

5.0 Comparison of Alternatives

This section summarizes the environmental advantages and disadvantages associated with the proposed Project and the alternatives evaluated in this Environmental Impact Report (EIR). This comparison is based on the assessment of environmental impacts of the proposed Project and each alternative, as identified in Section 4.2 through 4.10. Section 2.0 introduces and describes the proposed Project and alternatives considered in this EIR, including those alternatives eliminated from further consideration. The alternatives carried forward for analysis in Sections 4.2 through 4.10 included the No Project Alternative and six alternatives identified to potentially reduce significant impacts resulting from the proposed Project (see Section 5.3). This section is organized as follows:

- **Section 5.1:** Comparison Methodology
- **Section 5.2:** Comparison of the Proposed Project to the No Project Alternative
- **Section 5.3:** Comparison of the Proposed Project to the Alternatives Identified to Potentially Reduce Significant Impacts of the Proposed Project
- **Section 5.4:** Environmentally Superior Alternative

5.1 Comparison Methodology

The California Environmental Quality Act (CEQA) does not provide specific direction regarding the methodology for comparing alternatives. 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 that are generally given more weight in comparing alternatives are those with longer-term impacts (e.g., visual impacts or permanent loss of habitat). Impacts that are short-term (e.g., construction-related impacts) or those that are easily mitigable to less than significant levels are generally considered to be less important.

This comparison is designed to satisfy the requirements of CEQA Guidelines Section 15126.6(d), Evaluation of Alternatives, which state that:

“The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed 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 project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed.”

In accordance with 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 proposed Project. If the environmentally superior alternative is the No Project Alternative, CEQA requires identification of an environmentally superior alternative from among the other alternatives [CEQA Guidelines Section 15126.6(e)(2)].

The following methodology was used to compare alternatives in this EIR:

- **Step 1: Identification of Alternatives.** An alternatives screening process (described in Section 2.8) was used to identify a number of alternatives to the proposed Project. That screening analysis resulted in one alternative that was a subset of the proposed Project, the No New Well Pads Alternative, but satisfied the basic objectives of the proposed Project. The No Project Alternative was also identified.

No other feasible alternatives meeting most of the project objectives were identified that would lessen or alleviate significant impacts.

- **Step 2: Determination of Environmental Impacts.** The environmental impacts of the proposed Project and alternatives were identified in Sections 4.2 through 4.10.
- **Step 3: Comparison of Proposed Project with Alternatives.** Sections 5.2 and 5.3 summarize the significant and unavoidable (Class I) and significant but mitigable (Class II) impacts that could occur with the proposed Project and the alternatives. Section 5.4 discusses the environmentally superior alternative.

5.2 Comparison of the Proposed Project to the No Project Alternative

The proposed Project includes the re-establishment of oil production in an existing oil field using a thermal enhanced oil recovery process with the construction and restoration of approximately 72 well pads, construction and restoration of over nine miles of field access roads, and drilling of up to 296 wells. The proposed Project also includes construction of new processing facilities, field systems, utility connections, and the transport of produced oil by truck, as well as the construction of a new natural gas pipeline and power line. Under the No Project Alternative, the proposed Project would not occur and the field would continue to be abandoned.

In summary, under the No Project Alternative, the impacts resulting from the proposed Project would not occur, and the No Project Alternative would be environmentally superior to the proposed Project. However, this Alternative would not meet the major objectives of the Project. As previously stated, if the environmentally superior alternative is the No Project Alternative, CEQA requires identification of an environmentally superior alternative from among the other alternatives. Section 5.3 provides a comparison of the proposed Project with the five alternatives identified to potentially reduce significant impacts that would result from the proposed Project, as described in Sections 4.2 through 4.10. Section 5.4 summarizes the comparison of the proposed Project with the No Project Alternative and the five alternatives, and identifies the environmentally superior alternative.

5.3 Comparison of the Proposed Project to the Alternatives Identified to Potentially Reduce Significant Impacts of the Proposed Project

Section 2.11.4 provides descriptions of five alternatives identified to potentially reduce impacts resulting from the proposed Project, including the following:

- Alternative 1: Reduced Footprint Alternative
- Alternative 2: Oak Avoidance Alternative
- Alternative 3: Phillips 66 Pipeline Alternative
- Alternative 4: Plains Pipeline Alternative
- Alternative 5: Natural Gas Pipeline Reroute Alternative

These alternatives address different aspects of the proposed Project, including oil field development and operation, crude oil transportation, and the natural gas pipeline. Table 5-1 summarizes each of the alternatives to the proposed Project. Overview descriptions of these alternatives (see Section 2.11.4 for complete descriptions) and impact analyses are provided in Section 5.3.1 thru 5.3.5.

Table 5-1. Summary of Project Alternatives Carried Forward

Alternative	Description	Changes with Respect to the Proposed Project
OIL FIELD DEVELOPMENT & OPERATION		
-	Proposed Project	<ul style="list-style-type: none"> • 72 well pads • 296 wells • 305 acres disturbance • 6.6 MM cubic yards cut/fill
1	Reduced Footprint Alternative	<ul style="list-style-type: none"> • 26 well pads, but same number of wells. • 296 wells; well lengths longer due to horizontal component (instead of vertical). • 164 acres disturbance • 3.1 MM cubic yards cut/fill
2	Oak Avoidance Alternative	<ul style="list-style-type: none"> • 37 well pads, but same number of wells • 296 wells; well lengths longer due to horizontal component (instead of vertical). • 136 acres disturbance • 2.3 MM cubic yards cut/fill
CRUDE OIL TRANSPORTATION		
-	Proposed Project (190 one-way truck trips)	<ul style="list-style-type: none"> • 95 blended crude one-way truck trips • 21 LCO one-way truck trips • 74 empty one-way truck trips
3	Phillips 66 Crude Oil Pipeline Alternative (156 one-way truck trips)	<ul style="list-style-type: none"> • Eliminates trucking of blended crude, • LCO truck trips increase from 21 to 78; trucks return empty • Requires constructing a new 4.5-mile connection pipeline • Requires construction of the FPP which was evaluated under an adopted CEQA document (Case No. 13EIR-00000-00002 and State Clearinghouse No. 2013061011) and approved by the County Planning Commission on March 11, 2015
4	Plains Crude Oil Pipeline Alternative (150 one-way truck trips)	<ul style="list-style-type: none"> • Eliminates trucking of blended crude • LCO truck trips increase from 21 to 75; truck return empty • Requires constructing a new 6-mile connection pipeline • Plains Lines 901 and 903 are currently shutdown; requires permitting and replacement of the 123.4-mile line system, which is being evaluated separately under CEQA by Santa Barbara County Planning and Development Energy, Minerals and Compliance Division (Case Nos. 17DVP-00000-00010, 17CUP-00000-00027 and 17CDP-00000-00060) • Requires construction and operation of Basic Sediment and Water (BS&W) processing facilities
NATURAL GAS PIPELINE		
-	Proposed Project	<ul style="list-style-type: none"> • 14 mile length • Traverses community of Orcutt, including sensitive land uses such as schools and churches
5	Natural Gas Pipeline Route Alternative	<ul style="list-style-type: none"> • 17.4 mile length • Avoids community of Orcutt, including sensitive land uses such as schools and churches.

As described in Section 2.11.4, each of these alternatives generally satisfies the objectives of the proposed Project. Resultant decreases or increases in impacts for each alternative, as compared to the proposed Project, are discussed in Sections 5.3.1 thru 5.3.5, presented below, and summarized in Table 5-6 in Section 5.3.6.

As offered by CEQA Guidelines Section 15126.6(d) as a tool for alternative comparison, Table 5-6 provides a matrix to compare the significant and unavoidable (Class I) and significant and mitigable (Class II) impacts of the proposed Project to each of these five Alternatives carried forward for further analysis in this EIR. Note that the impacts for the proposed Project were assessed in Sections 4.2 through 4.10 for

the oil field, natural gas pipeline, and power line. In Table 5-6 below, if the impact determination was concluded to be Class III (less than significant) for one or more proposed Project components, these components were not carried forward under the Class II portion of Table 5-6. Further, since the alternatives assessed provide options to various aspects of the proposed Project (i.e., oil field development and operation, crude oil transportation, and alternative natural gas pipeline alignment), the relative impacts of each alternative are assessed with respect to each aspect of the proposed Project. Section 5.4 then summarizes the Table 5-6 analysis and discusses the choice of the Environmentally Superior Alternative.

5.3.1 Alternative 1: Reduced Footprint Alternative (Oil Field Development & Operation)

Under the Reduced Footprint Alternative, Aera would utilize more horizontal drilling (i.e., angled drills instead of vertical) to reach reservoir areas, which would allow more wells to be drilled per well pad; therefore, the Reduced Footprint Alternative would reduce the overall number of well pads and associated ground disturbance of the proposed Project (see Figure 2-26 for a comparison of the proposed Project and the Reduced Footprint Alternative disturbance footprints). This Alternative would require 26 new well pads, compared with 72 for the proposed Project. The Conservation Easement acreage would be reduced (minimum of 404 acres). All other proposed components would be the same as the proposed Project.

The Reduced Footprint Alternative would result in 115.2 acres of permanent ground disturbance compared with 201.4 acres under the proposed Project. Likewise, temporary disturbance would be 48.5 acres under the Reduced Footprint Alternative compared to 103.3 acres under the proposed Project. Temporary disturbance from construction of the natural gas pipeline and power line would be the same as identified in the proposed Project. Because the number of active wells would remain the same, the potential sizes of spills from pipelines and corresponding impacts to biological resources would also be the same.

Air Quality

Impact AQ-1: Construction emissions could result in a considerable net increase of pollutants that would violate air quality standards or contribute substantially to an existing or projected air quality violation.

The Reduced Footprint Alternative would decrease the number of new well pads, but this Alternative would not reduce the number of production wells or change the number of stationary sources of air emissions. By reducing ground disturbance under the Reduced Footprint Alternative from 6.6 million cubic yards of cut and fill to 3.1 million cubic yards, construction air pollutant emissions, including fugitive dust emissions, would be reduced proportionately. However, the level of activity in well drilling and replacement well drilling could increase because the additional test bores, drilling lengths, and greater reliance on horizontal drilling would warrant a greater level of equipment use resulting in a greater level of air pollutant emissions during construction, especially since well drilling would occur over a 19 year period. **These considerations would slightly increase the overall level of the anticipated emissions for construction, when compared with those presented in Section 4.2.4. The impact determination would remain the same as identified in Section 4.2.4 (Class II), and the same mitigation measures would be required.**

Impact AQ-2: Operational emissions could result in a considerable net increase of pollutants that would violate air quality standards or contribute substantially to an existing or projected air quality violation.

The Reduced Footprint Alternative would increase the number of wells drilled per pad. Wells with increased drilling angles would be more complicated and would require more effort to drill, operate, and maintain, and therefore more well replacements may be required under this Alternative than for the proposed Project. **These considerations would increase the overall level of the anticipated emissions for operations, when compared with those presented in Section 4.2.4. The impact determination would remain the same as identified in Section 4.2.4 (Class II), and the same mitigation measures would be required.**

Impact AQ-3: Proposed Project activities could create objectionable odors affecting a substantial number of people.

The Reduced Footprint Alternative would create similar or identical emissions of objectionable odors at similar frequencies. **The impact determination would remain the same as identified in Section 4.2.4 (Class III).**

Impact AQ-4: Proposed Project activities could expose sensitive receptors to substantial pollutant concentrations exceeding adopted health risk thresholds for air toxics.

The Reduced Footprint Alternative would create a similar or identical potential for air quality-related health risk. **The impact determination would remain the same as identified in Section 4.2.4 (Class III).**

Impact AQ-5: Proposed Project activities could conflict with or obstruct implementation of the applicable air quality management plans.

The Reduced Footprint Alternative would increase the number of wells drilled per pad. The level of activity and emissions during construction and operation could increase because wells with increased drilling angles would be more complicated and would require more effort to drill, operate, and maintain. Mitigation recommended for Impact AQ-2 (MM AQ-2c requiring the Applicant to offset all proposed Project-related emissions that exceed the thresholds) would remain applicable to this Alternative. **The impact determination would remain the same as identified in Section 4.2.4 (Class II).**

Biological Resources

Impact BIO-1: A rupture or leak from oil production facilities, pipelines, or transport trucks has the potential to result in a substantial adverse effect on native species and habitats, special-status species and their habitats, and sensitive vegetation communities.

Because the number of active wells would remain the same as the proposed Project, the potential sizes of spills from pipelines and corresponding impacts to biological resources would also be the same. **Impact classification (Class I) is the same as for the proposed Project.**

Impact BIO-2: Proposed Project construction and routine operations have the potential for degradation and loss of habitat for listed and other special-status species.

The Reduced Footprint Alternative would reduce permanent impacts to native and nonnative vegetation by 59.7 acres, or 44 percent compared with the proposed Project.

The CTS reproductive value of the Reduced Footprint Alternative impacts would be 14,167 units, compared with 31,443 units for the proposed Project (a 55 percent reduction). The Reduced Footprint Alternative would result in a total of 93.77 acres of impacts that would not impede CTS migration from pond SISQ-19 (temporarily disturbed areas and roadways/pads), compared with 185.48 acres for the proposed Project. A total of 1.12 acres of impacts that would impede migration (permanent above ground structures) would occur, compared with 4.32 acres for the proposed Project. **Impact BIO-2 would be mitigated to less than significant (Class II).**

Impact BIO-3: Proposed Project construction and routine operation have the potential to injure or “take” listed and other special-status species.

The Reduced Footprint Alternative would result in 115.2 acres of permanent ground disturbance compared with 201.4 acres under the proposed Project. Temporary disturbance from construction of the natural gas pipeline and power line would be the same as the proposed Project. The Reduced Footprint Alternative would have a proportionally reduced impact on listed and other special-status species compared with the proposed Project. **Impact BIO-3 would be mitigated to less than significant (Class II).**

Impact BIO-4: Proposed Project construction has the potential to result in a net loss or permanent change in the extent or functional value of sensitive vegetation communities and loss of individual oak trees.

Total impacts to oak woodland would be reduced by 21.7 acres or 74.3 percent compared to the proposed Project. The Reduced Footprint Alternative would reduce oak removals from 1,500 to 735 coast live oak trees. **Even with implementation of available feasible mitigation, a significant net temporal loss and permanent change in the extent and functional value of oak trees and oak woodland habitat would occur and therefore, although substantially reduced in magnitude from the proposed Project, impacts to these resources under the Reduced Footprint Alternative would remain a Class I impact.**

Impact BIO-5: Proposed Project construction and routine operations have the potential to adversely affect waters of the U.S. and waters of the state.

Impacts would be the same as the proposed Project; therefore, **impact classification (Class II) is the same as for the proposed Project.**

Impact BIO-6: Proposed Project construction and routine operations have the potential to impair movement, migration, or dispersal of resident and migratory fish and wildlife species.

The Reduced Footprint Alternative would result in 115.2 acres of permanent ground disturbance compared with 201.4 acres under the proposed Project. Temporary disturbance from construction of the natural gas pipeline and power line would be the same as the proposed Project. The Reduced Footprint Alternative would have a proportionally reduced impact on wildlife movement compared with the proposed Project. **Impact BIO-6 would be less than significant (Class II) if mitigation measures are implemented.**

Impact BIO-7: An unanticipated surface expression of drilling fluid at HDD crossings under Cat Canyon Creek and other drainages has the potential to result in a substantial adverse effect on native species and habitats, special-status species and their habitats, and sensitive vegetation communities.

The Reduced Footprint Alternative would not affect the natural gas pipeline alignment and required HDD crossings.

Climate Change/Greenhouse Gas Emissions

Impact GHG-1: Proposed Project emissions could generate greenhouse gas emissions (GHG) that may have a significant impact on the environment.

The Reduced Footprint Alternative would decrease the number of new well pads and reduce the amount of permanent net new disturbance of the site from 305 to 163.7 acres. This Alternative would not reduce the number of production wells or change the number of stationary sources of air emissions. Reducing some ground disturbance under the Reduced Footprint Alternative would result in a smaller overall land use change, resulting in a smaller loss of natural carbon uptake. However, the level of activity in well drilling and replacement well drilling could increase because the additional test bores, drilling lengths, and greater reliance on horizontal drilling would warrant a greater level of equipment use resulting in a greater level of GHG emissions. The wells with increased drilling angles would be more complicated and would require more effort to drill, operate, and maintain, and therefore more well replacements may be required under this Alternative than for the proposed Project. **These considerations would increase the overall level of the anticipated emissions for construction and operations, when compared with those presented in Section 4.4.4. The impact determinations would remain the same as identified in Section 4.4.4 (Class II), and the same mitigation measures would be required.**

Impact GHG-2: Proposed Project emissions could conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Given the future oversight of alternative-related sources and progress of California's ongoing efforts to implement policies and a regulatory setting for reducing GHG emissions, the Reduced Footprint Alternative is not likely to conflict with any applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions; therefore, with mitigation, **Impact GHG-2 would be a less than significant impact (Class III).**

Cultural/Historic Resources

Impact CULT-1: The proposed Project may cause a substantial adverse change in the significance of a historical resource, unique archaeological resource, or tribal cultural resource.

As with the proposed Project, no historical resources, unique archaeological resources, or tribal cultural resources have been identified within the Reduced Footprint Alternative footprint, but the area does have a moderate to high sensitivity for the potential of presence of buried cultural resources given the presence of Holocene soils. Specifically, the sensitive area includes the northwestern site area, Conservation Easement, northern terminus of the 0.3-mi. section of the 115 kV power line, and the western and eastern termini of the natural gas pipeline. Because the sensitive areas for buried resources are not removed from the Project area in the Reduced Footprint Alternative, even with the reduction in acreage by 141 acres, **the impact determination would remain the same as identified in Section 4.5.4 (Class II) and the same mitigation measures would be required.**

Impact CULT-2: The proposed Project could damage human remains during ground disturbing activities occurring in the Project site.

As with the proposed Project, no human remains have been found within the Reduced Footprint Alternative area. However, it is possible that previously unidentified remains may be discovered during ground disturbing activities. Despite its smaller area of disturbance (164 acres) compared to the proposed Project (305 acres), the potential for an incidental discovery of human remains would remain since the sensitive areas would still be developed (see Impact CULT-1). **Therefore, the impact determination would remain the same as identified in Section 4.5.4 (Class II) for the proposed Project and the same mitigation measures would be required.**

Impact CULT-3: The proposed Project may result in a significant impact to paleontological resources due to the direct or indirect destruction of a unique paleontological resource or site located in the Project site.

The Reduced Footprint Alternative would reduce the potential for inadvertent discovery and impacts to significant historical resources, unique archaeological resources, tribal cultural resources, or human remains by 141 acres, or 46 percent compared with the proposed Project. However, the Reduced Footprint Alternative would not reduce potential impacts to the specific areas within the proposed Project that have moderate to high potential for the inadvertent discovery or destruction of significant buried resources; including cultural resources, historical resources, unique archaeological resources, tribal cultural resources, human remains, or paleontological resources. Specifically, the sensitive area includes the northwestern site area, Conservation Easement, northern terminus of the 0.3-mile section of the 115 kV power line, and the western and eastern termini of the natural gas pipeline. **Because the sensitive area for buried resources is not removed from the Project area in the Reduced Footprint Alternative, the impact determination would remain the same as identified in Section 4.5.4 (Class II) and the same mitigation measures would be required.**

Geologic Processes/Geologic Hazards

Impact GEO-1: Seismically induced ground shaking, Project induced ground shaking, or seismically induced slope failure could cause damage to Project structures or result in injury or death to people.

Under the Reduced Footprint Alternative, the ground disturbance and grading within the oil field site would be significantly reduced; 164 acres of temporary and permanent ground disturbance total under the Reduced Footprint Alternative versus 305 acres for the proposed Project, and a reduction down to 3.1 million cubic yards of cut and fill versus 6.6 cubic yards of cut and fill. Impact GEO-1 would be reduced relative to hazards related to seismically induced landslides due to the smaller footprint creating a smaller area to be impacted by landslides. Impacts due to seismic shaking and induced seismicity remain unchanged because the number of wells and planned operation are unchanged. **As with the proposed Project, Impact GEO-1 would be less than significant (Class III) given implementation of regulatory requirements during design and construction.**

Impact GEO-2: Slope failures, such as landslides, could be triggered by Project construction.

Impact GEO-3: Construction and operation of the Project could trigger or accelerate soil erosion.

