, and AQ.6 – GHG Emissions) since emissions would be slightly reduced when the trains were at the SMR. However, the impact would remain Class I assuming the County is preempted from imposing mitigation on the UPRR mainline and locomotives. This alternative would not affect the level of NOx, ROG, or DPM emissions on the UPRR mainline track when compared to the Rail Spur Project.

This alternative would increase the severity of 20 impacts identified for the Rail Spur Project, but would not change the classification of any of these impacts (These are all Class II or Class III

impacts). Most of these impacts would be related to construction activities. The loop track configuration would require a larger area of disturbance and more cut and fill, which increases the severity of some of the construction impacts. The loop track configuration would require a change in topography of the site that would increase the severity of the visual impacts, but they would remain Class II.

The loop track configuration alternative would meet all of the objectives of the Rail Spur Project.

From an environmental standpoint, the slight reduction in air emission at the SMR would be offset by the increase in severity of a large number of construction related impacts, and increased visual impacts. Therefore, the Rail Spur Project, which uses a linear track configuration, would be environmentally preferred to the loop track configuration alternative.

5.4.3 Rail Spur Project and Reduced Rail Delivery Alternative

This alternative would be exactly the same as the Rail Spur Project in terms of construction and operation with the exception that only three trains per week (150 trains per year) would be delivered to the SMR instead of the proposed five per week (250 per year). All of the construction impacts would be the same as the Rail Spur Project. A reduction in crude oil deliveries to the SMR would affect some of the operational impacts associated with air quality, hazards and hazardous material, and to some degree noise. Operational impacts in all the other issue areas would remain the same as the Rail Spur Project.

The alternative would reduce the severity of four Class I air quality impacts identified as part of the Rail Spur Project (AQ.2 – Operational Emissions in SLOC, AQ.3 – Mainline Rail Emissions, and AQ.5 – Toxic Emission on Mainline Rail, and AQ.6-GHG Emissions) since fewer trains would be delivered to the SMR. This alternative would reduce the annual NOx, ROG, DPM, and GHG emissions of these pollutants, but would not affect the peak day emissions.

As discussed in the Air Quality Section (Section 4.3) most of these Class I impacts could be mitigated to less than significant levels if the County is not preempted by Federal law from requiring mitigation on the UPRR mainline tracks and UPRR locomotives. Since the County may be preempted, the impacts have been classified as significant (Class I). If the County is not preempted then the NO_x, ROG, and GHG emissions can be mitigated and the impacts would be Class II. Only in the case where the County is preempted, would the Reduced Delivery Alternative reduce the severity of the NO_x, ROG, and GHG impacts associated with the Rail Spur Project. In all cases the DPM emissions would remain significant (Class I) since offset SLOCAPCD does not have an emission reduction program for DPM, and there is insufficient DPM reductions that could occur at the existing SMR operations to mitigate the DPM emissions associated with the Rail Spur Project or the reduced delivery alternative.

Impact AQ.4, Toxic Air Emissions at the SMR, could be reduced to less than significant with mitigation (Class II) with the reduced rail delivery alternative. Implementation of the mitigation measures that restricting idling time on site (AQ.2b), use of trucks for moving coke and sulfur that meet EPA 2010 model year NO_x and PM emissions requirements (AQ-4b), and limiting unloading times to between 7 A.M. and 7 P.M. (AQ-4c) would reduce the cancer risk to below the SLOCAPCD threshold.

As shown in Table 5.9, the highest residential cancer risk (also known as the maximally exposed individual resident) would be less than 10 in a million for the partial mitigation cases. The partial mitigation case does not include Tier 4 locomotives since the County may be preempted by Federal law from implementing this measure. However, even without the use of Tier 4 engines, the cancer risk with partial mitigation would be less than significant with mitigation.

Impact AQ.5 (Mainline Rail Toxic Emissions) would remain the same as the Rail Spur Project (Class I), but the severity of the impact would be reduced since fewer trains would travel to the SMR. Figure 5-8 shows that for areas where the train is moving faster than 20 miles per hour, the cancer health risk impacts would be less than significant. However, there are areas along the mainline rail route that have speed restriction of 10 miles per hour or less, such as in the City of Davis. These areas could experience cancer risks that are above the 10.0 in a million threshold. Given that the speed at which a train could cause excess cancer risk above the threshold is lower for the Rail Spur Project, the severity of the impact would be less since fewer areas would be affected.