Both Impacts GEO-2 (slope failures triggered by construction) and GEO-3 (triggered or accelerated soil erosion) would be reduced significantly due the large decrease in disturbed acreage. Under Impact GEO-2, less area being graded results in less chance to destabilize slopes and trigger landslides. Impact GEO-3

would be almost halved due to the amount of ground disturbance almost being half the amount. **As with the proposed Project, Impacts GEO-2 and GEO-3 would be less than significant (Class III) given implementation of regulatory requirements during design and construction.**

Impact GEO-4: Expose people or structures to potential risk of loss or injury where expansive or other unsuitable soils are present.

Impact GEO-4 (expansive or unsuitable soils) would likely be reduced by the significant decrease in the footprint size; however, the amount of decrease would vary depending on the presence of unsuitable soils with the remaining footprint and location of Project components relative to these soils. **However, as with the proposed Project, implementation of MM GEO-1 would reduce these impacts to less than significant with mitigation (Class II).**

Impact GEO-5: Soils incapable of supporting septic system.

Under the Reduced Footprint Alternative, an onsite septic system would still be installed and would be required to obtain a permit from EHS and satisfy the County's septic system requirements. **Impact GEO-5 would remain unchanged, less than significant (Class III).**

Impact GEO-6: Encountering contaminated soils during construction.

Impact GEO-6 (encountering contaminated soils) would likely decrease due to the large decrease in ground disturbance; however, the amount of decrease is uncertain. Unknown contamination could be encountered anywhere on the site, and thus the likelihood of encountering it within the reduced footprint and potential amounts encountered is difficult to quantify. **However, as with the proposed Project, implementation of MM GEO-2 reduces the impact to less than significant with mitigation (Class II).**

Hazardous Materials/Risk of Upset

Impact RISK-1: The proposed Project could generate risks to public safety by exposing the public to produced gas releases from the oil field gathering pipelines, and gas treatment plant.

Under the Reduced Footprint Alternative, Aera would utilize more horizontal drilling (i.e., angled drills instead of vertical) to reach reservoir areas, which would allow more wells to be drilled per well pad, thereby reducing the overall number of well pads (from 72 to 26) and associated ground disturbance of the proposed Project. Additional test bores would be required by Aera to confirm the upper and lower reservoir depths to ensure the feasibility and proper positioning for horizontal drilling. The results will serve to inform the footprint of the Reduced Footprint Alternative. In addition, the increased drilling angle required to reduce the disturbance footprint is more complicated and costlier to drill, operate, and maintain, and therefore, more well replacements may be required under the Alternative than for the proposed Project.

The Reduced Footprint Alternative does not affect any of the other operational aspects of the proposed Project. In summary, **the Reduced Footprint Alternative would provide no reduction in the risk to public safety by exposing the public to produced gas releases identified for the proposed Project, so the impact determination would remain the same as identified in Section 4.7.4 (Class III) and the same mitigation measures would apply.**

Impact RISK-2: The proposed Project could generate risks to public safety by exposing the public to hazards from truck transport of light crude oil (LCO) and blended crude oil product.

The Reduced Footprint Alternative would not affect the overall level of oil production and associated truck transport compared to the proposed Project. Therefore, **the Reduced Footprint Alternative would provide no reduction in the risk of upset or hazardous materials exposure from truck transport of LCO and blended crude identified for the proposed Project, so the impact determination would remain the same as identified in Section 4.7.4 (Class II) and the same mitigation measures would apply.**

Impact RISK-3: The proposed Project could generate risks to public safety by exposing the public to hazards from releases of natural gas from the SoCal Gas natural gas pipeline.

The Reduced Footprint Alternative addresses the proposed Project area of disturbance and it would not affect the proposed natural gas pipeline; **therefore, the resultant hazards discussed under Impact RISK-3 for the Reduced Footprint Alternative would not be affected. The impact determination would remain the same as identified in Section 4.7.4 (Class III).**

Impact HAZ-1: Release of Hazardous Materials during Construction, including Well Drilling.

The Reduced Footprint Alternative would not affect the overall number of active wells, but Aera would utilize more horizontal drilling to reach reservoir areas. Additional test bores would be required by Aera to confirm the upper and lower reservoir depths to ensure the feasibility and proper positioning for horizontal drilling. In addition, the increased drilling angle required to reduce the disturbance footprint is more complicated and costlier to drill, operate, and maintain, and therefore more well replacements may be required under the Alternative than for the proposed Project. Therefore, with an increased level of activity and length in well drilling and replacement well drilling, **the potential for a release of hazardous materials during well drilling under the Reduced Footprint Alternative would be slightly greater than under the proposed Project, but the impact would remain less than significant (Class III). Similar to the proposed Project, the potential for a release of hazardous materials from construction equipment would be less than significant (Class II) with the implementation of the same mitigation measure (MM RISK-3) and other regulatory requirements discussed in Section 4.7.4.**

Impact HAZ-2: Release of Hazardous Materials during Operations and Maintenance.

The Reduced Footprint Alternative would not affect the overall level of oil production compared to the proposed Project. Therefore, **the potential for a release of hazardous materials during operations and maintenance under the Reduced Footprint Alternative would be similar to the proposed Project (Class II). The same mitigation measures would apply.**

Impact FIRE-1: Introduction of Development into an Existing High Fire Hazard Area

Impact FIRE-2: Introduction of Development into an Area without Adequate Water Pressure, Fire Hydrants, or Adequate Access for Fire Fighting

Impact FIRE-3: Introduction of Development that will Hamper Fire Prevention Techniques such as Controlled Burns or Backfiring in High Fire Hazard Areas.

Impact FIRE-4: Development of Structures beyond Safe Fire Department Response Time.

Similar to the proposed Project, the construction of the Reduced Footprint Alternative would introduce sources of ignition within high fire hazard areas. **The Reduced Footprint Alternative impact determina-**

tion would remain the same as identified in Section 4.7.4 for the proposed Project (Class II), and the same mitigation measure would apply.

Noise

Impact NOISE-1: Construction Noise

As shown in Table 2-1, the Reduced Footprint Alternative would reduce the total disturbance area compared to the proposed Project, resulting in a significant reduction in the total number of well pads developed. However, this Alternative would still develop the same number of wells (296 new wells). Under the Reduced Footprint Alternative, Aera would utilize more horizontal drilling (i.e., angled drills instead of vertical) to reach reservoir areas, which would allow more wells to be drilled per well pad, thereby reducing the overall number of well pads and associated ground disturbance of the proposed Project. However, because of increased angled well lengths, the duration of drilling at each well could be longer.

By reducing the number of new well pads under the Reduced Footprint Alternative, there would be a reduction in the duration of construction noise impacts, reducing the total duration of construction and number of locations where impacts from well pad development could occur. However, 296 wells would still be drilled, the primary source of construction noise, and many of these angled drills would be longer in length, increasing the duration of drilling at each well. With the implementation of MM NOISE-1, which would require the reduction of temporary construction noise through modeling and reduction techniques, the Reduced Footprint Alternative would **result in less than significant construction noise impacts (Class II)**.

Impact NOISE-2: Operational Noise

The Reduced Footprint Alternative would still develop the same number of wells (296 new wells developed) and have the same production as the proposed Project. Therefore, it would generate similar or identical operational noise as the proposed Project. As shown in Table 4.8-14, **production equipment operation would result in a less than significant impact during the modeled production operations (Class III)**. Short-term maintenance activity noise levels would be similar to or less than those identified above for well development and construction, including workover drill rig operations. **To ensure proposed Project workover drilling (which could be 24-hours per day) does not impact sensitive receptors, MM NOISE-2 (Maintenance Noise Control Plan) is proposed to reduce noise impacts to a less than significant level (Class II)**. As shown in Tables 4.8-16 and 4.8-17, the addition of operational-related traffic to the haul routes would not exceed any applicable noise threshold at NSRs located along these travel routes. **Therefore, vehicle trips associated with proposed Project operation would result in a less than significant impact (Class III)**.

Impact NOISE-3: Vibration

By reducing the number of new well pads under the Reduced Footprint Alternative, there would be a reduction in the duration of construction noise impacts, reducing the total duration of construction and number of locations where impacts from well pad development could occur. However, 296 wells would still be drilled, the primary source of construction noise, and many of these angled drills would be longer in length, increasing the duration of drilling at each well. During construction, minor localized vibration may occur proximate to the work area. While momentary vibration could be felt by receptors located within 100-feet of a vibration source, they are not considered to be at levels that could damage structures. As noted earlier in Sections 4.8.2 (Regulatory Setting), the County of Santa Barbara does not identify thresholds for vibration. MM NOISE-1 would ensure that sensitive receptors along the natural gas pipeline

route are contacted prior to construction and provided contact information to submit any complaints pertaining to vibration. Upon receiving a complaint, MM NOISE-1 (requirements 7 through 9) requires the Project Applicant to resolve such a complaint and provide resolution to the County. **Because perceivable vibration from proposed Project activities would not be felt at any receptor, temporary vibration from construction is considered less than significant (Class III).** Once operational, the only vibration source would be maintenance activities, which would likely generate vibration levels less than those generated during construction. **Vibration impacts from maintenance would be less than significant (Class III).**

Surface/Groundwater.

Surface Water

Impact SGW-1: A rupture or leak from oil production facilities, pipelines, or transport trucks has the potential to result in a substantial adverse effect on surface or groundwater quality.

The Reduced Footprint Alternative would have the same number of wells as the proposed Project. Consequently, Impact SGW-1 is approximately the same as described for the proposed Project. **Mitigation and impact classification (Class I) are the same as for the proposed Project.**

Impact SGW-2: The proposed Project construction and routine operations have the potential to violate water quality standards or waste discharge requirements, or otherwise degrade water quality.

Construction-related impacts would be reduced by approximately half under the Reduced Footprint Alternative, due to the reduction in total disturbed area. Operations impacts, including the potential for spills, would be approximately the same as for the proposed Project due to the total number of wells being the same. **Mitigation and impact classification (Class II) are the same as for the proposed Project.**

Impact SGW-3: The proposed Project would place within a watercourse or flood hazard area structures which would impede or redirect flood flows, or otherwise alter the existing drainage pattern of the site or area, including through land disturbance or the alteration of the course of a stream or river, in a manner which would result in erosion, siltation, or mudflow.

Potential erosion and siltation impacts for the Reduced Footprint Alternative would be as described under Impact SGW-2 in Section 4.9.4.2, but reduced by approximately half due to the reduced footprint. **Mitigation and impact classification (Class II) are the same as for the proposed Project.**

Impact SGW-4: The proposed Project would increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site, create or contribute to runoff water which would exceed the capacity of existing or planned stormwater drainage systems, divert or obstruct flow in a manner that would induce or exacerbate flooding, or otherwise contribute to flood-related damage, on- or off-site.

Although there is no hydrologic analysis of the Reduced Footprint Alternative, this Alternative would be expected to increase flood peaks on the same watercourses as described for the proposed Project under Impact SGW-4 in Section 4.9.4.2, but at the magnitude of roughly half the proposed Project, because the total disturbed footprint would be reduced by roughly half. The Reduced Footprint Alternative would not alter the discharge points exiting the property, and detention basins would be installed to mitigate the effects of increased peak flows. None of the proposed Project features would be within the known floodplain. **Mitigation and impact classification (Class II) are the same as for the proposed Project.**

Groundwater

Impact SGW-5: The proposed Project cyclic steam or steam flooding injected under pressure to enhance oil recovery in oil-bearing formations or injection of produced water/brine could adversely affect groundwater quality.

The Reduced Footprint Alternative would reduce the number of drilling pads, but not the number of wells. There would be no reduction in well drilling, high Total Dissolved Solids groundwater pumping, steam production and injection, or waste water and brine disposal. Impacts related to Impact SGW-5, groundwater quality, **would remain less than significant (Class II) provided that DOGGR regulatory requirements and MM SGW-3 are implemented.**

Impact SGW-6: Potential for the proposed Project's fresh water usage to exceed the threshold of significance for the Santa Maria Groundwater Basin.

Under the Reduced Footprint Alternative, the disturbance footprint would reduce by about 50 percent the amount of cut/fill grading and the associated compaction and oak tree replacement. Consequently, the water use for grading, dust control, and oak tree establishment would be significantly reduced. These activities account for most of the fresh groundwater use (11 to 18 acre-feet/year) and the Reduced Footprint Alternative would save about 6 to 9 acre-feet/year. **Impact SGW-6 would remain less than significant (Class III) for the Reduced Footprint Alternative.**

Traffic/Transportation

Impact TR-1: Construction trips could increase the volume to capacity (V/C) ratio for relevant roadway segments.

As shown in Table 2-1, the Reduced Footprint Alternative would reduce the total disturbance area compared to the proposed Project, resulting in a significant reduction in the total number of well pads developed. However, this Alternative would still develop the same number of wells (296 new wells developed). Under the Reduced Footprint Alternative, Aera would utilize more horizontal drilling (i.e., angled drills instead of vertical) to reach reservoir areas, which would allow more wells to be drilled per well pad, thereby reducing the overall number of well pads and associated ground disturbance of the Project.

By reducing the number of new well pads under the Reduced Footprint Alternative, there would be a reduction in the number of construction-related trips generated, reducing the potential effect construction-related trips could have on the study area circulation system. However, **temporary construction trips and roadway disruptions (natural gas pipeline construction) would still occur and proposed MM TR-3 would be required to reduce temporary construction effects on the circulation system to result in less than significant impacts (Class II).**

Impact TR-2: Operational trips could increase the volume to capacity (V/C) ratio for relevant roadway segments and intersections.

The Reduced Footprint Alternative would develop the same number of wells (296 new wells developed) and have the same production as the proposed Project. Therefore, it would generate identical operational trips as the proposed Project. As shown in Tables 4.10-9 through 4.10-11, **operational trips would not significantly impact freeway performance along the regional haul route or affected located roadway segments and intersections; less than significant impacts would occur (Class III).**

Impact TR-3: Project-related heavy truck trips could impose safety hazards.

The Reduced Footprint Alternative would generate identical operational trips as the proposed Project. While the Accident Analysis for Project study area roadways and freeways determined no further investigation was warranted, to ensure motorist, bicycle, or pedestrian hazards are reduced, MM TR-1 is proposed to control vehicle speeds, increase Project-related awareness, and to ensure oversize and large truck deliveries would not pose any hazards. **Potential Project-related safety impacts from Project vehicle trips are considered less than significant with the implementation of MM TR-1 (Class II).**

Impact TR-4: Project-related heavy truck trips could degrade public roadway conditions.

The Reduced Footprint Alternative would generate identical operational trips as the proposed Project. Primarily, operational-related trips include daily heavy truck trips for the import of light crude oil and export of blended produced crude oil (190 daily trips). MM TR-2 is proposed to mitigate any long-term damage to the haul routes from the increase of daily heavy truck trips. **With the implementation of MM TR-2, the Project would have less than significant impacts related to roadway damage (Class II).**

5.3.2 Alternative 2: Oak Avoidance Alternative (Oil Field Development & Operation)

The Oak Avoidance Alternative would be similar to the Reduced Footprint Alternative, but would reduce Project impacts to oaks to the greatest extent practical, beyond what was proposed under the Reduced Footprint Alternative. In addition to utilizing more horizontal drilling, Aera has designed the Oak Avoidance Alternative to minimize road widths and well pad areas, reroute roads, relocate well pads, refine grading plans, and fine tune proposed development areas with a tree-by-tree analysis to reduce impacts to oak trees by 81 percent (see Figure 2-27 for a comparison of the proposed Project and Oak Avoidance Alternative disturbance footprints). This Alternative would require 37 new well pads, compared with 72 for the proposed Project. The Conservation Easement acreage would be reduced (minimum of 222 acres). All other proposed components would be the same as the proposed Project.

The Oak Avoidance Alternative would result in 95.5 acres of permanent ground disturbance compared with 201.4 acres under the proposed Project. Temporary disturbance from construction of the natural gas pipeline and power line would be the same as the proposed Project. Because the number of active wells would remain the same, the potential sizes of spills from pipelines and corresponding impacts to biological resources would also be the same.

Air Quality

Impact AQ-1: Construction emissions could result in a considerable net increase of pollutants that would violate air quality standards or contribute substantially to an existing or projected air quality violation.

The Oak Avoidance Alternative would decrease the number of new well pads and reduce the amount of permanent net new disturbance, but this Alternative would not reduce the number of production wells or change the number of stationary sources of air emissions. By reducing ground disturbance under this Alternative from 6.6 million cubic yards of cut and fill to 2.3 million cubic yards, construction air pollutant emissions, including fugitive dust emissions, would be reduced proportionately. However, the level of activity in well drilling and replacement well drilling could increase because the additional test bores, drilling lengths, and greater reliance on horizontal drilling would warrant a greater level of equipment use resulting in a greater level of air pollutant emissions during construction, especially since well drilling would occur over a 19 year period. **These considerations would slightly increase the overall level of the**

anticipated emissions for construction, when compared with those presented in Section 4.2.4. The impact determination would remain the same as identified in Section 4.2.4 (Class II), and the same mitigation measures would be required.

Impact AQ-2: Operational emissions could result in a considerable net increase of pollutants that would violate air quality standards or contribute substantially to an existing or projected air quality violation.

The Oak Avoidance Alternative would increase the number of wells drilled per pad. Wells with increased drilling angles would be more complicated and would require more effort to drill, operate, and maintain, and therefore more well replacements may be required under this Alternative than for the proposed Project. **These considerations would increase the overall level of the anticipated emissions for operations, when compared with those presented in Section 4.2.4. The impact determination would remain the same as identified in Section 4.2.4 (Class II), and the same mitigation measures would be required.**

Impact AQ-3: Proposed Project activities could create objectionable odors affecting a substantial number of people.

The Oak Avoidance Alternative would create similar or identical emissions of objectionable odors at similar frequencies. **The impact determination would remain the same as identified in Section 4.2.4 (Class III).**

Impact AQ-4: Proposed Project activities could expose sensitive receptors to substantial pollutant concentrations exceeding adopted health risk thresholds for air toxics.

The Oak Avoidance Alternative would create a similar or identical potential for air quality-related health risk. **The impact determination would remain the same as identified in Section 4.2.4 (Class III).**

Impact AQ-5: Proposed Project activities could conflict with or obstruct implementation of the applicable air quality management plans.

The Oak Avoidance Alternative would increase the number of wells drilled per pad. The level of activity and emissions during construction and operation could increase because wells with increased drilling angles would be more complicated and would require more effort to drill, operate, and maintain. Mitigation recommended for Impact AQ-2 (MM AQ-2c requiring the Applicant to offset all proposed Project-related emissions that exceed the thresholds) would remain applicable to this Alternative. **The impact determination would remain the same as identified in Section 4.2.4 (Class II).**

Biological Resources

Impact BIO-1: A rupture or leak from oil production facilities, pipelines, or transport trucks has the potential to result in a substantial adverse effect on native species and habitats, special-status species and their habitats, and sensitive vegetation communities.

Because the number of active wells for the Oak Avoidance Alternative would remain the same as the proposed Project, the potential sizes of spills from pipelines and corresponding impacts to biological resources would also be the same; therefore, **the impact classification (Class I) is the same as for the proposed Project.**

Impact BIO-2: Proposed Project construction and routine operations have the potential for degradation and loss of habitat for listed and other special-status species.

The Oak Avoidance Alternative would reduce permanent impacts to native and nonnative vegetation by 80.5 acres, or 59 percent compared with the proposed Project.

The CTS reproductive value of Oak Avoidance Alternative impacts would be 11,865 units, compared with 31,443 units for the proposed Project (a 62 percent reduction). The Oak Avoidance Alternative would result in a total of 71.77 acres of impacts that would not impede CTS migration from pond SISQ-19 (temporarily disturbed areas and roadways/pads), compared with 185.48 acres for the proposed Project. A total of 0.88 acre of impacts that would impede migration (permanent above ground structures) would occur, compared with 4.32 acres for the proposed Project. **Impact BIO-2 would be mitigated to less than significant (Class II).**

Impact BIO-3: Proposed Project construction and routine operation have the potential to injure or “take” listed and other special-status species.

The Oak Avoidance Alternative would result in 95.5 acres of permanent ground disturbance compared with 201.4 acres under the proposed Project. Temporary disturbance from construction of the natural gas pipeline and power line would be the same as the proposed Project. The Oak Avoidance Alternative would have a proportionally reduced impact on listed and other special-status species compared with the proposed Project. **Impact BIO-3 would be mitigated to less than significant (Class II).**

Impact BIO-4: Proposed Project construction has the potential to result in a net loss or permanent change in the extent or functional value of sensitive vegetation communities and loss of individual oak trees.

Total impacts to oak woodland would be reduced by 25.8 acres or 88.4 percent under the Oak Avoidance Alternative. This Alternative would reduce oak removals from 1,500 to 281 coast live oak trees. **Even with implementation of available feasible mitigation identified here, a significant net temporal loss and permanent change in the extent and functional value of oak trees and oak woodland habitat would occur and therefore, although substantially reduced in magnitude from the proposed Project, impacts to these resources under the Oak Avoidance Alternative would remain a Class I impact.**

Impact BIO-5: Proposed Project construction and routine operations have the potential to adversely affect waters of the U.S. and waters of the state.

Impacts would be the same as the proposed Project; therefore, **impact classification (Class II) is the same as for the proposed Project.**

Impact BIO-6: Proposed Project construction and routine operations have the potential to impair movement, migration, or dispersal of resident and migratory fish and wildlife species.

The Oak Avoidance Alternative would result in 95.5 acres of permanent ground disturbance compared with 201.4 acres under the proposed Project. Temporary disturbance from construction of the natural gas pipeline and power line would be the same as the proposed Project. The Oak Avoidance Alternative would have a proportionally reduced impact on wildlife movement compared with the proposed Project. **Impact BIO-6 would be mitigated to less than significant (Class II).**

Impact BIO-7: An unanticipated surface expression of drilling fluid at HDD crossings under Cat Canyon Creek and other drainages has the potential to result in a substantial adverse effect on native species and habitats, special-status species and their habitats, and sensitive vegetation communities.

The Oak Avoidance Alternative would not affect the natural gas pipeline alignment and required HDD crossings.

Climate Change/Greenhouse Gas Emissions

Impact GHG-1: Proposed Project emissions could generate greenhouse gas emissions (GHG) that may have a significant impact on the environment.

The Oak Avoidance Alternative would decrease the number of new well pads and reduce the amount of temporary and permanent net new disturbance of the site from 305 to 136 acres. This Alternative would not reduce the number of production wells or change the number of stationary sources of air emissions. Reducing some ground disturbance under this Alternative would result in a smaller overall land use change, resulting in a smaller loss of natural carbon uptake. However, the level of activity in well drilling and replacement well drilling could increase because the additional test bores, drill lengths, and greater reliance on horizontal drilling would warrant a greater level of equipment use, resulting in a greater level of GHG emissions. The wells with increased drilling angles would be more complicated and would require more effort to drill, operate, and maintain, and therefore more well replacements may be required under this Alternative than for the proposed Project. **These considerations would increase the overall level of the anticipated emissions for construction and operations, when compared with those presented in Section 4.4.4. The impact determinations would remain the same as identified in Section 4.4.4 (Class II), and the same mitigation measures would be required.**

Impact GHG-2: Proposed Project emissions could conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Given the future oversight of alternative-related sources and progress of California's ongoing efforts to implement policies and a regulatory setting for reducing GHG emissions, the Oak Avoidance Alternative is not likely to conflict with any applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions; therefore, **Impact GHG-2 would be a less than significant impact (Class III).**

Cultural/Historic Resources

Impact CULT-1: The proposed Project may cause a substantial adverse change in the significance of a historical resource, unique archaeological resource, or tribal cultural resource.

As with the proposed Project, no historical resources, unique archaeological resources, or tribal cultural resources have been identified within the Oak Avoidance Alternative footprint, but the area does have a moderate to high sensitivity for the presence of buried cultural resources given the presence of Holocene soils. Because the sensitive areas for buried resources are not removed from the Project area in the Oak Avoidance Alternative, even with the reduction in acreage by 169 acres, **the impact determinations would remain the same as identified in Section 4.5.4 (Class II) and the same mitigation measures would be required.**

Impact CULT-2: The proposed Project could damage human remains during ground disturbing activities occurring in the Project site.

As with the proposed Project, no human remains have been found within the Oak Avoidance Alternative area. However, it is possible that previously unidentified remains may be discovered during ground disturbing activities. Despite its smaller area of disturbance (136 acres) compared to the proposed Project (305 acres), the potential for an incidental discovery of human remains would remain since the most sensitive areas would still be developed. **Therefore, the impact determinations would remain the same as identified in Section 4.5.4 for the proposed Project (Class II) and the same mitigation measures would be required.**

Impact CULT-3: The proposed Project may result in a significant impact to paleontological resources due to the direct or indirect destruction of a unique paleontological resource or site located in the Project site.

The Oak Avoidance Alternative would reduce the potential of inadvertent discovery and impacts to significant historical resources, unique archaeological resources, tribal cultural resources, or human remains by approximately 169 acres, or 55 percent compared with the proposed Project. However, the Oak Avoidance Alternative would not reduce potential impacts to the specific areas within the proposed Project that have moderate to high potential for the inadvertent discovery and impacts to significant buried resources; including cultural resources, historical resources, unique archaeological resources, tribal cultural resources, human remains, or paleontological resources. Specifically, the sensitive area includes the northwestern site area, southern half of the Conservation Easement, northern terminus of the 0.3-mi. section of the 115 kV power line, and the western and eastern termini of the natural gas pipeline. Because the sensitive area for buried resources is not removed from the Project area with the Oak Avoidance Alternative, **the impact determinations would remain the same as identified in Section 4.5.4 (Class II) and the same mitigation measures would be required.**

Geologic Processes/Geologic Hazards

Impact GEO-1: Seismically induced ground shaking, Project induced ground shaking, or seismically induced slope failure could cause damage to Project structures or result in injury or death to people.

Under the Oak Avoidance Alternative, total temporary and permanent ground disturbance and grading within the oil field site would be significantly reduced, a 55 percent reduction of ground disturbance (136 vs. 305 acres) and an approximate 65 percent reduction of cut and fill (2.3 million cubic yards vs. 6.6 million cubic yards). Impact GEO-1 would be reduced relative to hazards related to seismically induced landslides due to the smaller number of well pads and access roads, creating a smaller area to be impacted by landslides. Impacts due to seismic shaking and induced seismicity remain unchanged because the number of wells and planned operation are unchanged. **As with the proposed Project, Impact GEO-1 would be less than significant (Class III) given implementation of regulatory requirements during design and construction.**

Impact GEO-2: Slope failures, such as landslides, could be triggered by Project construction.

Impact GEO-3: Construction and operation of the Project could trigger or accelerate soil erosion.

Both Impacts GEO-2 and GEO-3 would be reduced significantly due the large decrease in disturbed acreage under the Oak Avoidance Alternative. Under Impact GEO-2, less area being graded results in less chance to destabilize slopes and trigger landslides. Impact GEO-3 would be more than halved due to the

amount of ground disturbance and grading being less than half the amount of the proposed Project. **As with the proposed Project, Impacts GEO-2 and GEO-3 would be less than significant (Class III) given implementation of regulatory requirements during design and construction.**

Impact GEO-4: Expose people or structures to potential risk of loss or injury where expansive or other unsuitable soils are present.

Impact GEO-4 would likely be reduced by the significant decrease in the number of well pads; however, the amount of decrease would vary depending on the presence of unsuitable soils with the remaining footprint and location of project components relative to these soils. **However, as with the proposed Project, implementation of MM GEO-1 would reduce these impacts to less than significant with mitigation (Class II).**

Impact GEO-5: Soils incapable of supporting septic system.

Under the Oak Avoidance Alternative, an onsite septic system would still be installed and would be required to obtain a permit from EHS and satisfy the County's septic system requirements. **Impact GEO-5 would remain unchanged, less than significant (Class III).**

Impact GEO-6: Encountering contaminated soils during construction.

Under the Oak Avoidance Alternative, Impact GEO-6 would likely decrease due to the large decrease in ground disturbance; however, the amount of decrease is uncertain. Unknown contamination could be encountered anywhere on the site, and thus the likelihood of encountering it within the reduced footprint and potential amounts encountered is difficult to quantify. **However, as with the proposed Project, implementation of MM GEO-2 reduces the impact to less than significant with mitigation (Class II).**

Hazardous Materials/Risk of Upset

Impact RISK-1: The proposed Project could generate risks to public safety by exposing the public to produced gas releases from the oil field gathering pipelines, and gas treatment plant.

Under the Oak Avoidance Alternative, Aera would utilize more horizontal drilling (i.e., angled drills instead of vertical) to reach reservoir areas, which would allow more wells to be drilled per well pad, thereby reducing the overall number of well pads (from 72 to 37) and associated oak tree and woodland habitat removal. Additional test bores would be required by Aera to confirm the upper and lower reservoir depths to ensure the feasibility and proper positioning for horizontal drilling. The results will serve to inform the footprint of the Oak Avoidance Alternative.

Overall the Oak Avoidance Alternative would result in a 55 percent reduction in total disturbed acreage and a 36 percent reduction in cut and fill volumes. However, the increased drilling angle required to reduce the disturbance footprint is more complicated and costlier to drill, operate, and maintain, and therefore more well replacements may be required under the Alternative than for the proposed Project.

The Oak Avoidance Alternative does not affect any of the other operational aspects of the proposed Project. In summary, the Oak Avoidance Alternative would provide no reduction in the risk to public safety by exposing the public to produced gas releases identified for the proposed Project, so the impact classification would remain the same (Class III) and the same mitigation measures would apply.

Impact RISK-2: The proposed Project could generate risks to public safety by exposing the public to hazards from truck transport of light crude oil (LCO) and blended crude oil product.

The Oak Avoidance Alternative would not affect the overall level of oil production and associated truck transport compared to the proposed Project. Therefore, **the Oak Avoidance Alternative would provide no reduction in the risk of upset or hazardous materials exposure from truck transport of LCO and blended crude identified for the proposed Project, so the impact classification would remain the same (Class II) and the same mitigation measures would apply.**

Impact RISK-3: The proposed Project could generate risks to public safety by exposing the public to hazards from releases of natural gas from the SoCal Gas natural gas pipeline.

The Oak Avoidance Alternative addresses the proposed Project area of disturbance in the oil field, and it would not affect the proposed natural gas pipeline. **Therefore, the resultant hazards discussed under Impact RISK-3 for the Oak Avoidance Alternative would not be affected. The impact determination would remain the same as identified in Section 4.7.4 (Class III).**

Impact HAZ-1: Release of Hazardous Materials during Construction, including Well Drilling.

The Oak Avoidance Alternative would not affect the overall number of active wells, but Aera would utilize more horizontal drilling to reach reservoir areas. Additional test bores would be required by Aera to confirm the upper and lower reservoir depths to ensure the feasibility and proper positioning for horizontal drilling. In addition, the increased drilling angle required to reduce the disturbance footprint is more complicated and costlier to drill, operate, and maintain, and therefore more well replacements may be required under the Alternative than for the proposed Project. Therefore, with increased drilling, **the potential for a release of hazardous materials during well drilling under the Oak Avoidance Alternative would be slightly greater than under the proposed Project, but the impact would remain less than significant (Class III). Similar to the proposed Project, the potential for a release of hazardous materials from construction equipment would be less than significant (Class II) with the implementation of the same mitigation measure (MM RISK-3) and other regulatory requirements discussed in Section 4.7.4.**

Impact HAZ-2: Release of Hazardous Materials during Operations and Maintenance.

The Oak Avoidance Alternative would not affect the overall level of oil production or use of hazardous materials compared to the proposed Project. Therefore, **the potential for a release of hazardous materials during operations and maintenance under the Oak Avoidance Alternative would be similar to the proposed Project (Class II) and the same mitigation measures would apply.**

Impact FIRE-1: Introduction of Development into an Existing High Fire Hazard Area

Impact FIRE-2: Introduction of Development into an Area without Adequate Water Pressure, Fire Hydrants, or Adequate Access for Fire Fighting

Impact FIRE-3: Introduction of Development that will Hamper Fire Prevention Techniques such as Controlled Burns or Backfiring in High Fire Hazard Areas.

Impact FIRE-4: Development of Structures beyond Safe Fire Department Response Time.

Similar to the proposed Project, the construction of the Oak Avoidance Alternative would introduce sources of ignition within high fire hazard areas. **The Oak Avoidance Alternative impact determination would remain the same as identified in Section 4.7.4 for the proposed Project, (Class II) and the same mitigation measure would apply.**

Noise

Impact NOISE-1: Construction Noise

As shown in Table 2-1, the Oak Avoidance Alternative would reduce the total disturbance area compared to the proposed Project, resulting in a significant reduction in the total number of well pads developed. However, this Alternative would still develop the same number of wells (296 new wells developed). Under the Oak Avoidance Alternative, Aera would utilize more horizontal drilling (i.e., angled drills instead of vertical) to reach reservoir areas, which would allow more wells to be drilled per well pad, thereby reducing the overall number of well pads and associated oak tree and woodland habitat removal.

By reducing the number of new well pads under the Oak Avoidance Alternative, there would be a reduction in the duration of construction noise impacts, reducing the total duration of construction and number of locations where impacts from well pad development could occur. However, 296 wells would still be drilled, the primary source of construction noise, and many of these angled drills would be longer in length, increasing the duration of drilling at each well. **MM NOISE-1 would be required to reduce temporary construction noise and MM NOISE-3 (for cumulative impacts) would be required to result in less than significant construction noise impacts (Class II).**

Impact NOISE-2: Operational Noise

The Oak Avoidance Alternative would generate identical operational noise as the proposed Project. As shown in Table 4.8-14, **production equipment operation would result in a less than significant impact during the modeled production operations (Class III)**. Short-term maintenance activity noise levels would be similar to or less than those identified above for well development and construction, including workover drill rig operations. **To ensure proposed Project workover drilling (which could be 24-hours per day) does not impact sensitive receptors, MM NOISE-2 (Maintenance Noise Control Plan) is proposed to reduce noise impacts to a less than significant level (Class II)**. As shown in Tables 4.8-16 and 4.8-17, the addition of operational-related traffic to the haul routes would not exceed any applicable noise threshold at NSRs located along these travel routes. **Therefore, vehicle trips associated with proposed Project operation would result in a less than significant impact (Class III).**

Impact NOISE-3: Vibration

The Oak Avoidance Alternative would generate identical vibration as the proposed Project. During construction, minor localized vibration may occur proximate to the work area. While momentary vibration could be felt by receptors located within 100-feet of a vibration source, they are not considered to be at levels that could damage structures. As noted earlier in Sections 4.8.2 (Regulatory Setting), the County of Santa Barbara does not identify thresholds for vibration. MM NOISE-1 would ensure that sensitive receptors along the natural gas pipeline route are contacted prior to construction and provided contact information to submit any complaints pertaining to vibration. Upon receiving a complaint, MM NOISE-1 (requirements 7 through 9) requires the Project Applicant to resolve such a complaint and provide resolution to the County. **Because perceivable vibration from proposed Project activities would not be felt at any receptor, temporary vibration from construction is considered less than significant (Class III)**. Once operational, the only vibration source would be maintenance activities, which would likely generate vibration levels less than those generated during construction. **Vibration impacts from maintenance would be less than significant (Class III).**

Surface/Groundwater

Surface Water

Impact SGW-1: A rupture or leak from oil production facilities, pipelines, or transport trucks has the potential to result in a substantial adverse effect on surface or groundwater quality.

The Oak Avoidance Alternative would have the same number of wells as the proposed Project. Consequently, Impact SGW-1 is approximately the same as described for the proposed Project. **Mitigation and impact classification (Class I) are the same as for the proposed Project.**

Impact SGW-2: The proposed Project construction and routine operations have the potential to violate water quality standards or waste discharge requirements, or otherwise degrade water quality.

Potential water quality impacts would be as described under Impact SGW-2 in Section 4.9.4.2 for the Oak Avoidance Alternative, but reduced due to the reduced footprint. Construction-related impacts would be reduced by a little more than half, due to the reduction in total disturbed area. Operations impacts, including the potential for spills, would be approximately the same as for the proposed Project due to the total number of wells being the same. **Mitigation and impact classification (Class II) are the same as for the proposed Project.**

Impact SGW-3: The proposed Project would place within a watercourse or flood hazard area structures which would impede or redirect flood flows, or otherwise alter the existing drainage pattern of the site or area, including through land disturbance or the alteration of the course of a stream or river, in a manner which would result in erosion, siltation, or mudflow.

Potential erosion and siltation impacts would be as described under Impact SGW-2 in Section 4.9.4.2 for the Oak Avoidance Alternative, but reduced by a little more than half due to the reduced disturbed area. **Mitigation and impact classification (Class II) are the same as for the proposed Project.**

Impact SGW-4: The proposed Project would increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site, create or contribute to runoff water which would exceed the capacity of existing or planned stormwater drainage systems, divert or obstruct flow in a manner that would induce or exacerbate flooding, or otherwise contribute to flood-related damage, on- or off-site.

Although there is no hydrologic analysis of the Oak Avoidance Alternative, this Alternative would be expected to increase flood peaks on the same watercourses as described for the proposed Project under Impact SGW-4 in Section 4.9.4.2, but at the magnitude of a little less than half the proposed Project, because the total disturbed footprint would be reduced by approximately that amount. The Oak Avoidance Alternative would not alter the discharge points exiting the property, and detention basins would be installed to mitigate the effects of increased peak flows. None of the proposed Project features would be within the known floodplain. **Mitigation and impact classification (Class II) are the same as for the proposed Project.**

Groundwater

Impact SGW-5: The proposed Project cyclic steam or steam flooding injected under pressure to enhance oil recovery in oil-bearing formations or injection of produced water/brine could adversely affect groundwater quality.

The Oak Avoidance Alternative does not reduce the number of oil wells, high TDS groundwater supply wells, and steam injection wells and includes a small increase in access road construction. Consequently, impacts related to Impact SGW-5, groundwater quality, provided DOGGR regulatory requirements and MM SGW-3 are implemented, **would remain less than significant (Class II) for the Oak Avoidance Alternative.**

Impact SGW-6: Potential for the proposed Project's fresh water usage to exceed the threshold of significance for the Santa Maria Groundwater Basin.

The Oak Avoidance Alternative reduces the cut/fill grading by 65 percent and oak tree replacement acreage by 84 percent resulting in significant less fresh groundwater than the proposed Project; saving 8 to 12 acre-feet/year during the first six years of the project. **Impact SGW-6 would remain less than significant (Class III) for the Oak Avoidance Alternative.**

Traffic/Transportation.

Impact TR-1: Construction trips could increase the volume to capacity (V/C) ratio for relevant roadway segments.

As shown in Table 2-1, the Oak Avoidance Alternative would reduce the total disturbance area compared to the proposed Project, resulting in a significant reduction in the total number of well pads developed. However, this Alternative would still develop the same number of wells (296 new wells developed). Under the Oak Avoidance Alternative, Aera would utilize more horizontal drilling (i.e., angled drills instead of vertical) to reach reservoir areas, which would allow more wells to be drilled per well pad, thereby reducing the overall number of well pads and associated oak tree and woodland habitat removal.

By reducing the number of new well pads under the Oak Avoidance Alternative, there would be a reduction in the number of construction-related trips generated, reducing the potential effect construction-related trips could have on the study area circulation system. However, **temporary construction trips and roadway disruptions (natural gas pipeline construction) would still occur and proposed MM TR-3 would be required to reduce temporary construction effects on the circulation system to result in less than significant impacts (Class II).**

Impact TR-2: Operational trips could increase the volume to capacity (V/C) ratio for relevant roadway segments and intersections.

The Oak Avoidance Alternative would generate identical operational trips as the proposed Project. As shown in Tables 4.10-9 through 4.10-11, **operational trips would not significantly impact freeway performance along the regional haul route or affected located roadway segments and intersections; less than significant impacts would occur (Class III).**

Impact TR-3: Project-related heavy truck trips could impose safety hazards.

The Oak Avoidance Alternative would generate identical operational trips as the proposed Project. While the Accident Analysis for Project study area roadways and freeways determined no further investigation

was warranted, to ensure motorist, bicycle, or pedestrian hazards are reduced, MM TR-1 is proposed to control vehicle speeds, increase Project-related awareness, and to ensure oversize and large truck deliveries would not pose any hazards. **Potential Project-related safety impacts from Project vehicle trips are considered less than significant with the implementation of MM TR-1 (Class II).**

Impact TR-4: Project-related heavy truck trips could degrade public roadway conditions.