This alternative would reduce the severity of two hazard impacts identified as part of the Rail Spur Project (HM.1-Risk of Spill/Fire at Unloading Facility and HM.2-UPRR Mainline Accidents) since fewer trains would be delivered to the SMR.

This alternative would reduce the severity of HM.2-UPRR Mainline Accidents but would remain a Class I impact. The reduction in risk associated with train accidents for this alternative would be due to fewer trains per year servicing the SMR, so the probability of an accident and resulting spill would be less. Figure 5-9 shows the results of the QRA for the reduced rail delivery alternatives.

The majority of the rail risk can be mitigated via use of safer rail tanker cars as discussed in Section 4.7 (Hazards and Hazardous Materials). However, the County may be preempted by Federal law from requiring mitigation on the UPRR mainline tracks, and may not be able to require the use of the safer tank car design. If the County is not preempted then the risk of a rail accident can be substantially reduced for both the Rail Spur Project as well as this alternative. In all cases the reduced delivery alternative would have a lower risk of accidents along the mainline rail.

The Reduced Rail Delivery Alternative would also reduce the probability of an oil spill from a train accident since fewer trains would be used to deliver crude to the SMR. This would reduce the probability that spill would impact biological, water, agricultural, and cultural resources. However, the spill volumes would remain the same. In the event of a spill that occurred in the vicinity of any of these resources, impacts BIO.11 (UPRR Mainline Oil Spills), WR.3 (UPRR Mainline Oil Spills), CR.6 (UPRR Mainline Oil Spills), and AR.5 (UPRR Mainline Oil Spills) could be significant and would remain Class I, but would be reduced in severity due to the lower probability of a spill impacting these resources.

This alternative would reduce the duration of train unloading noise that sensitive receptors would be exposed to since fewer trains would be unloaded at the SMR. However, the peak hour noise exposure (the criteria used to determine the significance of the unloading noise) would remain the same as the Rail Spur Project.

The reduced rail delivery alternative would meet most of the objectives of the Rail Spur Project. However, it may not allow the SMR to operate at its permitted throughput capacity since less crude oil could be available to the refinery.

The determination of the environmentally superior alternative is somewhat complicated by the preemption issue. If the County is preempted from requiring mitigation of the impacts on the UPRR mainline track and locomotives, then the Reduced Rail Delivery Alternative would be the environmentally preferred since it would reduce the severity of number of Class I impacts, and eliminate one Class I impact in air quality (AQ.4- Toxic Air Emissions at the SMR).

If the County is not preempted, the reduced rail delivery alternative would offer no advantage over the Rail Spur Project in terms of NO_x and ROG emissions since these emissions could be fully mitigated. However, the reduced rail delivery alternative would offer some very real advantages over the Rail Spur Project in terms of hazards, noise, GHG emissions, health risk, and DPM emissions.

The reduced rail delivery alternative would reduce the probability of a train accident, reduce the exposure of sensitive receptors to train unloading noise, reduce GHG emissions, reduce DPM emissions and the associated air toxic emissions. All of these reductions would result since fewer trains would be delivered to the SMR. Therefore, the Reduced Rail Delivery Alternative would be environmentally preferred over the Rail Spur Project regardless whether the County is preempted from applying mitigation to the mainline and locomotives.