The Oak Avoidance Alternative would generate identical operational trips as the proposed Project. Primarily, operational-related trips include daily heavy truck trips for the import of light crude oil and export of blended produced crude oil (190 daily trips). MM TR-2 is proposed to mitigate any long-term damage to the haul routes from the increase of daily heavy truck trips. **With the implementation of MM TR-2, the Project would have less than significant impacts related to roadway damage (Class II).**

5.3.3 Alternative 3: Phillips 66 Pipeline Alternative (Crude Oil Transportation)

The Phillips 66 Pipeline Alternative was developed to utilize local pipeline facilities to transport Project produced crude oil to a Bay Area refinery; thereby, eliminating the need for and impacts associated with tanker truck transport of blended produced oil to Aera's Belridge facility. To accomplish this Alternative, the construction of a 4.5 mile pipeline connection from the Aera East Cat Canyon Oil Field to the ERG Cantin lease would be required, as well as use of the approved, but not yet constructed, 2.9 mile ERG Foxen Petroleum Pipeline (FPP), as described in Table 5-2 (Summary of Project Alternatives Carried Forward) and shown in Figure 2-29. For purposes of this Alternative, the FPP is assumed to be in place and operational. The Phillips 66 Pipeline Alternative connection pipeline would increase proposed Project intra-field piping by approximately 12%.¹In the instance that ERG does not construct the FPP, Aera would build a new pipeline to connect their East Cat Canyon facility to the Phillips 66 Sisquoc Pipeline in place of the FPP.

Phase 1 trucking under the Phillips 66 Pipeline Alternative would be the same as the proposed Project. For Phase II, light crude import from Aera's Belridge facility would increase from 21 to 78 truck trips to meet Phillips 66 viscosity and sulfur specifications; trucks would return empty decreasing proposed Project related truck trips from 190 to 156.

Air Quality

Impact AQ-1: Construction emissions could result in a considerable net increase of pollutants that would violate air quality standards or contribute substantially to an existing or projected air quality violation.

The Phillips 66 Pipeline Alternative would require Aera to use the existing local Phillips 66 pipeline facilities to transport proposed Project produced crude oil. This Alternative would require Aera to construct a new 4.5-mile pipeline connection from the Aera East Cat Canyon Oil Field to the ERG Cantin facility. Construction of the pipeline connection would increase the level of construction activity, resulting in a relatively minor increase in construction-phase air pollutant emissions. **These considerations would increase the overall level of the anticipated emissions for construction, when compared with those presented in Section 4.2.4. The impact determination would remain the same as identified in Section 4.2.4 (Class II), and the same mitigation measures would be required.**

¹ Proposed Project includes 32 miles of intra-field piping ranging from 3 to 14 inches in diameter (see Table Ap.B-1 in Appendix B).

Impact AQ-2: Operational emissions could result in a considerable net increase of pollutants that would violate air quality standards or contribute substantially to an existing or projected air quality violation.

The Phillips 66 Pipeline Alternative would require Aera to use the existing local Phillips 66 pipeline facilities to transport proposed Project produced crude oil, which would eliminate the proposed tanker truck transport (95 trucks per day) of produced crude oil, accordingly decreasing the overall number of new one-way truck trips from 190 to 156 per day. This Alternative would not reduce the number of production wells or change the number of stationary sources of air emissions, although it would reduce proposed Project operational-phase emissions from mobile sources by eliminating some offsite truck trips to transport blended produced oil. **These considerations would decrease the overall level of the anticipated emissions for operations, when compared with those presented in Section 4.2.4. The impact determination would remain the same as identified in Section 4.2.4 (Class II), and the same mitigation measures would be required.**

Impact AQ-3: Proposed Project activities could create objectionable odors affecting a substantial number of people.

The Phillips 66 Pipeline Alternative would not change the potential for the proposed Project to create emissions of objectionable odors. **The impact determination would remain the same as identified in Section 4.2.4 (Class III).**

Impact AQ-4: Proposed Project activities could expose sensitive receptors to substantial pollutant concentrations exceeding adopted health risk thresholds for air toxics.

The Phillips 66 Pipeline Alternative would not change the potential for the proposed Project to create air quality-related health risk. **The impact determination would remain the same as identified in Section 4.2.4 (Class III).**

Impact AQ-5: Proposed Project activities could conflict with or obstruct implementation of the applicable air quality management plans.

The Phillips 66 Pipeline Alternative would decrease the operational-phase emissions from motor vehicle trips, while causing a relatively minor increase in construction-phase emissions to establish the new crude oil pipeline connection. Mitigation recommended for Impact AQ-2 (MM AQ-2c requiring the Applicant to offset all proposed Project-related emissions that exceed the thresholds) would remain applicable to this Alternative. **The impact determination would remain the same as identified in Section 4.2.4 (Class II).**

Biological Resources

Impact BIO-1: A rupture or leak from oil production facilities, pipelines, or transport trucks has the potential to result in a substantial adverse effect on native species and habitats, special-status species and their habitats, and sensitive vegetation communities.

The Phillips 66 Pipeline Alternative would reduce the risk of accidental spills from a trucking accident (laden truck trips would be reduced from 116 to 78), but spills due to a leak or rupture in the Phillips 66 Pipeline Alternative connection pipeline could also occur. A leak or rupture from the connection pipeline could potentially result in a larger spill than a trucking accident, although the risk of leak or rupture would be less than the risk of a spill from a trucking accident (see Impact RISK-2 below). **Impact BIO-1 would remain significant and unavoidable (Class I) for the Phillips 66 Pipeline Alternative.** Section 4.7.5.4,

Impact RISK-2, discusses the relative probability of a spill occurring due to a trucking accident or pipeline leak/rupture.

Impact BIO-2: Proposed Project construction and routine operations have the potential for degradation and loss of habitat for listed and other special-status species.

The Phillips 66 Pipeline Alternative connection pipeline alignment would increase temporary impacts to native and nonnative vegetation compared with the proposed Project, potentially including listed and special-status species habitats. The Phillips 66 Pipeline Alternative alignment is within dispersal distance from several ponds that could support CTS and CRLF breeding, including a known CTS breeding pond. **Impact BIO-2 would be mitigated to less than significant (Class II).**

Impact BIO-3: Proposed Project construction and routine operation have the potential to injure or “take” listed and other special-status species.

During construction, the Phillips 66 Pipeline Alternative connection pipeline would be installed primarily within native and nonnative vegetation that could support special-status species. The Phillips 66 Pipeline Alternative would result in an increase in temporary ground disturbance compared with the proposed Project and therefore would proportionally increase the potential to injure or take listed or other special-status species. During operation, the reduced amount of truck traffic (laden truck trips would be reduced from 116 to 78) would decrease the Phillips 66 Pipeline Alternative’s potential to take listed and other special-status species (such as CTS) as roadkill, compared with the proposed Project. **Impact BIO-3 would be mitigated to less than significant (Class II).**

Impact BIO-4: Proposed Project construction has the potential to result in a net loss or permanent change in the extent or functional value of sensitive vegetation communities and loss of individual oak trees.

The Phillips 66 Pipeline Alternative would likely result in greater impacts to oaks and oak woodlands compared to the proposed Project, since the Phillips 66 Pipeline Alternative alignment could require oak woodland disturbance to install the connection pipeline. **Impact BIO-4 would still be considered significant and avoidable (Class I).**

Impact BIO-5: Proposed Project construction and routine operations have the potential to adversely affect waters of the U.S. and waters of the state.

The Phillips 66 Pipeline Alternative impacts would be increased compared with the proposed Project, since the connection pipeline would cross Cat Canyon Creek and up to three additional locations that are considered waters of the United States and/or waters of the State. **Impact BIO-5 would be mitigated to less than significant (Class II).**

Impact BIO-6: Proposed Project construction and routine operations have the potential to impair movement, migration, or dispersal of resident and migratory fish and wildlife species.

The Phillips 66 Pipeline Alternative could increase potential temporary impacts to wildlife movement during connection pipeline construction compared with the proposed Project due to the increase in construction activities and duration, and the fact that the Phillips 66 Pipeline Alternative connection pipeline would cross open space. **Impact BIO-6 would be mitigated to less than significant (Class II).**

Impact BIO-7: An unanticipated surface expression of drilling fluid at HDD crossings under Cat Canyon Creek and other drainages has the potential to result in a substantial adverse effect on native species and habitats, special-status species and their habitats, and sensitive vegetation communities.

The Phillips 66 Pipeline Alternative impacts could be increased compared with the proposed Project, since the connection pipeline would cross Cat Canyon Creek and up to three additional locations that are considered waters of the United States and/or waters of the State that would require HDD crossings. **Impact BIO-7 would be mitigated to less than significant (Class II).**

Climate Change/Greenhouse Gas Emissions

Impact GHG-1: Proposed Project emissions could generate greenhouse gas emissions (GHG) that may have a significant impact on the environment.

The Phillips 66 Pipeline Alternative would require Aera to use the existing local Phillips 66 pipeline facilities to transport proposed Project produced crude oil; thereby, eliminating the proposed tanker truck transport (95 trucks per day) of produced crude oil from Aera's East Cat Canyon Oil Field to Aera's Belridge facility in Kern County (140.4 miles). Under the Phillips 66 Pipeline Alternative, trucking of light crude oil (LCO) from Belridge to the proposed Project site would still be required to meet Phillips 66 viscosity and sulfur specifications. In order to meet those requirements (approximately 78 trucks per day, roundtrip) would be required. This Alternative would require Aera to construct a new 4.5-mile pipeline connection from the proposed Project site to the Foxen Petroleum Pipeline (FPP) origination point at the ERG Cantin facility and would utilize the 2.9 mile FPP once it is constructed. The Phillips 66 Pipeline Alternative would decrease the overall number of new one-way truck trips from 190 to 156 per day. This Alternative would reduce proposed Project emissions of GHGs from mobile sources by eliminating some offsite truck trips to transport blended produced oil. However, it would not reduce the number of production wells or change the number of stationary sources of air emissions. Construction of the 4.5 mile pipeline connection would increase the level of cumulative construction activity, resulting in a relatively small amount of additional construction-phase GHG emissions. Reducing the mobile tanker truck trips associated with proposed Project operations by about 20% would decrease the annual rate of GHG emissions over the long-term operational life of the proposed Project, when compared with those presented in Section 4.4.4, but only nominally since operational mobile GHG emissions for the proposed Project comprise about 5% of the total GHG emissions. Therefore, a 20% reduction in the trucking fleet would reduce operational GHG emissions by about 1.2%. Minimal GHG emissions would occur as a result of pipeline operations, assuming that pumps are powered by the electrical grid. **The Phillips 66 Pipeline Alternative impact determinations would remain the same as identified in Section 4.4.4 for the proposed Project (Class II), and the same mitigation measure would be required.**

Impact GHG-2: Proposed Project emissions could conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Given the oversight of project-related sources and progress of California's ongoing efforts to implement policies and a regulatory setting for reducing GHG emissions, the Phillips 66 Pipeline Alternative is not likely to conflict with any applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions; therefore, **Impact GHG-2 would be a less than significant impact (Class III).**

Cultural/Historic Resources

Impacts to cultural resources due to Phillips 66 Pipeline Alternative would include impacts related to construction of the connection pipeline.

Impact CULT-1: The proposed Project may cause a substantial adverse change in the significance of a historical resource, unique archaeological resource, or tribal cultural resource.

No historical resources, unique archaeological resources, or tribal cultural resources have been identified within the proposed Project site, as discussed in Section 4.5.4. Further, within the ERG Oil Field, no historical resources, unique archaeological resources or tribal cultural resources have been identified on the ground surface of the proposed Project area. However, there is a moderate to high potential for discovering buried resources in Holocene soils on both sites. Geoarchaeological testing of high sensitivity areas at the ERG Oil Field confirmed the absence of cultural materials (County of Santa Barbara, 2018). Within the Aera East Cat Canyon Oil Field, implementation of MM CULT-2a, requiring cultural monitoring during construction within Holocene soils, would reduce this potential impact to less than significant. **The Phillips 66 Pipeline Alternative impact determinations would remain the same as identified in Section 4.5.4 for the proposed Project (Class II), and the same mitigation measures would be required.**

Impact CULT-2: The proposed Project could damage human remains during ground disturbing activities occurring in the Project site.

Although no human remains have been found along the pipeline connection route, the potential to encounter and adversely impact to human remains would be possibly greater than the proposed Project due to the additional pipeline construction and associated ground disturbance. **The Phillips 66 Pipeline Alternative impact determination would remain the same as identified in Section 4.5.4 for the proposed Project (Class II), and the same mitigation measure would be required.**

Impact CULT-3: The proposed Project may result in a significant impact to paleontological resources due to the direct or indirect destruction of a unique paleontological resource or site located in the Project site.

Potential impacts to paleontological resources would be possibly greater than the proposed Project due to the additional pipeline construction and associated ground disturbance, which could encounter and disturb unknown paleontological resources. **The Phillips 66 Pipeline Alternative impact determination would remain the same as identified in Section 4.5.4 for the proposed Project (Class II), and the same mitigation measures would be required.**

Geologic Processes/Geologic Hazards

The Phillips 66 Pipeline Alternative would require the construction of the 4.5-mile connection pipeline. In addition to the 16 to 18 acres of ground disturbance for the FPP (County of Santa Barbara, 2015), approximately 20 to 40 acres of ground disturbance and grading is estimated to be required for the pipeline connection (Aera, 2018). This addition would increase proposed Project temporary disturbance by about 7% to 13% (proposed Project disturbance is 305 acres).

Impact GEO-1: Seismically induced ground shaking, Project induced ground shaking, or seismically induced slope failure could cause damage to Project structures or result in injury or death to people.

Under the Phillips 66 Pipeline Alternative, Impact GEO-1 would be increased relative to hazards related to seismically induced landslides due to the connection pipeline potentially being impacted by landslides; however, the increased disturbance in comparison to the proposed Project disturbance is 7% to 13%, so the relative increase would be small. The Phillips 66 Pipeline Alternative connection pipeline would also not cross any faults. As with the proposed Project features, the Phillips 66 Pipeline Alternative connection pipeline could be damaged by strong seismic ground shaking, but could be repaired and would not pose

a significant hazard of loss, injury, or death (see Section 4.7.4 for discussion of risk of hazards associated with pipeline ruptures and Sections 4.3.4 and 4.9.4 for discussion of oil spill impacts). The Phillips 66 Pipeline Alternative required pipeline would not have the potential to induce seismicity. **As with the proposed Project, Impact GEO-1 would be less than significant (Class III) given implementation of regulatory requirements during design and construction.**

Impact GEO-2: Slope failures, such as landslides, could be triggered by Project construction.

Under the Phillips 66 Pipeline Alternative, Impact GEO-2, slope failures triggered by construction, would be increased due to the amount of ground disturbance being increased by 7% to 13%, resulting in a nominal increase in the chance to destabilize slopes and trigger landslides. **As with the proposed Project, Impact GEO-2 would be less than significant (Class III) given implementation of regulatory requirements during design and construction.**

Impact GEO-3: Construction and operation of the Project could trigger or accelerate soil erosion.

Under the Phillips 66 Pipeline Alternative, Impact GEO-3, triggered or accelerated soil erosion, would be increased due to the amount of ground disturbance being increased by 7% to 13%. **As with the proposed Project, Impact GEO-3 would be less than significant (Class III) given implementation of regulatory requirements during design and construction.**

Impact GEO-4: Expose people or structures to potential risk of loss or injury where expansive or other unsuitable soils are present.

Under the Phillips 66 Pipeline Alternative, Impact GEO-4 would likely be increased by the additional pipeline alignments; however, the amount of increase would vary depending on the presence of expansive and unsuitable soils along the pipeline alignments relative to these soils. **However, as with the proposed Project, implementation of MM GEO-1 would reduce these impacts to less than significant with mitigation (Class II).**

Impact GEO-5: Soils incapable of supporting septic system.

Impact GEO-5 does not apply to Phillips 66 Pipeline Alternative, since the Alternative is related to the transportation of produced crude oil.

Impact GEO-6: Encountering contaminated soils during construction.

Under the Phillips 66 Pipeline Alternative, Impact GEO-6 would likely increase due to the increase in ground disturbance within the Cat Canyon area; however, the amount of increase is uncertain. Unknown contamination could be encountered anywhere along the pipeline alignments, and thus the likelihood and potential amounts encountered is difficult to quantify. **However, as with the proposed Project, implementation of MM GEO-2 reduces the impact to less than significant with mitigation (Class II).**

Hazardous Materials/Risk of Upset

The Phillips 66 Pipeline Alternative would reduce the risk of accidental spills from a trucking accident (laden truck trips would be reduced from 116 to 78 one-way trips), but spills due to a leak or rupture in the Phillips 66 Pipeline Alternative pipeline system could also occur.

Impact RISK-1: The proposed Project could generate risks to public safety by exposing the public to produced gas releases from the oil field gathering pipelines, and gas treatment plant.

The Phillips 66 Pipeline Alternative addresses the transportation of produced crude oil via pipeline instead of tanker truck; **therefore, does not affect proposed oil field operations and resultant hazards discussed in Section 4.7.4 under Impact RISK-1.**

Impact RISK-2: The proposed Project could generate risks to public safety by exposing the public to hazards from truck transport of light crude oil (LCO) and blended crude oil product.

Impact RISK-2 addresses the probability of a trucking accident occurring and the potential consequences on the public. See Impacts BIO-1, Section 4.3.4, and Impact SGW-1, Section 4.9.4, for discussions of impacts related to spilled crude oil or other hazardous materials as a result of an accident on biological and hydrological resources, respectively.

The Phillips 66 Pipeline Alternative would eliminate the truck transport of produced crude oil, but the import of light crude oil to meet Phillips 66 viscosity and sulfur specifications would still be required; thereby, reducing laden truck trips associated with the proposed Project from 116 to 78 one-way trips. **The Phillips 66 Pipeline Alternative impact determination would remain the same as identified in Section 4.7.4 for the proposed Project (Class II), and the same mitigation measure would be required.**

The Phillips 66 Pipeline Alternative would also involve the transport of blended produced crude oil in the required connection pipeline, FPP, and Phillips 66 pipeline system. To compare Phillips 66 Pipeline Alternative to the proposed Project, which includes truck transport of produced crude to Aera’s Belridge facility and eventual transport of crude via pipeline to Los Angeles Basin or Bay Area refineries, the probability of an accidental spill and average spill volume for hazardous material truck and pipeline transport has been assembled and is discussed below.

Truck Transport

Table 5-2 provides the probability of a spill per year during hazardous material transport as presented in the proposed Project Transportation QRA (Dixon, 2017), assuming the annual truck miles per year is 42,340 (21 LCO trucks/day and 95 blended trucks/day).

Table 5-2. Hazard Material Trucking Spill Incident Data

Route	Trip Miles	Hazardous Material Truck Accident Rate per Trip	LCO and Blended Crude Truck Trips per Year ² .	Crude Truck Accidents/Year (with and without release)	Accident Release Probability per Accident	Releases per Year
Aera TQRA						
Local (L)	12.8	6.70E-06 ¹	42,340	0.232	5.4% ³	0.0153
Route B	127.6	3.90E-05 ¹	42,340	1.35	5.4% ³	0.0891
Totals	140.4	4.57E-05	-	1.58	-	0.1044
Avg. Release Size ⁴						108 Bbls

Notes:

Aera TQRA:

- 1 - Aera TQRA Section 3.3 Table
- 2 - TQRA Section 2.2 Table (116x365)
- 3 - Section 4.7 Table
- 4 - Section 3.5 Table.

The Aera TQRA is based on the California Highway Patrol Statewide Integrated Traffic Record System (SWITRS) raw data extracted for years 2009 to 2013 (see Aera TQRA, Section 3.5). The provided adjustment factor is applied to the base statistical data to account for more recent trucking safety measures or segregating hazardous material truck accidents from all average vehicle accidents. The estimated crude truck accidents per year, with and without release of hazardous materials is 1.58 per year.

The TQRA prepared for Aera’s proposed Project uses 5.4% as the accident release probability during hazardous material trucking accidents. This is mainly due to the very low level of fatal hazardous material truck accidents. As Section 3.5 of the Aera TQRA (Appendix K) explains, spills occur about 40% of the time in a fatal accident, but the fatal trucking accidents are only 1.2% of all hazardous material trucking accidents. For the remaining trucking accidents that result in serious injury or property damage only, releases occur 5% of the time for that class of accidents. Hence the weighted average release probability is 5.4%. The Aera TQRA concludes that release of hazardous materials during a trucking accident occurs 0.1044 times per year for 116 laden trucks with an average spill volume of 108 barrels; 0.0009 spill risk per year per truck.

Pipeline Transport

Table 5-3 presents crude oil spill statistics for pipelines for the USA and California. The following pipeline incident data was extracted from the U.S. Department of Transportation Pipeline and Hazardous Material Safety Administration (PHMSA) database. The data set is for Hazardous Liquid Pipelines/Crude Oil Material.

Table 5-3. Crude Oil Pipeline Spill Stats (PHMSA)

State Local	Data Year	Interstate Pipeline Miles	Intrastate Pipeline Miles	Total Pipelines Miles	Incidents per Year ¹	Total Barrels Spilled ¹	Average Spill Size (barrels)	Incidents per Mile-Year
All US	2010	37939	16692	54631	152	52,710	347	2.78E-03
	2011	38402	17699	56101	143	35,276	247	2.559E-03
	2012	39482	17981	57463	186	15,025	81	3.24E-03
	2013	42408	18678	61086	204	43,048	211	3.34E-03
	2014	46999	19944	66943	238	17,620	74	3.56E-03
	2015	50246	22926	73172	253	20,687	82	3.46E-03
	2016	52231	23464	75695	204	42,394	208	2.70E-03
Totals		307707	137384	445091	1,380	226,760	164	3.10E-03
CA	2010	255	3639	3894	9	793	88	2.31E-03
	2011	242	3679	3921	16	212	13	4.08E-03
	2012	242	3770	4012	15	691	46	3.74E-03
	2013	232	3702	3934	12	547	46	3.05E-03
	2014	232	3664	3896	19	1,534	81	4.88E-03
	2015	232	4024	4256	17	4,560 ²	268	3.99E-03
	2016	240	3330	3570	15	1,874	125	4.20E-03
Totals		1675	25808	27483	103	10,211	99	3.75E-03

1 - Includes pipeline and gathering lines.

2 - Year 2015 is when the Plains Pipeline rupture occurred in Santa Barbara County. The spill size was estimated at 123 thousand gallons (2,934 barrels).

In Table 5-3, data are presented for both the total US and California. The incident rate for California is above the national average; however, the average spill size is less (99 barrels vs 164 barrels). Note that the average spill volume is about the same as for trucking (99 barrels vs 108 barrels). It should also be noted that the pipeline incident/year rate is relatively unaffected by the volume transported as the majority of pipeline failures are due to external corrosion and third-party intervention. As a result, with the use of existing pipeline systems, the release incident/year rate would be relatively unchanged with the added production from the proposed Project under the Phillips 66 Pipeline Alternative. Table 5-4 presents the estimated incidents per year (crude oil spill as a result of accidental release) for the proposed Project and the Phillips 66 Pipeline Alternative. It should be noted that for the proposed Project, once the produced crude is transported to Aera’s Belridge facility for initial processing, it will then be transported to Los Angeles Basin or Bay Area refineries via existing pipelines.

Table 5-4. Estimated Incidents Per Year for Proposed Project and Phillips 66 Pipeline Alternative for Produced Crude Transport					
	Estimated Pipeline Distance (miles)	Pipeline		Incident/Year	
		US Incident per Mile-Year	CA Incident per Mile-Year Incident/Year	US Incident per Mile-Year	CA Incident per Mile-Year Incident/Year
Proposed Project					
LCO & Blended Trucking from/to Belridge (116 laden trucks)				0.1044 ¹	
Pipeline to Los Angeles Basin	120	Existing pipeline; no increase in existing risk.			
Pipeline to Bay Area	200	Existing pipeline; no increase in existing risk.			
TOTAL RISK				0.1044	
Phillips 66 Pipeline Alternative					
LCO Trucking from Belridge (78 laden trucks)				0.0702	
Connection Pipeline	4.5	3.10E-03	3.75E-03	0.0140 ²	0.0169 ³
FPP ⁴	3	Existing pipeline; no increase in existing risk.			
Phillips 66 System	250	Existing pipeline; no increase in existing risk.			
TOTAL RISK				0.0842	0.0871

1 - Incident/Year, Aera TQRA (see Table 5-2).
 2 - Based on US Incident per Mile-Year.
 3 - Based on California Incident per Mile-Year.
 4 – For purposes of the Phillips 66 Pipeline Alternative, the FPP is assumed operational.

As presented in Table 5-4, the Phillip 66 Pipeline Alternative incident/year rate ranges between 0.0842 to 0.0871 for release of hazardous materials during a trucking accident, whereas the proposed Project (no pipelines) incident/year rate is 0.1044.

RISK-3: The proposed Project could generate risks to public safety by exposing the public to hazards from releases of natural gas from the SoCal Gas natural gas pipeline.

The Phillips 66 Pipeline Alternative addresses the transportation of produced crude oil via pipeline instead of tanker truck; therefore, does not affect proposed natural gas pipeline operations and resultant hazards discussed under Impact RISK-3.

Impact HAZ-1: Release of Hazardous Materials during Construction, including Well Drilling

Hazardous materials that would be used during project construction activities include gasoline, diesel fuel, oil, lubricants, paint and small quantities of solvents. Small volumes of these materials would be temporarily stored on-site. To minimize the potential for a release, all handling and storage of these materials would be conducted in accordance with oil field best management practices including secondary containment and proper storage of materials in accordance with federal, State, and local codes and standards. Because of construction of the 4.5 miles connection pipeline required under the Phillips 66 Pipeline Alternative, the potential for release of hazardous materials during construction would have a nominal increase over the proposed Project (connection pipeline increases total proposed Project intra-field piping by 12%). **The Phillips 66 Pipeline Alternative impact determination would remain the same as identified in Section 4.7.4 for the proposed Project (Class II), and the same regulatory requirements would apply.**

Impact HAZ-2: Release of Hazardous Materials during Operations and Maintenance

During operations, the proposed Project would generate crude oil and produced gas and water which contain naturally occurring chemicals that in the appropriate concentration are detrimental to human health. In addition, during operations and maintenance, chemicals will be brought on site to facilitate operations. Operations of the 4.5 mile connection pipeline required under the Phillips 66 Pipeline Alternative would require the use of hazardous materials; therefore, the potential for release of hazardous materials during operations and maintenance would have a nominal increase over the proposed Project (connection pipeline increases total proposed Project intra-field piping by 12%). **The Phillips 66 Pipeline Alternative impact determination would remain the same as identified in Section 4.7.4 for the proposed Project (Class II), and the same regulatory requirements would apply.**

Impact FIRE-1: Introduction of Development into an Existing High Fire Hazard Area

Impact FIRE-2: Introduction of Development into an Area without Adequate Water Pressure, Fire Hydrants, or Adequate Access for Fire Fighting

Impact FIRE-3: Introduction of Development that will Hamper Fire Prevention Techniques such as Controlled Burns or Backfiring in High Fire Hazard Areas.

Impact FIRE-4: Development of Structures beyond Safe Fire Department Response Time.

The construction of the Phillips 66 Pipeline Alternative connection pipeline would introduce additional sources of ignition to that of the proposed Project within a high fire hazard area, resulting in a nominal increase in the fire potential during construction. Once constructed, the underground pipeline would not present an additional ignition source. **The Phillips 66 Pipeline Alternative impact determination would remain the same as identified in Section 4.7.4 for the proposed Project (Class II), and the same mitigation measure would apply.**

Noise

Impact NOISE-1: Construction Noise

Construction of the connection pipeline would result in temporary noise increases along the alignment, increasing the overall temporary construction noise generated when compared to the proposed Project. Land uses near the pipeline route include existing oil and gas development, open space, agriculture, and several rural residences. Proposed MM NOISE-1 would be required to reduce temporary construction noise associated with the pipelines and MM NOISE-3 would be required to reduce cumulative construction

noise impacts. The Phillips 66 Pipeline Alternative does not propose changes to well development and noise impacts associated with well installation and operations are discussed in Section 4.8.4. With the application of the aforementioned mitigation measures, **the construction noise impact determinations for the Phillips 66 Pipeline Alternative would remain the same as identified in Section 4.8.4 for the proposed Project (Class III).**

Impact NOISE-2: Operational Noise

Once operational, the connection pipeline would not contribute detectable noise over existing conditions given the use of electric pumps. The Phillips 66 Pipeline Alternative would eliminate trucking of blended crude from the Aera East Cat Canyon Oil Field to the Aera Belridge facility (95 one-way truck trips/day); however, under the Phillips 66 Pipeline Alternative trucking of light crude oil from the Aera Belridge facility to meet Phillips 66 viscosity and sulfur specifications would still occur (78 one-way truck trips/day; trucks would return empty to Belridge); reducing daily truck trips from 190 to 156. **This would reduce Phase II operational traffic noise levels compared to the proposed Project by approximately 20% (refer to Tables 4.8-16 and 4.8-17).**

Impact NOISE-3: Vibration

Construction of the 4.5-mile connection pipeline would result in temporary vibration along the alignment, increasing the overall temporary construction vibration generated when compared to the proposed Project. Land uses near the pipeline route includes existing oil and gas development, open space, agriculture, and several rural residences. However, vibration from all other construction sources would be identical to the proposed Project. While momentary vibration could be felt by receptors located within 100-feet of a vibration source, they are not considered to be at levels that could damage structures. As noted earlier in Sections 4.8.2 (Regulatory Setting), the County of Santa Barbara does not identify thresholds for vibration. MM NOISE-1 would ensure that sensitive receptors along the natural gas pipeline route are contacted prior to construction and provided contact information to submit any complaints pertaining to vibration. Upon receiving a complaint, MM NOISE-1 (requirements 7 through 9) requires the Project Applicant to resolve such a complaint and provide resolution to the County. **Because perceivable vibration from proposed Project activities would not be felt at any receptor, temporary vibration from construction is considered less than significant (Class III).** Once operational, the Phillips 66 Pipeline Alternative would reduce the frequency of vibration from heavy truck trips along the operational travel routes. However, such momentary vibration would not be eliminated under this Alternative as heavy truck trips during operation would still occur from light crude oil trips. The remaining vibration sources would be maintenance activities, which would likely generate vibration levels less than those generated during construction. **Vibration impacts from operational and maintenance would be less than significant (Class III).**

Surface/Groundwater

Surface Water

Impact SGW-1: A rupture or leak from oil production facilities, pipelines, or transport trucks has the potential to result in a substantial adverse effect on surface or groundwater quality.

Under the Phillips 66 Pipeline Alternative, the connection pipeline would have the potential for increasing potential contamination of surface water through accidental release caused by pipeline rupture as described for Impact SGW-1 for the proposed Project (connection pipeline increases total proposed Project intra-field piping by 12%); however, the trucking spill risk would decrease by about 33% given the

reduction in laden truck trips (116 to 78). Watercourses which could be affected by the connection pipeline include Cat Canyon Creek and three tributaries. Spills could result from flood-related scour, seismic events, mechanical failure, structural failure, corrosion, or human error during operations, and result in the same impacts as described in Section 4.9.4.1.1.

Regulatory requirements, AMMs, and mitigation measures require the preparation of an Emergency Response Plan, Spill Contingency Plan, Spill Prevention and Countermeasure Plan (SPCC), and Stormwater Pollution and Prevention Plan (SWPPP). Mitigation Measure (MM) BIO-1 requires development and implementation of an Emergency Response Action Plan to mitigate impacts in the event of an oil or other hazardous materials spill, including measures to minimize impacts due to spill cleanup. However, the potential remains for a catastrophic spill and the associated substantial environmental effects of the spill and its clean-up. **Even with implementation of regulatory requirements, AMMs/MMs, and MM BIO-1, this impact remains significant and unavoidable (Class I).**

Impact SGW-2: The proposed Project construction and routine operations have the potential to violate water quality standards or waste discharge requirements, or otherwise degrade water quality.

Under the Phillips 66 Pipeline Alternative, the 4.5 mile connection pipeline would have a nominal increase in the potential proposed Project impacts during construction as described for Impact SGW-2 (connection pipeline increases total proposed Project intra-field piping by 12%). Waters potentially affected by the connection pipeline under this Alternative are Cat Canyon Creek and three tributaries. Once constructed, the underground connection pipeline would contribute little to the East and West Cat Canyon Oil Field operational spill risks (connection pipeline traverses these existing oil fields). **With regulatory requirements and MMs SGW-1, SGW-2, and BIO-1 in place, surface water quality impacts due to construction and routine operations would be less than significant (Class II).**

Impact SGW-3: The proposed Project would place within a watercourse or flood hazard area structures which would impede or redirect flood flows, or otherwise alter the existing drainage pattern of the site or area, including through land disturbance or the alteration of the course of a stream or river, in a manner which would result in erosion, siltation, or mudflow.

Under the Phillips 66 Pipeline Alternative, due to pipeline construction, potential erosion and siltation impacts would increase slightly relative to those of the proposed Project as described under Impact SGW-3 (connection pipeline increases total proposed Project intra-field piping by 12%). **Mitigation and impact classification (Class II) are the same as described in in Section 4.9.4.1.2 for the connection pipeline.**

Impact SGW-4: The proposed Project would increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site, create or contribute to runoff water which would exceed the capacity of existing or planned stormwater drainage systems, divert or obstruct flow in a manner that would induce or exacerbate flooding, or otherwise contribute to flood-related damage, on- or off-site.

Under the Phillips 66 Pipeline Alternative, the connection pipeline would be buried and the ground surface above the pipeline would be restored to the original contours. There would be negligible increase in impervious area and no obstruction of flood flows for the connection pipeline. **This impact would therefore be less than significant (Class III).**

Groundwater

Impact SGW-5: The proposed Project cyclic steam or steam flooding injected under pressure to enhance oil recovery in oil-bearing formations or injection of produced water/brine could adversely affect groundwater quality.

The Phillips 66 Pipeline Alternative addresses the transportation of produced crude oil, so therefore will not alter the amount of oil well drilling or produced water injection by the proposed Project.

Impact SGW-6: Potential for the proposed Project's fresh water usage to exceed the threshold of significance for the Santa Maria Groundwater Basin.

The Phillips 66 Pipeline Alternative will not alter the amount of fresh groundwater used by the proposed Project for operations; however, additional water will be required for pipeline construction purposes such as dust abatement, compaction, fire suppression, and hydrotesting, as well as restoration (hydroseeding and irrigation). As provided for the proposed Project, groundwater would be extracted from the Santa Maria Groundwater Basin for these purposes.

No estimate was provided for construction and restoration water needs for the 4.5-mile connection pipeline; however, based on the Line 901/903 water usage rate of 0.83 acre-feet/mile (see Plains Pipeline Alternative below), approximately 3.7 acre-feet would be required for the connection pipeline. The fresh groundwater consumption throughout the duration of the proposed Project (construction plus operations) would range between 16 and 21 acre-feet per year, plus an additional 4 acre-feet per year for oak tree replacement watering during the first few years of the proposed Project.

As discussed in Section 4.9.1.3, the most recent Groundwater Basins Status Report (October 14, 2014) published by the County Water Agency notes that the Santa Maria Groundwater Basin "is managed and not believed to be in a state of overdraft". The project's groundwater use of 25 AF per year would be 0.020% of the current municipal and agricultural water demand for the Santa Maria Valley Management Area and less than 0.022% of the current groundwater use for the Santa Maria Valley Management Area. **With the additional use of water for pipeline construction purposes, including dust abatement, compaction, fire suppression, and hydrotesting, as well as restoration (hydroseeding and irrigation), water use would remain less than significant (Class III).**

Traffic/Transportation.

Impact TR-1: Construction trips could increase the volume to capacity (V/C) ratio for relevant roadway segments.

Under the Phillips 66 Pipeline Alternative, the construction of the new connection pipeline would result in additional temporary trip generation and disruption impacts to transportation facilities when compared to the proposed Project. As shown in Figure 2-29, construction of the pipeline connection may require temporary lane disruptions to Palmer Road, and Foxen Canyon Road. While construction-related trip generation volumes would slightly increase, it is not expected to result in significant impacts to traffic flow given the temporary nature of pipeline construction and slight increase in daily traffic volumes associated with pipeline construction. However, **temporary construction trips and roadway disruptions (natural gas pipeline construction) would still occur and proposed MM TR-3 would be required to reduce temporary construction effects on the circulation system to result in less than significant impacts (Class II).**

Impact TR-2: Operational trips could increase the volume to capacity (V/C) ratio for relevant roadway segments and intersections.

As discussed in Section 2.11.4.3, the Phillips 66 Pipeline Alternative would require 78 one-way tanker truck trips per day of light crude oil occur from the Aera Belridge Facility to the Aera East Cat Canyon Oil Field which would return to the Belridge Facility empty (156 total daily truck trips). Therefore, the Phillips 66 Pipeline Alternative would increase daily trips associated with light crude oil from 21 to 78 when compared to those required under the proposed Project. However, because the Phillips 66 Pipeline Alternative would deliver produced oil via pipeline, the truck trips associated with blended produced crude would be eliminated (95 one-way laden truck trips per day, plus 74 empty truck trips per day), reducing overall operational truck trips from 190 to 156 when compared to the proposed Project. As shown in Table 4.10-10 for the proposed Project, operational-related truck trips would not appreciably increase delay times over the County Thresholds or diminish LOS of study area intersections under any haul route option. Therefore, **because the Phillips 66 Pipeline Alternative would result in less daily trips, it would further reduce any potential for impacts to traffic flow and operational trips would not significantly impact freeway performance along the regional haul route or affected located roadway segments and intersections; less than significant impacts would occur (Class III).**

Impact TR-3: Project-related heavy truck trips could impose safety hazards.

As discussed, the Phillips 66 Pipeline Alternative would reduce overall operational truck trips from 190 to 156 when compared to the proposed Project. **However, because the Plains Pipeline Alternative would continue to include daily truck trips during operation, potential roadway safety impacts from heavy truck travel would remain similar to the proposed Project and require proposed MMs TR-1 (Vehicle Safety Plan) and TR-2 (roadway maintenance agreement) for operational traffic and transportation impacts to be less than significant (Class II).**

Impact TR-4: Project-related heavy truck trips could degrade public roadway conditions.

As discussed, the Phillips 66 Pipeline Alternative would reduce overall operational truck trips from 190 to 156 when compared to the proposed Project. MM TR-2 is proposed to mitigate any long-term damage to the haul routes from the increase of daily heavy truck trips. **With the implementation of MM TR-2, the Project would have less than significant impacts related to roadway damage (Class II).**

5.3.4 Alternative 4: Plains Pipeline Alternative (Crude Oil Transportation)

Similar to the Phillips 66 Pipeline Alternative, the Plains Pipeline Alternative was developed to utilize regional pipeline facilities to transport Project produced crude oil to Los Angeles Basin and Bay Area refineries; thereby, eliminating the need for and impacts associated with tanker truck transport of blended produced oil to Aera's Belridge facility. However, under the Plains Pipeline Alternative, construction of a 6-mile connection pipeline from the Aera East Cat Canyon Oil Field to Line 901 would be required (see Figure 2-30), as well as use of the 123.4-mile Plains Line 901/903 replacement system to Kern County. In addition, construction and operation of BS&W processing facilities would be required to meet Plains solids specifications and would include 1.5 miles of intra-field piping. The Plains Pipeline Alternative connection and intra-field piping would increase proposed Project intra-field piping by approximately 19%.² For purposes of the Plains Pipeline Alternative, it is assumed that the BS&W

² Proposed Project includes 32 miles of intra-field piping ranging from 3 to 14 inches in diameter (see Table Ap.B-1 in Appendix B).

processing facilities would be constructed within the proposed Aera East Cat Canyon Oil Field Central Processing facility and that the intra-field piping would be installed within proposed disturbance areas, so no new ground disturbance would occur. Replacement of the Plains Pipeline is assumed to be in place and operational.

Phase 1 trucking under the Plains Pipeline Alternative would be the same as the proposed Project. For Phase II, light crude import from Aera's Belridge facility would increase from 21 to 75 truck trips to meet Plains viscosity specifications; truck would return empty decreasing proposed Project related truck trips from a total of 190 to 150. This Alternative would not reduce the number of production wells and would reduce daily round trip trucking from 190 to 150 per day.

Air Quality

Impact AQ-1: Construction emissions could result in a considerable net increase of pollutants that would violate air quality standards or contribute substantially to an existing or projected air quality violation.