Table 5.11 Comparison of Rail Spur Project and Alternative Impacts

Impact #	Impact Description	Impact Classification ↓ - Decrease in Severity but the same Classification ↑ - Increase in Severity but the same Classification			
		Proposed Project	No Project	Loop Rail Unloading Configuration	Reduced Rail Delivery
AV.1	The eastern extension of the proposed rail spur and its associated trains would reduce quality views of the open space as seen from portions of State Route 1, the California Coastal Trail, the De Anza Trail, and other public areas east of State Route 1, resulting in a potentially significant impact.	Class II	NA	Class II(↑)	Class II
AV.2	The expanded industrial use and visibility of the rail spur and associated trains on the existing open space would cause the project to be more noticeable as seen from public viewpoints on State Route 1, the California Coastal Trail, the De Anza Trail, and other public areas east of State Route 1. This effect on the existing visual character would be inconsistent with the County of San Luis Obispo visual policy goals, resulting in a potentially significant impact.	Class II	NA	Class II(↑)	Class II
AV.3	The project would create a new source of substantial light and glare which would adversely affect nighttime views in the area.	Class II	NA	Class II	Class II
AV.4	Visibility of headlights and other operational and safety lights from trains on the rail spur would create a new source of light and glare which would adversely affect nighttime views in the area.	Class II	NA	Class II(↑)	Class II(↓)
AR.1	The Rail Spur Project would result in conversion of prime agricultural land per NRCS soil classification to non-agricultural use.	None	NA	None	None
AR.2	The Rail Spur Project would result in the permanent conversion of approximately 22.3 acres of Farmland of Statewide Importance, based on soil classifications in the COSE, to non-agricultural use.	Class III	NA	Class III(↑)	Class III
AR.3	The project could result in effects that impair adjacent agricultural uses, including the generation of dust and contaminated air emissions, soil and water contamination, use of water within the Santa Maria Groundwater Basin, the spread of noxious weeds, and increased risk of fire or oil spills, which have the potential to adversely affect adjacent agricultural areas.	Class II	Class III[1]	Class II	Class II(↓)
AR.4	The project proposes disturbance and use of lands within the Agriculture designation to support industrial development.	None	NA	None	None
AR.5	The project could result in effects that impair adjacent agricultural uses along the UPRR mainline in the event of a derailment and/or spill, including the	Class I	Class I(↑)[2]	Class I	Class I(↓)

Table 5.11 Comparison of Rail Spur Project and Alternative Impacts

Impact #	Impact Description	Impact Classification ↓ - Decrease in Severity but the same Classification ↑ - Increase in Severity but the same Classification			
		Proposed Project	No Project	Loop Rail Unloading Configuration	Reduced Rail Delivery
	generation of contaminated air emissions, soil and water contamination, and increased risk of fire, which have the potential to adversely affect adjacent agricultural areas.				
AQ.1	Construction activities associated with the Rail Spur project would generate criteria pollutant emissions that exceed SLOCAPCD thresholds.	Class II	NA	Class II(↑)	Class II
AQ.2	Operational activities associated with the Rail Spur Project within SLOC (i.e., on the project site (SMR) and on the mainline within SLOC) would generate criteria pollutant emissions that exceed SLOCAPCD thresholds.	Class I	Class I(↓)[1]	Class I(↓)	Class I(↓)
AQ.3	Operational activities of trains along the mainline rail route outside of SLOC associated with the Rail Spur Project would generate criteria pollutant emissions that exceed thresholds.	Class I	Class I(↓)[2]	Class I	Class I(↓)
AQ.4	Operational activities at the Refinery associated with the Rail Spur Project would generate toxic emissions that exceed SLOCAPCD thresholds.	Class I	Class III[1]	Class I(↓)	Class II
AQ.5	Operational activities of trains along the mainline rail route associated with the Rail Spur Project would generate toxic emissions that exceed SLOCAPCD thresholds.	Class I	Class I(↓)[2]	Class I	Class I(↓)
AQ.6	Operational activities associated with the Rail Spur Project would generate GHG emissions that exceed SLOCAPCD thresholds.	Class I	Class I(↑)[1,2]	Class I(↓)	Class I(↓)
AQ-7	Operational activities associated with the Rail Spur Project could generate odors.	Class II	Class III[1]	Class II	Class II(↓)
AQ-8	Cumulative criteria pollutant and GHG emissions at the refinery could exceed SLOCAPCD thresholds.	Class II	Class II(↓)	Class II	Class II(↓)
BIO.1	Proposed construction of the Rail Spur Project has the potential to impact Nipomo Mesa lupine, a state and federally endangered plant species.	Class II	NA	Class II(↑)	Class II
BIO.2	Proposed construction of the Rail Spur and associated Emergency Vehicle Access route would result in the removal of plant species considered to be rare by the California Native Plant Society.	Class II	NA	Class II(↑)	Class II
BIO.3	Proposed construction and operational activities could result in disturbance and mortality to common ground-dwelling wildlife and sensitive ground-	Class II	NA	Class II(↑)	Class II