The Plains Pipeline Alternative would require Aera to use regional pipelines that are currently shutdown and planned for replacement, Plains Lines 901 and 903, to transport proposed Project produced crude oil and eliminate the proposed tanker truck transport (95 round trip truck trips per day, or 190 one-way truck trips per day) of produced crude oil from the Aera East Cat Canyon Oil Field. This Alternative would require Aera to construct a new 6-mile pipeline connection from the Oil Field to Line 901, as well as construct 1.5 miles of new intra-field piping. The Plains Pipeline Alternative would also require the construction and operation of additional processing facilities at the Aera East Cat Canyon Oil Field to meet Plains' BS&W specification. Construction of the pipeline connection to Line 901 would increase the level of construction activity, resulting in a relatively minor increase in construction-phase air pollutant emissions when compared with those presented in Section 4.2.4 for the proposed Project. **The impact determination would remain the same as identified in Section 4.2.4 (Class II), and the same mitigation measures would be required.**

Impact AQ-2: Operational emissions could result in a considerable net increase of pollutants that would violate air quality standards or contribute substantially to an existing or projected air quality violation.

The Plains Pipeline Alternative would decrease the overall number of new one-way truck trips from 190 to 150 per day. This Alternative would not reduce the number of production wells and could increase the number of stationary sources of air emissions at the Aera East Cat Canyon Oil Field due to the additional BS&W processing facilities. Additionally, under the Plains Pipeline Alternative, additional BS&W processing facilities could require additional truck trips to haul away sediment as solid waste, although the overall effect of this Alternative would be to reduce proposed Project emissions from mobile sources by eliminating some offsite truck trips to transport blended produced oil. By eliminating some of the mobile tanker truck trips associated with operations, this Alternative would decrease the operational-phase emissions from motor vehicle trips when compared with those presented in Section 4.2.4 for the proposed Project. **The impact determination would remain the same as identified in Section 4.2.4 (Class II), and the same mitigation measures would be required.**

Impact AQ-3: Proposed Project activities could create objectionable odors affecting a substantial number of people.

The Plains Pipeline Alternative would not change the potential for the proposed Project to create emissions of objectionable odors. **The impact determination would remain the same as identified in Section 4.2.4 (Class III).**

Impact AQ-4: Proposed Project activities could expose sensitive receptors to substantial pollutant concentrations exceeding adopted health risk thresholds for air toxics.

The Plains Pipeline Alternative would not change the potential for the proposed Project to create air quality-related health risk. **The impact determination would remain the same as identified in Section 4.2.4 (Class III).**

Impact AQ-5: Proposed Project activities could conflict with or obstruct implementation of the applicable air quality management plans.

The Plains Pipeline Alternative would decrease the operational-phase emissions from motor vehicle trips, while causing a relatively minor increase construction-phase emissions to establish the new crude oil pipeline connection. Mitigation recommended for Impact AQ-2 (MM AQ-2c requiring the Applicant to offset all proposed Project-related emissions that exceed the thresholds) would remain applicable to this Alternative. **The impact determination would remain the same as identified in Section 4.2.4 (Class II).**

Biological Resources

Impact BIO-1: A rupture or leak from oil production facilities, pipelines, or transport trucks has the potential to result in a substantial adverse effect on native species and habitats, special-status species and their habitats, and sensitive vegetation communities.

The Plains Pipeline Alternative would reduce the risk of accidental spills from a trucking accident (laden truck trips would be reduced from 116 to 75), but spills due to a leak or rupture in the Plains Pipeline Alternative connection pipeline could also occur. A leak or rupture from the connection pipeline could potentially result in a larger spill than a trucking accident, although the risk of leak or rupture would be less than the risk of a spill from a trucking accident (see Impact RISK-2 below). **Impact BIO-1 would remain significant and unavoidable (Class I) for the Plains Pipeline Alternative.**

Impact BIO-2: Proposed Project construction and routine operations have the potential for degradation and loss of habitat for listed and other special-status species.

Under the Plains Pipeline Alternative, the majority of connection pipeline alignment would be installed within or adjacent to paved roads with unpaved shoulders as well as agricultural land. During construction, there would be a minor increase in temporary impacts to native and nonnative vegetation from installation of the 6-mile connection pipeline. The Alternative pipeline alignment is within the dispersal distance of several agricultural ditches that could potentially support CTS or CRLF breeding. **Impact BIO-2 would be mitigated to less than significant (Class II).**

Impact BIO-3: Proposed Project construction and routine operation have the potential to injure or “take” listed and other special-status species.

During construction, the Plains Pipeline Alternative connection pipeline would be installed primarily within roads and road shoulders, resulting in a minor increase in temporary ground disturbance compared with the proposed Project, and therefore would proportionally increase the potential to injure or take listed or other special-status species. Vegetation and land cover types were identified via desktop review and aerial imagery adjacent to the Plains Pipeline Alternative route include agricultural, annual grassland, California coastal scrub, coast live oak woodland, ornamental, wetland features, and previously disturbed/developed lands. These habitats provide suitable foraging, nesting, and denning habitat for a variety of wildlife including amphibians, reptiles, birds, and mammals (Aera, 2018). During operation, the

reduced amount of truck traffic (laden truck trips would be reduced from 116 to 75) would decrease the Plains Pipeline Alternative's potential to take listed and other special-status species (such as CTS) as roadkill, compared with the proposed Project. **Impact BIO-3 would remain less than significant (Class II) if mitigation is implemented.**

Impact BIO-4: Proposed Project construction has the potential to result in a net loss or permanent change in the extent or functional value of sensitive vegetation communities and loss of individual oak trees.

Although the Plains Pipeline Alternative alignment is primarily within existing roads which eliminates direct impacts to oaks and oak woodlands, there may be indirect impacts to adjacent oaks if construction occurs within driplines or if trimming is required. **Impact BIO-4 would remain significant and unavoidable (Class I) for the Plains Pipeline Alternative.**

Impact BIO-5: Proposed Project construction and routine operations have the potential to adversely affect waters of the U.S. and waters of the state.

Plains Pipeline Alternative impacts would be increased compared with the proposed Project, since the Plains Pipeline Alternative connection pipeline route intersects or runs parallel to several ephemeral drainages that are considered waters of the United States and/or waters of the State, including Long Canyon Creek, Olivera Canyon Creek, and Asphaltum Creek. **Impact BIO-5 would remain less than significant (Class II) if mitigation is implemented.**

Impact BIO-6: Proposed Project construction and routine operations have the potential to impair movement, migration, or dispersal of resident and migratory fish and wildlife species.

The Plains Pipeline Alternative would increase potential to impact wildlife movement during pipeline construction compared with the proposed Project due to the increase in construction activities and duration. **Impact BIO-6 would remain less than significant (Class II) if mitigation is implemented.**

Impact BIO-7: An unanticipated surface expression of drilling fluid at HDD crossings under Cat Canyon Creek and other drainages has the potential to result in a substantial adverse effect on native species and habitats, special-status species and their habitats, and sensitive vegetation communities.

The Plains Pipeline Alternative impacts could be increased compared with the proposed Project, since the Plains Pipeline Alternative connection pipeline route intersects or runs parallel to several ephemeral drainages that are considered waters of the United States and/or waters of the State, including Long Canyon Creek, Olivera Canyon Creek, and Asphaltum Creek, and may require HDD crossings. **Impact BIO-7 would be mitigated to less than significant (Class II).**

Climate Change/Greenhouse Gas Emissions

Impact GHG-1: Proposed Project emissions could generate greenhouse gas emissions (GHG) that may have a significant impact on the environment.

The Plains Pipeline Alternative would require Aera to use regional pipelines that are currently shutdown and planned for replacement, Plains Lines 901 and 903, to transport the proposed Project produced crude oil and eliminate the proposed tanker truck transport of blended crude (95 truck trips per day) from the proposed Project site in the Aera East Cat Canyon Oil Field to Aera's Belridge facility in Kern County (140.4 miles). Under the Plains Pipeline Alternative, approximately 75 trucks (roundtrip) per day would be

required to import light crude oil from Aera’s Belridge facility to the proposed Project site to meet Plains viscosity specifications. This Alternative would require Aera to construct a new 6 mile pipeline connection from the proposed Project site to Line 901, as well as 1.5 miles of intra-field piping, and would decrease the overall number of new one-way truck trips from 190 to 150 per day. The Plains Pipeline Alternative would also require the construction and operation of additional processing facilities at the proposed Project site to meet Plains’ BS&W specification. Although the Plains Pipeline Alternative would reduce proposed Project emissions from mobile sources by eliminating some offsite truck trips to transport blended produced oil, it would not reduce the number of production wells and could increase the number of stationary sources of air emissions due to the additional BS&W processing facilities. Construction of the 6-mile pipeline connection to Line 901 would increase the level of cumulative construction activity, resulting in a relatively small amount of additional construction-phase GHG emissions. By reducing the mobile tanker truck trips associated with proposed Project operations by about 20% would decrease the annual rate of GHG emissions over the long-term operational life of the proposed Project, when compared with those presented in Section 4.4.4, but only nominally since operational mobile GHG emissions for the proposed Project comprise about 5% of the total GHG emissions. Therefore, a 20% reduction in the trucking fleet would reduce operational GHG emissions by about 1.2%. However, under the Plains Pipeline Alternative, additional BS&W processing facilities could require additional truck trips to haul away sediment as solid waste; thereby, contributing to operation GHG emissions associated with trucking. Minimal GHG emissions would occur as a result of pipeline operations, assuming that pumps are powered by the electrical grid. **The Plains Pipeline Alternative impact determinations would remain the same as identified in Section 4.4.4 for the proposed Project, and the same mitigation measures would be required.**

Impact GHG-2: Proposed Project emissions could conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Given the oversight of project-related sources and progress of California’s ongoing efforts to implement policies and a regulatory setting for reducing GHG emissions, the Plains Pipeline Alternative is not likely to conflict with any applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions; therefore, **Impact GHG-2 would be a less than significant impact (Class III).**

Cultural/Historic Resources

Impacts to cultural resources due to the Plains Pipeline Alternative would include impacts related to construction of BS&W facilities, intra-field piping, and the connection pipeline. For purposes of the Plains Pipeline Alternative, it is assumed that the BS&W processing facilities and intra-field piping would be constructed within the proposed disturbance areas within the Aera East Cat Canyon Oil Field and no additional impacts would occur.

Impact CULT-1: The proposed Project may cause a substantial adverse change in the significance of a historical resource, unique archaeological resource, or tribal cultural resource.

Under the Plains Pipeline Alternative, the alignment of the connection pipeline to Line 901 parallels Long Canyon Road, then turn southeast along Foxen Canyon Road. No cultural resources have been identified within 0.25 miles of the pipeline alignment (Denardo, 2014a). **The Plains Pipeline Alternative impact determinations would remain the same as identified in Section 4.5.4 for the proposed Project (Class II), and the same mitigation measures would be required.**

Impact CULT-2: The proposed Project could damage human remains during ground disturbing activities occurring in the Project site.

Although no human remains have been found along the pipeline connection route, the potential to encounter and adversely impacts human remains would be possibly greater than under the proposed Project due to the additional pipeline construction and associated ground disturbance required under the Plains Pipeline Alternative. **The Plains Pipeline Alternative impact determination would remain the same as identified in Section 4.5.4 for the proposed Project (Class II), and the same mitigation measure would be required.**

Impact CULT-3: The proposed Project may result in a significant impact to paleontological resources due to the direct or indirect destruction of a unique paleontological resource or site located in the Project site.

Under the Plains Pipeline Alternative, potential impacts to paleontological resources would be possibly greater than under the proposed Project due to the additional pipeline construction and associated ground disturbance, which could encounter and disturb unknown paleontological resources. **The Plains Pipeline Alternative impact determination would remain the same as identified in Section 4.5.4 for the proposed Project (Class III), and the same mitigation measure would be required.**

Geologic Processes/Geologic Hazards

The required connection pipeline would primarily follow paved roads bordered by unpaved shoulders and agricultural land, situated among terrain of moderately steep hills and valleys (Aera, 2018). While an estimate of disturbance acreage for the 6-mile connection pipeline was not provided, based on the estimate provided for the Phillips 66 Pipeline Alternative and the increased length of the Plains Pipeline Alternative connection pipeline, disturbance acreage is estimated to range from 27 acres to 53 acres; thereby, increasing proposed Project temporary disturbance by about 9% to 17% for the connection pipeline (proposed Project disturbance is 305 acres).

Impact GEO-1: Seismically induced ground shaking, Project induced ground shaking, or seismically induced slope failure could cause damage to Project structures or result in injury or death to people.

The Plains Pipeline Alternative connection and in-field pipelines could be damaged by strong seismic ground shaking. In the event of damage, the pipelines would be repaired and would not pose a significant hazard of loss, injury, or death (see Impacts BIO-1 and SGW-1 for a discussion of oil spill impacts). The Plains Pipeline Alternative required pipelines would have no influence on induced seismicity. **As with the proposed Project, Impact GEO-1 would be less than significant (Class III) given implementation of regulatory requirements during design and construction.**

Impact GEO-2: Slope failures, such as landslides, could be triggered by Project construction.

Under the Plains Pipeline Alternative, Impact GEO-2, slope failures triggered by construction, would nominally increase due to the amount of ground disturbance being increased by 9% to 17% (305 acres to up to 358 acres), resulting in a greater chance to destabilize slopes and trigger landslides. **As with the proposed Project, Impact GEO-2 would be less than significant (Class III) given implementation of regulatory requirements during design and construction.**

Impact GEO-3: Construction and operation of the Project could trigger or accelerate soil erosion.

Under the Plains Pipeline Alternative, Impact GEO-3, triggered or accelerated soil erosion, would nominally increase due to the amount of ground disturbance being increased by 9% to 17% (305 acres to up to 358 acres). **As with the proposed Project, Impact GEO-3 would be less than significant (Class III) given implementation of regulatory requirements during design and construction.**

Impact GEO-4: Expose people or structures to potential risk of loss or injury where expansive or other unsuitable soils are present.

Under the Plains Pipeline Alternative, Impact GEO-4 would likely be increased by the additional connection and in-field pipeline alignments; however, the amount of increase would vary depending on the presence of unsuitable soils along the pipeline alignments relative to these soils. **However, as with the proposed Project, implementation of MM GEO-1 would reduce these impacts to less than significant with mitigation (Class II).**

Impact GEO-5: Soils incapable of supporting septic system.

Impact GEO-5 does not apply to the Plains Pipeline Alternative, since the Alternative is related to the transportation of produced crude oil.

Impact GEO-6: Encountering contaminated soils during construction.

Under the Plains Pipeline Alternative, Impact GEO-6 would likely increase due to the significant increase in ground disturbance; however, the amount of increase is uncertain. Unknown contamination could be encountered anywhere along the connection and in-field pipeline alignments, and thus the likelihood and potential amounts encountered is difficult to quantify. **However, as with the proposed Project, implementation of MM GEO-2 reduces the impact to less than significant with mitigation (Class II).**

Hazardous Materials/Risk of Upset

Impact RISK-1: The proposed Project could generate risks to public safety by exposing the public to produced gas releases from the oil field gathering pipelines, and gas treatment plant.

The Plains Pipeline Alternative addresses the transportation of produced crude oil via pipeline instead of tanker truck; therefore, does not affect proposed oil field operations and resultant hazards discussed under Impact RISK-1.

Impact RISK-2: The proposed Project could generate risks to public safety by exposing the public to hazards from truck transport of light crude oil (LCO) and blended crude oil product.

Impact RISK-2 addresses the probability of a trucking accident occurring and the potential consequences on the public. See Impacts BIO-1, Section 4.3.4, and Impact SGW-1, Section 4.9.4, for discussions of impacts related to spilled crude oil or other hazardous materials as a result of an accident on biological and hydrological resources, respectively.

The Plains Pipeline Alternative would eliminate the truck transport of produced crude oil, but the import of light crude oil to meet Plains viscosity specifications would still be required; thereby, reducing laden truck trips associated with the proposed Project from 116 to 75. **The Plains Pipeline Alternative impact determination would remain the same as identified in Section 4.7.4 for the proposed Project (Class II), and the same mitigation measure would be required.**

The Plains Pipeline Alternative would also involve the transport of blended produced crude oil in the required connection pipeline and Line 901/903 pipeline system, then transport in existing pipelines to Los Angeles Basin or Bay Area refineries. To compare the Plains Pipeline Alternative to the proposed Project, which includes truck transport of produced crude to Aera’s Belridge facility as well as pipeline transport to deliver crude oil to refineries, the probability of an accidental spill and average spill volume for hazardous material truck and pipeline transport has been assembled in Table 5-5. As noted for the Phillips 66 Pipeline Alternative, with the use of existing pipeline systems, the release incident/year rate would be relatively unchanged with the added production from the proposed Project under the Plains Pipeline Alternative.

Table 5-5. Estimated Incidents Per Year for Proposed Project and Plains Pipeline Alternative for Produced Crude Transport					
	Estimated Pipeline Distance (miles)	Pipeline		Incident/Year	
		US Incident per Mile-Year	CA Incident per Mile-Year Incident/Year	US Incident per Mile-Year	CA Incident per Mile-Year Incident/Year
Proposed Project					
LCO & Blended Trucking from/to Belridge (116 laden trucks)				0.1044 ¹	
Pipeline to Los Angeles Basin	120	Existing pipeline; no increase in existing risk.			
Pipeline to Bay Area	200	Existing pipeline; no increase in existing risk.			
TOTAL RISK				0.1044	
Plains Pipeline Alternative					
LCO Trucking from Belridge (75 laden trucks)				0.0675	
Connection Pipeline	6	3.10E-03	3.75E-03	0.0186 ²	0.0225 ³
Plains Pipeline ⁴	123	Existing pipeline; no increase in existing risk.			
Pipeline to Los Angeles Basin	120	Existing pipeline; no increase in existing risk.			
Pipeline to Bay Area	200	Existing pipeline; no increase in existing risk.			
TOTAL RISK				0.0861	0.0900

1 - Incident/Year, Aera TQRA (see Table 5-2).

2 - Based on US Incident per Mile-Year.

3 - Based on California Incident per Mile-Year.

4 – For purposes of the Plains Pipeline Alternative, Plains Pipeline is assumed operational.

As presented in Table 5-5, the Plains Pipeline Alternative incident/year rate ranges between 0.0861 to 0.0900 incidents per year for release of hazardous materials during a trucking accident, whereas the proposed Project incident/year rate (no pipeline) is 0.1044.

Impact RISK-3: The proposed Project could generate risks to public safety by exposing the public to hazards from releases of natural gas from the SoCal Gas natural gas pipeline.

The Plains Pipeline Alternative addresses the transportation of produced crude oil via pipeline instead of tanker truck; therefore, does not affect proposed natural gas pipeline operations and resultant hazards discussed under Impact RISK-3.

Impact HAZ-1: Release of Hazardous Materials during Construction, including Well Drilling

Hazardous materials that would be used during project construction activities include gasoline, diesel fuel, oil, lubricants, paint and small quantities of solvents. Small volumes of these materials would be temporarily stored on-site. Because of connection and in-field pipeline construction activities required under the Plains Pipeline Alternative, the potential for release of hazardous materials during construction would increase in comparison to the proposed Project, but not significantly (connection and intra-field piping increases total proposed Project intra-field piping by 19%). To minimize the potential for a release, all handling and storage of these materials would be conducted in accordance with oil field best management practices including secondary containment and proper storage of materials in accordance with federal, State, and local codes and standards. **The Plains Pipeline Alternative impact determination would remain the same as identified in Section 4.7.4 for the proposed Project (Class II), and the same regulatory requirements and MM RISK-3 would apply.**

Impact HAZ-2: Release of Hazardous Materials during Operations and Maintenance

During operations, the proposed Project would generate crude oil and produced gas and water which contain naturally occurring chemicals that in the appropriate concentration are detrimental to human health. In addition, during operations and maintenance, chemicals will be brought on site to facilitate operations. Since Plains Pipeline Alternative would require the use of hazardous materials, the potential for release of hazardous materials during operations and maintenance would increase in comparison to the proposed Project, but not significantly (connection and intra-field piping increases total proposed Project intra-field piping by 19%). **The Plains Pipeline Alternative impact determination would remain the same as identified in Section 4.7.4 for the proposed Project (Class II), and the same regulatory requirements and mitigation measures (HAZ-1, RISK-2, RISK-3 and RISK-4) would apply.**

Impact FIRE-1: Introduction of Development into an Existing High Fire Hazard Area

Impact FIRE-2: Introduction of Development into an Area without Adequate Water Pressure, Fire Hydrants, or Adequate Access for Fire Fighting

Impact FIRE-3: Introduction of Development that will Hamper Fire Prevention Techniques such as Controlled Burns or Backfiring in High Fire Hazard Areas.

Impact FIRE-4: Development of Structures beyond Safe Fire Department Response Time.

The construction of the Plains Pipeline Alternative connection pipeline and in-field pipelines would introduce additional sources of ignition to that of the proposed Project within high fire hazard areas resulting in a nominal increase in the fire potential during construction. Once constructed, the underground connection pipeline would not present an additional ignition source and the intra-field pipeline corridors would be subject to required vegetation management practices. **The Plains Pipeline Alternative impact determination would remain the same as identified in Section 4.7.4 for the proposed Project, and the same mitigation measure would apply.**

Noise

Impact NOISE-1: Construction Noise

Under the Plains Pipeline Alternative, construction of the new connection pipeline would result in temporary noise increases along the alignment, increasing in the regional temporary construction noise generated when compared to the proposed Project. Construction of the additional intra-field piping and BS&W processing facilities would occur within the Aera East Cat Canyon Oil Field and these construction

activities are not expected to differ from other construction activities to be conducted within the oil field. Land uses near the connection pipeline include existing oil and gas development, open space, agriculture, and several rural residences. Proposed MM NOISE-1 would be required to reduce temporary construction noise associated with pipeline construction/replacement and MM NOISE-3 would be required to reduce cumulative construction noise impacts. The Plains Pipeline Alternative would result in identical constructional noise impacts related to well development when compared to the proposed Project since the same number of wells would be developed. **The construction noise impact determinations for the Plains Pipeline Alternative would remain the same as identified in Section 4.8.4 for the proposed Project (Class II), and the same mitigation measures would be required.**

Impact NOISE-2: Operational Noise

Under the Plains Pipeline Alternative, once operational, the connection pipeline would not generate any noise. Proposed MM NOISE-2 would be required to reduce workover drilling maintenance noise which would be the same as the proposed Project given that the same number of wells would be developed. The Plains Pipeline Alternative would eliminate trucking of blended crude from the Aera East Cat Canyon Oil Field (95 one-way truck trips/day); however, under the Plains Pipeline Alternative trucking of LCO from the Aera Belridge facility to the proposed Project site to meet Plains' viscosity specifications would still occur (75 one-way truck trips/day; trucks would return empty to Belridge); reducing daily truck trips from 190 to 150. This would reduce operational traffic noise levels compared to the proposed Project (refer to Tables 4.8-16 and 4.8-17). **The operation noise impact determinations for the Plains Pipeline Alternative would remain the same as identified in Section 4.8.4 for the proposed Project (Class II), and the same mitigation measures would be required.**

Impact NOISE-3: Vibration

Under the Plains Pipeline Alternative, construction of the connection pipeline would result in temporary vibration along the alignment, increasing the overall temporary construction vibration generated when compared to the proposed Project. Land uses near the pipeline route includes existing oil and gas development, open space, agriculture, and several rural residences. However, vibration from all other construction sources would be identical to the proposed Project. While momentary vibration could be felt by receptors located within 100-feet of a vibration source, they are not considered to be at levels that could damage structures. As noted earlier in Sections 4.8.2 (Regulatory Setting), the County of Santa Barbara does not identify thresholds for vibration. MM NOISE-1 would ensure that sensitive receptors along the natural gas pipeline route are contacted prior to construction and provided contact information to submit any complaints pertaining to vibration. Upon receiving a complaint, MM NOISE-1 (requirements 7 through 9) requires the Project Applicant to resolve such a complaint and provide resolution to the County. **Because perceivable vibration from proposed Project activities would not be felt at any receptor, temporary vibration from construction is considered less than significant (Class III).** Once operational, the Plains Pipeline Alternative would reduce the frequency of vibration from heavy truck trips along the operational travel routes. However, such momentary vibration would not be eliminated under this Alternative as heavy truck trips during operation would still occur from light crude oil trips. The remaining vibration sources would be maintenance activities, which would likely generate vibration levels less than those generated during construction. **Vibration impacts from operational and maintenance would be less than significant (Class III).**

Surface/Groundwater

Surface Water

It is assumed that the BS&W processing facilities and 1.5 miles of intra-field piping would be constructed within the proposed Aera East Cat Canyon Oil Field Central Processing facility and other proposed disturbance areas, respectively, so no additional impacts would occur. The following impacts are for the connection pipeline.

Impact SGW-1: A rupture or leak from oil production facilities, pipelines, or transport trucks has the potential to result in a substantial adverse effect on surface or groundwater quality.

The Plains Pipeline Alternative would have the potential for contaminating surface water through accidental release caused by a pipeline rupture as described under Impact SGW-1 for the proposed Project; however, the trucking spill risk would decrease by about 35% given the reduction in laden truck trips (116 to 75). Watercourses which could be affected by the connection pipeline include Long Canyon, Olivera Canyon Creek, and Asphaltum Creek. Spills could result from flood-related scour, seismic events, mechanical failure, structural failure, corrosion, or human error during operations, and result in the same impacts as described in Section 4.9.4.1.1. Regulatory requirements, AMMs, and mitigation measures require an Emergency Response Plan, spill contingency plan, SPCC, and SWPPP. MM BIO-1 requires development and implementation of an Emergency Response Action Plan to mitigate impacts in the event of an oil or other hazardous materials spill, including measures to minimize impacts due to spill cleanup. However, the potential remains for a catastrophic spill and the associated substantial environmental effects of the spill and its clean-up. **Even with implementation of regulatory requirements, AMMs, and MM BIO-1, this impact remains significant and unavoidable (Class I).**

Impact SGW-2: The proposed Project construction and routine operations have the potential to violate water quality standards or waste discharge requirements, or otherwise degrade water quality.

Under the Plains Pipeline Alternative, potential water quality impacts would be as described under Impact SGW-2 for the proposed Project, but limited to the connection pipeline only. Waters potentially affected by the connection pipeline are Long Canyon, Olivera Canyon Creek, and Asphaltum Creek. Spill risk from the pipeline would increase the risk described in Impact SGW-2 for the entire oil field, but not significantly (connection pipeline increases total proposed Project intra-field piping by 15%). **With regulatory requirements and MMs SGW-1, SGW-2, and BIO-1 in place, surface water quality impacts due to construction and routine operations would be less than significant (Class II).**

Impact SGW-3: The proposed Project would place within a watercourse or flood hazard area structures which would impede or redirect flood flows, or otherwise alter the existing drainage pattern of the site or area, including through land disturbance or the alteration of the course of a stream or river, in a manner which would result in erosion, siltation, or mudflow.

Under the Plains Pipeline Alternative, potential erosion and siltation impacts due to pipeline construction would increase slightly to that described under Impact SGW-2 for the proposed Project (connection pipeline increases total proposed Project intra-field piping by 15%). Waters potentially affected by the connection pipeline are Long Canyon, Olivera Canyon Creek, and Asphaltum Creek. **Mitigation and impact classification (Class II) are the same as described in in Section 4.9.4.1.2.**

Impact SGW-4: The proposed Project would increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site, create or contribute to runoff water which would exceed the capacity of existing or planned stormwater drainage systems, divert or obstruct flow in a manner that would induce or exacerbate flooding, or otherwise contribute to flood-related damage, on- or off-site.

Under the Plains Pipeline Alternative, the pipeline would be buried predominantly below existing roadways. There would be no increase in impervious area and no obstruction of flood flows for the connection pipeline. **This impact would therefore be less than significant (Class III) for the connection pipeline.**

Groundwater

Impact SGW-5: The proposed Project cyclic steam or steam flooding injected under pressure to enhance oil recovery in oil-bearing formations or injection of produced water/brine could adversely affect groundwater quality.

The Plains Pipeline Alternative addresses the transportation of produced crude oil, so therefore will not alter the amount of oil well drilling or produced water injection by the proposed Project.

Impact SGW-6: Potential for the proposed Project's fresh water usage to exceed the threshold of significance for the Santa Maria Groundwater Basin.

The Plains Pipeline Alternative 4 will not alter the amount of fresh groundwater used by the proposed Project for operations; however, additional water will be required for pipeline construction purposes such as dust abatement, compaction, fire suppression, and hydrotesting, as well as restoration (hydroseeding and irrigation).

No estimate was provided for construction and restoration water needs for the 6-mile connection pipeline; however, based on the Line 901/903 water usage rate of 0.83 acre-feet/mile, approximately 5 acre-feet would be required for the connection pipeline. The fresh groundwater consumption throughout the duration of the proposed Project (construction plus operations) would range between 16 and 21 acre-feet per year, plus an additional 4 acre-feet per year for oak tree replacement watering during the first few years of the proposed Project.

As discussed in Section 4.9.1.3, the most recent Groundwater Basins Status Report (October 14, 2014) published by the County Water Agency notes that the Santa Maria Groundwater Basin "is managed and not believed to be in a state of overdraft". The project's groundwater use of 25 acre feet per year would be 0.020% of the current municipal and agricultural water demand for the Santa Maria Valley Management Area and less than 0.022% of the current groundwater use for the Santa Maria Valley Management Area. **With the additional use of water for construction purposes, including dust abatement, compaction, fire suppression, and hydrotesting, as well as restoration (hydroseeding and irrigation), water use would remain less than significant.**

Traffic/Transportation

Impact TR-1: Construction trips could increase the volume to capacity (V/C) ratio for relevant roadway segments.

The Plains Pipeline Alternative would require the construction a new 6-mile connection pipeline and 1.5 miles of associated intra-field piping to connect to Line 901. The Plains Pipeline Alternative would also

require the construction and operation of additional processing facilities at the Aera East Cat Canyon Oil Field to meet Plains' BS&W specification. The construction of the new pipeline would result in additional temporary trip generation and disruption impacts to regional transportation facilities when compared to the proposed Project. As shown in Figure 2-30, construction of the connection pipeline may require temporary lane disruptions to Palmer Road, Long Canyon Road, and/or Cat Canyon Road. While construction-related trip generation volumes would increase, they are not expected to result in significant impacts to traffic flow given the regional distribution of the construction truck trips and temporary nature of pipeline construction. However, **temporary construction trips and roadway disruptions (natural gas pipeline construction) would still occur and proposed MM TR-3 would be required to reduce temporary construction effects on the circulation system to result in less than significant impacts (Class II).**

Impact TR-2: Operational trips could increase the volume to capacity (V/C) ratio for relevant roadway segments and intersections.

As discussed in Section 2.11.4.4, the Plains Pipeline Alternative would require 75 one-way tanker truck trips per day of light crude oil from the Aera Belridge Facility to the Aera East Cat Canyon Oil Field which would return to the Belridge Facility empty (150 total daily truck trips). Therefore, the Plains Pipeline Alternative would increase daily trips associated with light crude oil from 21 to 75 when compared to those required under the proposed Project. However, because the Plains Pipeline Alternative would deliver produced oil via pipeline, the truck trips associated with blended produced crude would be eliminated (95 one-way laden truck trips per day, plus 74 empty one-way truck trips per day), reducing overall operational truck trips from 190 to 150 when compared to the proposed Project. In addition, because of the BS&W processing facilities required under the Plains Pipeline Alternative, additional truck trips to haul away sediment as solid waste could be required. As shown in Table 4.10-10, for the proposed Project, operational-related truck trips would not appreciably increase delay times over the County Thresholds or diminish LOS of study area intersections under any haul route option. Therefore, **because the Plains Pipeline Alternative would result in less daily trips, it would further reduce any potential for impacts to traffic flow and operational trips would not significantly impact freeway performance along the regional haul route or affected located roadway segments and intersections; less than significant impacts would occur (Class III).**

Impact TR-3: Project-related heavy truck trips could impose safety hazards.

As discussed, the Plains Pipeline Alternative would reduce overall operational truck trips from 190 to 150 when compared to the proposed Project. **However, because the Plains Pipeline Alternative would continue to include daily truck trips during operation, potential roadway safety impacts from heavy truck travel would remain similar to the proposed Project and require proposed MMs TR-1 (Vehicle Safety Plan) and TR-2 (roadway maintenance agreement) for operational traffic and transportation impacts to be less than significant (Class II).**

Impact TR-4: Project-related heavy truck trips could degrade public roadway conditions.

As discussed, the Plains Pipeline Alternative would reduce overall operational truck trips from 190 to 150 when compared to the proposed Project. MM TR-2 is proposed to mitigate any long-term damage to the haul routes from the increase of daily heavy truck trips. **With the implementation of MM TR-2, the Project would have less than significant impacts related to roadway damage (Class II).**

5.3.5 Alternative 5: Natural Gas Pipeline Reroute Alternative

An alternative natural gas pipeline alignment was developed that would avoid the town of Orcutt and associated population centers. The overall length of Natural Gas Pipeline Alternative Option 4 would be approximately 17.4 miles, 3.4 miles longer than the proposed route (see Figure 2-25).

Air Quality

Impact AQ-1: Construction emissions could result in a considerable net increase of pollutants that would violate air quality standards or contribute substantially to an existing or projected air quality violation.

The Natural Gas Pipeline Reroute Alternative would increase the overall length of the proposed pipeline route from 14 to 17.4 miles; thereby, proportionally increasing the overall quantities of pipeline construction air pollutant emissions, including fugitive dust. The additional length of pipeline construction would add a relatively minor increase to overall Project construction emissions. **These considerations would increase the overall level of the anticipated emissions for construction, when compared with those presented in Section 4.2.4. The impact determination would remain the same as identified in Section 4.2.4 (Class II), and the same mitigation measures would be required.**

Impact AQ-2: Operational emissions could result in a considerable net increase of pollutants that would violate air quality standards or contribute substantially to an existing or projected air quality violation.

The Natural Gas Pipeline Reroute Alternative would increase the overall length of the proposed pipeline route, but no additional operation-phase emissions sources would occur. Because the same level of oil field operations would occur under the Natural Gas Pipeline Reroute Alternative, as with the proposed Project, no reduction or increase in emissions related to natural gas usage would occur. **The impact determination would remain the same as identified in Section 4.2.4 (Class II), and the same mitigation measures would be required.**

Impact AQ-3: Proposed Project activities could create objectionable odors affecting a substantial number of people.

The Natural Gas Pipeline Reroute Alternative would not change the potential for the proposed Project to create emissions of objectionable odors. **The impact determination would remain the same as identified in Section 4.2.4 (Class III).**

Impact AQ-4: Proposed Project activities could expose sensitive receptors to substantial pollutant concentrations exceeding adopted health risk thresholds for air toxics.

The Natural Gas Pipeline Reroute Alternative would not change the potential for the proposed Project to create air quality-related health risk. **The impact determination would remain the same as identified in Section 4.2.4 (Class III).**

Impact AQ-5: Proposed Project activities could conflict with or obstruct implementation of the applicable air quality management plans.

The Natural Gas Pipeline Reroute Alternative would result in a minor increase in emissions during construction with no reduction or increase in operation-phase emissions. Similar to the proposed Project, mitigation recommended for Impact AQ-2 (MM AQ-2c requiring the Applicant to offset all proposed

Project-related emissions that exceed the thresholds) would remain applicable to this Alternative. **The impact determination would remain the same as identified in Section 4.2.4 (Class II).**

Biological Resources

Impact BIO-1: A rupture or leak from oil production facilities, pipelines, or transport trucks has the potential to result in a substantial adverse effect on native species and habitats, special-status species and their habitats, and sensitive vegetation communities.

As with the proposed Project natural gas pipeline, the Natural Gas Pipeline Reroute Alternative would not affect the oil spill potential associated with oil field operations and crude oil transport.

Impact BIO-2: Proposed Project construction and routine operations have the potential for degradation and loss of habitat for listed and other special-status species.

Impacts along the gas pipeline would be greater during construction because the Natural Gas Pipeline Reroute Alternative alignment would cross open space in several locations, resulting in greater impacts to vegetation and wildlife habitat compared with the proposed Project, which would be entirely within road shoulders.

The Natural Gas Pipeline Reroute Alternative alignment is within dispersal distance from several ponds that could support CTS and CRLF breeding, although it does not cross any designated critical habitat for listed species. **Impact BIO-2 would be mitigated to less than significant (Class II).**

Impact BIO-3: Proposed Project construction and routine operation have the potential to injure or “take” listed and other special-status species.

Impacts along the gas pipeline would be greater during construction because the Natural Gas Pipeline Reroute Alternative alignment would cross open space in several locations. In addition, the Natural Gas Pipeline Reroute Alternative alignment is within dispersal distance from several ponds that could support CTS and CRLF breeding, although it does not cross any designated critical habitat for listed species. **Impact BIO-3 would be mitigated to less than significant (Class II).**

Impact BIO-4: Proposed Project construction has the potential to result in a net loss or permanent change in the extent or functional value of sensitive vegetation communities and loss of individual oak trees.

The Natural Gas Pipeline Reroute Alternative is likely to result in greater impacts to oaks and oak woodlands compared to the proposed Project natural gas pipeline, since the Natural Gas Pipeline Reroute Alternative alignment would cross open space in several locations, resulting in greater impacts to vegetation and wildlife habitat compared with the proposed Project natural gas pipeline, which would be entirely within road shoulders. **Impact BIO- 4 would be considered significant and avoidable (Class I) for the Natural Gas Pipeline Reroute Alternative.**

Impact BIO-5: Proposed Project construction and routine operations have the potential to adversely affect waters of the U.S. and waters of the state.

The Natural Gas Pipeline Reroute Alternative is likely to result in greater impacts to waters of the U.S. and Waters of the State compared with the proposed Project natural gas pipeline, since the Natural Gas Pipeline Reroute Alternative alignment would cross several creeks and canals, including San Antonio Creek and its tributaries approximately four times along Highway 135. Ephemeral pools and swales (primarily

roadside ditches and culverts) as well as agricultural ditches are also present. **Impacts to BIO-5 would be less than significant (Class II) if mitigation measures are implemented.**

Impact BIO-6: Proposed Project construction and routine operations have the potential to impair movement, migration, or dispersal of resident and migratory fish and wildlife species.

The Natural Gas Pipeline Reroute Alternative is likely to result in increased potential to impact wildlife movement during pipeline construction compared with the proposed Project natural gas pipeline due to the increase in length and associated increase in construction duration, and the fact that the Natural Gas Pipeline Reroute Alternative would cross open space. **Impact BIO-6 would be mitigated to less than significant (Class II).**

Impact BIO-7: An unanticipated surface expression of drilling fluid at HDD crossings under Cat Canyon Creek and other drainages has the potential to result in a substantial adverse effect on native species and habitats, special-status species and their habitats, and sensitive vegetation communities.

The Natural Gas Pipeline Reroute Alternative is likely to result in increased potential to result in unanticipated surface expression of drilling fluids compared with the proposed Project natural gas pipeline, since the Natural Gas Pipeline Reroute Alternative alignment would cross several creeks and canals, including San Antonio Creek and its tributaries approximately four times along Highway 135. **Impact BIO-7 would be less than significant (Class II) if mitigation measures are implemented.**

Climate Change/Greenhouse Gas Emissions

The Natural Gas Pipeline Reroute Alternative would increase the overall length of the proposed pipeline route from 14 to 17.4 miles; thereby, proportionally increasing the overall quantities of pipeline construction-related GHG emissions. As noted in Section 4.4.4, construction GHG emissions due to the natural gas pipeline comprise about one percent of the overall Project GHG emissions, so the additional pipeline construction would add a very minor contribution to overall Project GHG emissions. Because the same level of oil field operations would occur under the Natural Gas Pipeline Reroute Alternative, as with the proposed Project, no reduction in emissions related to natural gas usage would occur. **Under this Alternative, Project-related emissions and the impact determinations would remain the same as identified in Section 4.4.4 and the same mitigation measures would be required.**

Cultural/Historic Resources

Impact CULT-1: The proposed Project may cause a substantial adverse change in the significance of a historical resource, unique archaeological resource, or tribal cultural resource.