Table 5.11 Comparison of Rail Spur Project and Alternative Impacts

Impact #	Impact Description	Impact Classification ↓ - Decrease in Severity but the same Classification ↑ - Increase in Severity but the same Classification			
		Proposed Project	No Project	Loop Rail Unloading Configuration	Reduced Rail Delivery
	dwelling animal species.				
BIO.4	Proposed construction activities could result in disturbance of American badger, potentially including mortality.	Class II	NA	Class II(↑)	Class II
BIO.5	Proposed construction of the Rail Spur Project could result in a permanent impact to approximately 20.88 acres of vegetation types that are considered sensitive communities by the California Department of Fish and Wildlife following the National Vegetation Classification.	Class II	NA	Class II(↑)	Class II
BIO.6	Proposed construction of the Rail Spur Project has the potential to impact individual specimens of coast live oak of 5-inch DBH or greater.	Class II	NA	Class II(↑)	Class II
BIO.7	A rupture or leak from, pipelines, rails cars, or other facility related infrastructure during operation of the Rail Spur Project has potential to impact surrounding onsite sensitive habitats.	Class II	Class III[1]	Class II	Class II(↓)
BIO.8	Proposed construction and operational activities could result in disturbance and mortality to nesting migratory bird species and overwintering burrowing owl.	Class II	NA	Class II(↑)	Class II
BIO.9	Proposed construction activities could result in disturbance and the introduction or spread of invasive plant species.	Class II	NA	Class II(↑)	Class II
BIO-10	Long term air quality impacts could result in impacts to known overwintering monarch butterfly habitat located approximately one-mile east of the Rail Spur Project.	Class III	NA	Class III	Class III(↓)
BIO.11	Crude oil transportation along the UPRR mainline could result in a crude oil spill that impacts sensitive plant and wildlife species and wetlands.	Class I	Class I[2]	Class I	Class I(↓)
BIO.12	Crude oil transportation along the UPRR mainline could result impacts to wildlife in the vicinity of the mainline.	Class III	Class III(↓)	Class III	Class III(↓)
CR.1	Grading and excavation associated with the construction of the emergency vehicle access road (EVA) could result in the disturbance and destruction of a portion of CA-SLO-1190.	Class II	NA	Class II	Class II
CR.2	Grading and excavation associated with the project could result in the disturbance and destruction of unknown subsurface archeological resources.	Class II	NA	Class II(↑)	Class II

Table 5.11 Comparison of Rail Spur Project and Alternative Impacts

Impact #	Impact Description	Impact Classification ↓ - Decrease in Severity but the same Classification ↑ - Increase in Severity but the same Classification			
		Proposed Project	No Project	Loop Rail Unloading Configuration	Reduced Rail Delivery
CR.3	Unanticipated disturbance to human remains due to construction.	Class II	NA	Class II(↑)	Class II
CR.4	Construction of the Rail Spur Project would result in impacts to historical resources.	None	NA	None	None
CR.5	Unanticipated disturbance to paleontological resources.	Class II	NA	Class II(↑)	Class II
CR.6	Train traffic associated with the importation of crude oil to the project site could result in a derailment or a material spill, which could result in the disturbance and destruction of cultural resources along the mainline routes.	Class I	Class I[2]	Class I	Class I(↓)
GR.1	Seismically induced ground shaking could damage proposed structures and infrastructure, potentially resulting in loss of property, risk to human health and safety, and oil spills.	Class II	NA	Class II	Class II
GR.2	Project grading would result in changes in topography, potentially unstable slopes, and potential increased erosion.	Class II	NA	Class II(↑)	Class II
GR.3	Expansive soils, if present, could damage proposed foundations.	Class II	NA	Class II(↑)	Class II
GR.4	The Project could potentially preclude the future extraction of valuable mineral resources.	Class III	NA	Class III	Class III
HM.1	The proposed rail spur unloading facility would increase the risk of an oil spill, fires and explosions at the refinery that could impact the public.	Class III	Class III[1]	Class III	Class III(↓)
HM.2	The potential for a crude oil unit train derailment would increase the risk to the public in the vicinity of the UPRR right-of-way.	Class I	Class I(↓)[2]	Class I	Class I(↓)
HM.3	A change in crude slate from rail deliveries could increase hazards at the refinery that would impact the public.	Class III	Class III(↓)	Class III	Class III(↓)
REC.1	The Rail Spur Project would increase use or demand for parks and recreational opportunities.	Class III	NA	Class III	Class III
REC.2	The Rail Spur Project would affect access to existing trails, parks or recreational opportunities.	Class III	Class III(↓)[2]	Class III	Class III(↓)
N.1	Construction activities would generate noise that could exceed San Luis Obispo thresholds.	Class II	NA	Class II	Class II
N.2	Operational activities would generate noise levels that exceed San Luis	Class II	Class III[1]	Class II(↑)	Class II(↓)

Table 5.11 Comparison of Rail Spur Project and Alternative Impacts

Impact #	Impact Description	Impact Classification ↓ - Decrease in Severity but the same Classification ↑ - Increase in Severity but the same Classification			
		Proposed Project	No Project	Loop Rail Unloading Configuration	Reduced Rail Delivery
	Obispo thresholds.				
N.3	Operational activities along the UPRR mainline tracks would generate transportation related noise levels that exceed San Luis Obispo thresholds.	Class III	Class III(↓)[2]	Class III	Class III(↓)
N.4	Operational activities would produce vibration levels that exceed San Luis Obispo thresholds.	Class III	Class III[1]	Class III	Class III
P/H.1	The Project would induce substantial population growth in the area.	Class III	NA	Class III	Class III
P/H.2	The project would increase the transfer of hazardous substances through residential areas, potentially resulting in the indirect displacement of people.	Class III	NA	Class III	Class III
P/H.3	The project would generate temporary and permanent employment needs, which could result in the need for new housing in the project vicinity.	Class III	NA	Class III	Class III
PS.1	The Rail Spur Project would generate solid waste requiring disposal at landfills.	Class III	NA	Class III	Class III
PS.2	The Rail Spur Project would potentially impact electricity supplies.	Class III	Class III[1]	Class III	Class III(↓)
PS.3	The Rail Spur Project would increase demand for fire protection and emergency response services at the SMR.	Class II	Class III[1]	Class II	Class II(↓)
PS.4	Operations of the crude oil train on the mainline UPRR tracks would increase demand for fire protection and emergency response services along the rail routes.	Class I	Class I[2]	Class I	Class I(↓)
PS.5	The Rail Spur Project would increase demand for police services at the SMR.	Class III	Class III[1]	Class III	Class III
TR.1	Traffic associated with the construction phase of the Rail Spur Project could impact traffic on roadways in the Project vicinity due to construction traffic.	Class II	NA	Class II(↑)	Class II
TR.2	Traffic associated with operation of the Rail Spur Project could impact traffic on roadways in the Project vicinity due to increased traffic.	Class III	Class III[1]	Class III	Class III
TR.3	Crude oil trains servicing the SMR could cause traffic delays in the vicinity of at-grade crossing.	Class III	Class III(↓)[2]	Class III	Class III(↓)
TR.4	Increased rail traffic on Union Pacific main rail lines could impact the performance of the public rail transit facilities.	Class III	Class III(↓)[2]	Class III	Class III(↓)

Table 5.11 Comparison of Rail Spur Project and Alternative Impacts

Impact #	Impact Description	Impact Classification ↓ - Decrease in Severity but the same Classification ↑ - Increase in Severity but the same Classification			
		Proposed Project	No Project	Loop Rail Unloading Configuration	Reduced Rail Delivery
WR.1	Project grading and construction, could degrade surface water and groundwater quality.	Class II	NA	Class II(↑)	Class II
WR.2	A rupture or leak from the tanker rail cars, unloading facility, or oil pipeline during operation of the Rail Spur Project could substantially degrade surface water and groundwater quality.	Class II	Class III[1]	Class II	Class II(↓)
WR.3	A rupture or leak from a rail car on the UPRR mainline track could substantially degrade surface water and groundwater quality.	Class I	Class I[2]	Class I	Class I(↓)
WR.4	Project operations would result in an increase in the amount of stormwater runoff at the site.	Class III	NA	Class III	Class III
WR.5	The Project would not involve activities within the 100-year flood plain.	Class III	NA	Class III	Class III
WR.6	The Project would potentially change the quantity or movement of available ground water or adversely affect a community water service provider.	Class III	NA	Class III	Class III

NA – The impact would not occur.

1. Location of impact would shift from the SMR to other rail loading facilities near Bakersfield and/or the SMPS.
2. Location of mainline rail impacts would shift from Coastal Route to the San Joaquin Valley and State Highway 166 for the truck transportation.

5.5 References

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