The Natural Gas Pipeline Reroute Alternative would reduce the potential of inadvertent discovery and impacts to significant historical resources, unique archaeological resources, and tribal cultural resources by virtue of avoiding the historic town of Orcutt, resource SCGP-1, and associated historic-aged built environment and archaeological resources. However, the Natural Gas Pipeline Reroute Alternative could introduce new potential for inadvertent discovery or permanent/temporary impacts in areas of undisturbed Holocene sediments along its 17.4-mile alignment. Because sensitive areas for buried resources remain within the Natural Gas Pipeline Reroute Alternative area, **the impact determinations would remain the same as identified in Section 4.5.4.3 (Class II) and the same mitigation measures would be required.**

Impact CULT-2: The proposed Project could damage human remains during ground disturbing activities occurring in the Project site.

Potential impacts to human remains would be potentially greater than under the proposed Project due to the 3.4-mile increased length of the natural gas pipeline. **The Natural Gas Pipeline Reroute Alternative impact determination would remain the same as identified in Section 4.5.4 for the proposed Project natural gas pipeline (Class II), and the same mitigation measure would be required.**

Impact CULT-3: The proposed Project may result in a significant impact to paleontological resources due to the direct or indirect destruction of a unique paleontological resource or site located in the Project site.

Potential impacts to paleontological resources would be greater than under the proposed Project due to the 3.4-mile increased length of the natural gas pipeline. **The Natural Gas Pipeline Reroute Alternative impact determination would remain the same as identified in Section 4.5.4 for the proposed Project natural gas pipeline (Class II), and the same mitigation measure would be required.**

Geologic Processes/Geologic Hazards

Impact GEO-1: Seismically induced ground shaking, Project induced ground shaking, or seismically induced slope failure could cause damage to Project structures or result in injury or death to people.

The Natural Gas Pipeline Reroute Alternative is approximately 3.4 miles longer than the proposed Project pipeline and traverses approximately 6.5 miles of undeveloped gently sloping hills versus being totally within developed roads like the proposed Project. The potential for damage due to seismic shaking (Impact GEO-1) is increased for both potential shaking damage to the pipeline and for seismically induced landslides due to the increased length and route through the hills. However, **Impact GEO-1 would be less than significant (Class III) given implementation of regulatory requirements during design and construction.**

Impact GEO-2: Slope failures, such as landslides, could be triggered by Project construction.

As noted in Impact GEO-1, the Natural Gas Pipeline Reroute Alternative route is 3.4 miles longer than the proposed route and crosses about 6.5 miles of grass and brush covered and oil field developed gently sloping hills. Impact GEO-2 would be significantly increased as excavation for construction of the natural gas pipeline through these hills could potentially trigger slope failures. Impact GEO-2, would however, **Impact GEO-2 would be less than significant (Class III) given implementation of regulatory requirements during design and construction.**

Impact GEO-3: Construction and operation of the Project could trigger or accelerate soil erosion.

Impact GEO-3 would be increased for the Natural Gas Pipeline Reroute Alternative due to the increased amount of excavation required by the increased length and route crossing undeveloped hills. As with the proposed Project, **Impact GEO-3 would be less than significant (Class III) given implementation of regulatory requirements during design and construction.**

Impact GEO-4: Expose people or structures to potential risk of loss or injury where expansive or other unsuitable soils are present.

The potential to encounter expansive or unsuitable soils (Impact GEO-4) along the Natural Gas Pipeline Reroute Alternative alignment is slightly increased due to the increased length of the Alternative route. Although most of the soils underlying the Natural Gas Pipeline Reroute Alternative alignment have low expansive potential, some of the soils have moderate expansion potential. In addition, some of the soils along the route have low to high corrosion potential. As with the proposed Project, soils excavated from the natural gas pipeline trench would either be reused as backfill or disposed offsite at an approved facility if deemed unsuitable for backfill, and clean engineered fill would be imported as needed for backfill. **Implementation of MM GEO-1 would reduce the potential that unsuitable soils would cause damage to the natural gas pipeline to less than significant with mitigation. (Class II)**

Impact GEO-5: Soils incapable of supporting septic system.

There would be no impact related to Impact GEO-5 as the Natural Gas Pipeline Reroute Alternative does not include any restrooms or other wastewater disposal facilities. Therefore, there would be no impact related to soils incapable of supporting a septic system.

Impact GEO-6: Encountering contaminated soils during construction.

Impact GEO-6 would likely be increased due to the increased length of pipeline excavation in areas of oil field development and adjacent to agricultural land under the Natural Gas Pipeline Reroute alternative. A review of the GeoTracker website (SWRCB, 2018) indicates no large quantity hazardous material users or known contaminated sites on or immediately adjacent to the pipeline alignment. However, several known petroleum and oil field related contaminated sites are located within a mile of the Natural Gas Pipeline Reroute Alternative alignment (SWRCB, 2018). Unknown contamination could be encountered anywhere along the Natural Gas Pipeline Reroute Alternative alignment; however, it is very likely that petroleum contaminated soil will be encountered where the pipeline crosses existing oil fields. Petroleum-hydrocarbon containing soils with low levels of contamination may qualify for use under the beneficial reuse program as road sub-base, road base, and/or final road surfaces associated with project activities. **However, as with the proposed Project natural gas pipeline, implementation of MM GEO-2 is required to reduce the impact to less than significant with mitigation (Class II).**

Impact GEO-7: Surface fault rupture could cause damage to Project structures or result in injury or death to people.

Impacts related to damage from surface fault rupture would be increased under the Natural Gas Pipeline Reroute Alternative with two crossing of potentially active faults compared to one. Despite the alignment change, the Natural Gas Pipeline Reroute Alternative still crosses the potentially active Casmalia fault; under this Alternative the pipeline crosses the Casmalia fault just south of the Highways 135 and 1 interchange instead of approximately 4.1 miles north of the Highways 135 and 101 interchange. Additionally, this alignment crosses the northern mapped trace of the Los Alamos fault of the Los Alamos-Baseline fault zone approximately 900 feet east of the Casmalia fault along Highway 135. Where the pipeline crosses the Los Alamos fault, it is mapped as potentially active; note that an approximately 3.1-mile section of the fault near Highway 101, about 6.1 miles southeast of where the pipeline crosses the fault is mapped as active and is Alquist-Priolo zoned. **As with the proposed Project natural gas pipeline, implementation MM GEO-3 is required to reduce the impact to less than significant impact with mitigation (Class II).**

Impacts within the proposed oil field redevelopment site and along the 115 kV powerline remain unchanged, as there is no change to these components under this Alternative.

Hazardous Materials/Risk of Upset

Impact RISK-1: The proposed Project could generate risks to public safety by exposing the public to produced gas releases from the oil field gathering pipelines, and gas treatment plant.

The Natural Gas Pipeline Reroute Alternative pertains to the natural gas pipeline, so it would not affect produced gas compared to the proposed Project. Therefore, **the resultant hazards from a produced gas release discussed under Impact RISK-1 for the Natural Gas Pipeline Reroute Alternative would not be affected.**

Impact RISK-2: The proposed Project could generate risks to public safety by exposing the public to hazards from truck transport of light crude oil (LCO) and blended crude oil product.

The Natural Gas Pipeline Reroute Alternative pertains to the natural gas pipeline, so would not affect the overall level of oil production and associated truck transport compared to the proposed Project. Therefore, **the resultant hazards from truck transport discussed under Impact RISK-2 for the Natural Gas Pipeline Reroute Alternative would not be affected.**

Impact RISK-3: The proposed Project could generate risks to public safety by exposing the public to hazards from releases of natural gas from the SoCal Gas natural gas pipeline.

An alternative natural gas pipeline alignment was developed that would avoid the community of Orcutt, and associated population centers. The overall length of Natural Gas Pipeline Reroute Alternative would be approximately 17.4 miles, 3.4 miles longer than the proposed route. Land uses along the Alternative route include existing oil and gas development, open space, and agriculture and vineyards. Therefore, the Natural Gas Pipeline Reroute Alternative would traverse much less densely populated lands than the proposed alignment and avoid sensitive land uses such as schools and churches. By routing the natural gas pipeline farther from population centers and sensitive land uses, the consequences to the public in the event of upset or a pipeline leak would be reduced in comparison to the proposed Project. **Therefore, as with the proposed Project natural gas pipeline, Impact RISK-3 for the Natural Gas Pipeline Reroute Alternative would be less than significant (Class III).**

Impact HAZ-1: Release of Hazardous Materials during Construction, including Well Drilling.

Although the Natural Gas Pipeline Reroute Alternative route would be approximately 3.4 miles longer than the proposed Project, all construction and handling of hazardous materials would be conducted in accordance with best management practices including secondary containment and proper storage of materials in accordance with federal, State, and local codes and standards. **Therefore, the Natural Gas Pipeline Reroute Alternative impact determination would remain the same as identified in Section 4.7.4 for the proposed Project natural gas pipeline (Class II), and the same regulatory requirements would apply.**

Impact HAZ-2: Release of Hazardous Materials during Operations and Maintenance.

The Natural Gas Pipeline Reroute Alternative pertains to the natural gas pipeline, so would not affect the overall level of oil production or operations compared to the proposed Project. Therefore, the potential

for a release of hazardous materials during operations and maintenance of the oil field under the Natural Gas Pipeline Reroute Alternative would be the same as the proposed Project.

Although the Natural Gas Pipeline Reroute Alternative would be approximately 3.4 miles longer than the proposed Project, it would be located in a less populated area, which could reduce the potential for an accidental release during excavation by an outside party. **Overall the Natural Gas Pipeline Reroute Alternative impact determination would remain the same as identified in Section 4.7.4 for the proposed Project natural gas pipeline (Class III), and the same regulatory requirements would apply. Given the proposed design, as well as regulatory oversight as discussed above, no additional mitigation measures are required.**

Impact FIRE-1: Introduction of Development into an Existing High Fire Hazard Area

Impact FIRE-2: Introduction of Development into an Area without Adequate Water Pressure, Fire Hydrants, or Adequate Access for Fire Fighting

Impact FIRE-3: Introduction of Development that will Hamper Fire Prevention Techniques such as Controlled Burns or Backfiring in High Fire Hazard Areas.

Impact FIRE-4: Development of Structures beyond Safe Fire Department Response Time.

Natural gas pipeline construction would include the use of welding equipment, and construction equipment and vehicles, which have the potential to be ignition sources. Pipeline operations could also present a fire hazard under upset conditions. Similar to the proposed Project, the construction of the Natural Gas Pipeline Reroute Alternative would introduce these sources of ignition within high fire hazard areas. **The Natural Gas Pipeline Reroute Alternative impact determination would remain the same as identified in Section 4.7.4 for the proposed Project natural gas pipeline (Class II), and the same mitigation measure would apply.**

Noise

Impact NOISE-1: Construction Noise

As shown on Figure 2-25, the Natural Gas Pipeline Reroute Alternative, would travel southwest from the Aera Central Processing Facility, then south to parallel ERG's existing system, as well as ERG's natural gas pipeline proposed for the nearby ERG West Cat Canyon Revitalization Plan for approximately 6.5 miles south to Highway 135 (see Section 3, Cumulative Scenario). From there, the Alternative would continue beyond the endpoint of ERG's proposed pipeline by turning west to parallel Highway 135 and an existing SoCalGas distribution pipeline for approximately 4.7 miles. The Alternative alignment would turn north-northwest to parallel an existing SoCalGas transmission pipeline for 6.2 miles to interconnect at the Divide Station on Graciosa Road. The overall length of Natural Gas Pipeline Reroute Alternative would be approximately 17.4 miles, 3.4 miles longer than the proposed route.

Land uses along the Alternative route include existing oil and gas development, open space, and agriculture and vineyards. Therefore, this Alternative would significantly reduce the number of sensitive receptors temporarily affected by construction noise associated with natural gas pipeline construction under the proposed Project. The pipeline would no longer be constructed in existing public roadways that traverse residential areas, including through the Community of Orcutt. **Therefore, temporary noise impacts associated with construction of the natural gas pipeline would be greatly reduced under the Natural Gas Pipeline Reroute Alternative when compared to the proposed Project. However, temporary construction noise would still occur and proposed MM NOISE-1 would be required to reduce temporary**

construction noise and MM NOISE-3 (for cumulative impacts) would be required to result in less than significant construction noise impacts (Class II).

Impact NOISE-2: Operational Noise

Once constructed, the Natural Gas Pipeline Reroute Alternative would generate identical operational noise as the proposed Project natural gas pipeline which is less than significant impact (Class III).

Impact NOISE-3: Vibration

Land uses along the Natural Gas Pipeline Reroute Alternative route include existing oil and gas development, open space, and agriculture and vineyards. Therefore, this Alternative would significantly reduce the number of sensitive receptors temporarily affected by construction vibration associated with natural gas pipeline construction under the proposed Project. However, vibration from all other sources would be identical to the proposed Project. **Because perceivable vibration from proposed Project natural gas pipeline activities would not be felt at any receptor, temporary vibration from construction is considered less than significant (Class III).** Once operational, the only vibration source would be maintenance activities, which would likely generate vibration levels less than those generated during construction. **Vibration impacts from maintenance would be less than significant (Class III).**

Surface/Groundwater

Surface Water

Impact SGW-1: A rupture or leak from oil production facilities, pipelines, or transport trucks has the potential to result in a substantial adverse effect on surface or groundwater quality.

This impact addresses leaks from oil production facilities, pipelines, or transport trucks, and **does not apply to the natural gas pipeline reroute alternative.**

Impact SGW-2: The proposed Project construction and routine operations have the potential to violate water quality standards or waste discharge requirements, or otherwise degrade water quality.

Water quality impacts for the construction of the Natural Gas Pipeline Reroute Alternative are as described for the proposed Project pipeline. However, the Alternative reroute mostly avoids the Santa Maria River watershed, including Bradley Canyon Creek, Quail Canyon Creek, Orcutt Creek, Graciosa Canyon Creek, and tributaries. Instead, the Natural Gas Pipeline Reroute Alternative is mostly within the San Antonio Creek watershed and crosses San Antonio Creek, impaired for ammonia, boron, chloride, chlopyrifos, E. coli, fecal coliform, low dissolved oxygen, nitrogen, nitrate, and sodium. In addition, the Natural Gas Pipeline Reroute Alternative is 17.4 miles in length instead of 14 for the proposed Project, so construction impacts would be increased by approximately 25 percent. Except for being mostly in a different watershed and longer, the Natural Gas Pipeline Reroute Alternative impacts are the same as for the proposed Project. **Mitigation and impact classification (Class II) are the same as for the proposed Project natural gas pipeline.**

Impact SGW-3: The proposed Project would place within a watercourse or flood hazard area structures which would impede or redirect flood flows, or otherwise alter the existing drainage pattern of the site or area, including through land disturbance or the alteration of the course of a stream or river, in a manner which would result in erosion, siltation, or mudflow.

Except for being mostly in a different watershed and 25 percent longer, the Natural Gas Pipeline Reroute Alternative impacts are the same as for the proposed Project. **Mitigation and impact classification (Class II) are the same as for the proposed Project natural gas pipeline.**

Impact SGW-4: The proposed Project would increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site, create or contribute to runoff water which would exceed the capacity of existing or planned stormwater drainage systems, divert or obstruct flow in a manner that would induce or exacerbate flooding, or otherwise contribute to flood-related damage, on- or off-site.

Except for being mostly in a different watershed and longer, the Natural Gas Pipeline Reroute Alternative impacts are the same as for the proposed Project. **Mitigation and impact classification (Class II) are the same as for the proposed Project natural gas pipeline.**

Groundwater

Impact SGW-5: The proposed Project cyclic steam or steam flooding injected under pressure to enhance oil recovery in oil-bearing formations or injection of produced water/brine could adversely affect groundwater quality.

The Natural Gas Pipeline Reroute Alternative does not change the amount of oil well drilling, high TDS groundwater extraction, steam injection, or brine/wastewater disposal under the proposed Project. Impacts would remain the same as discussed in the respective section.

Impact SGW-6: Potential for the proposed Project's fresh water usage to exceed the threshold of significance for the Santa Maria Groundwater Basin.

The Natural Gas Pipeline Reroute Alternative is 3.4 miles longer pipeline than the proposed Project, an increase of about 25 percent. It is reasonable to assume there would be an increase of 25 percent of fresh water used for this Alternative, although the overall quantity of water required for dust control and compaction is small (less than 500 gallons per day), as well as hydrostatic testing (150,000 gallons total). **There would be a negligible increase in the amount of fresh water used for the Natural Gas Pipeline Reroute Alternative and Impact SGW-6 would remain less than significant (Class III).**

Traffic/Transportation

Impact TR-1: Construction trips could increase the volume to capacity (V/C) ratio for relevant roadway segments.

As shown on Figure 2-25, the Natural Gas Pipeline Reroute Alternative would travel southwest from the Aera Central Processing Facility, then south to parallel ERG's existing system, as well as ERG's natural gas pipeline proposed for the nearby ERG West Cat Canyon Revitalization Plan for approximately 6.5 miles south to Highway 135 (see Section 3 of the EIR, Cumulative Scenario). From there, the Alternative would continue beyond the endpoint of ERG's proposed pipeline by turning west to parallel Highway 135 and an existing SoCalGas distribution pipeline for approximately 4.7 miles. The Alternative alignment would turn

north-northwest to parallel an existing SoCalGas transmission pipeline for 6.2 miles to interconnect at the Divide Station on Graciosa Road. The overall length of Natural Gas Pipeline Reroute Alternative would be approximately 17.4 miles, 3.4 miles longer than the proposed route.

Land uses along the Alternative route include existing oil and gas development, open space, and agriculture and vineyards. Therefore, this Alternative would significantly reduce the number of roadways affected by temporary lane closures necessary for natural gas pipeline construction under the proposed Project. The pipeline would no longer be constructed in existing public roadways that traverse populated areas, including through the community of Orcutt. Therefore, temporary impacts from lane closures associated with construction of the natural gas pipeline would be greatly reduced under the Natural Gas Pipeline Reroute Alternative when compared to the proposed Project. However, **temporary construction trips and minor roadway/lane closures would still occur and proposed MM TR-3 would be required to reduce temporary construction effects on the circulation system to result in less than significant impacts (Class II).**

Impact TR-2: Operational trips could increase the volume to capacity (V/C) ratio for relevant roadway segments and intersections.

Natural Gas Pipeline Reroute Alternative operational trips due to occasional maintenance would be comparable to the proposed Project natural gas pipeline (Class III).

Impact TR-3: Project-related heavy truck trips could impose safety hazards.

The Natural Gas Pipeline Reroute Alternative would reduce the number of roadways affected by heavy trucks necessary for natural gas pipeline construction, as well as avoid populated areas in comparison to the proposed Project. The pipeline would no longer be constructed in existing public roadways that traverse populated areas, including through the community of Orcutt; thereby, minimizing associated safety hazards. **Potential Project-related safety impacts from Project vehicle trips are considered less than significant with the implementation of MM TR-1 (Class II).**

Impact TR-4: Project-related heavy truck trips could degrade public roadway conditions.

Natural Gas Pipeline Reroute Alternative operational trips due to occasional maintenance would be comparable to the proposed Project natural gas pipeline which would result in negligible roadway degradation (Class III).

5.3.6 Alternatives Comparison Summary

Table 5-6 provides a comparison of each of the five Alternatives to the proposed Project for each of the Class I and II impacts based on the discussion above. Section 5.4 summarizes this comparison and presents the Environmentally Superior Alternative.

Table 5-6. Alternatives Comparison

SIGNIFICANT AND UNAVOIDABLE (CLASS I) IMPACTS	
BIOLOGICAL RESOURCES	
Impact BIO-1: An accidental rupture or leak from oil production facilities, pipelines, or transport trucks has the potential to result in a substantial adverse effect on native species and habitats, special-status species and their habitats, and sensitive vegetation communities.	
Proposed Project	Unanticipated direct effects to special-status species, habitat, vegetation communities, and jurisdictional resources (e.g., drainages) both in and outside of the development footprint could occur during the operation phase in the event of a light crude oil, produced oil or water, or other hazardous material spill from proposed Project transport trucks, pipelines, or oil production facilities.
Alternative 1 – Reduced Footprint Alternative	Because the number of active wells would remain the same as the proposed Project, the potential sizes of spills from pipelines and corresponding impacts to biological resources would also be the same.
Alternative 2 – Oak Avoidance Alternative	Because the number of active wells would remain the same as the proposed Project, the potential sizes of spills from pipelines and corresponding impacts to biological resources would also be the same.
Alternative 3 – Phillips 66 Pipeline Alternative	The Phillips 66 Pipeline Alternative would reduce the risk of accidental spills from a trucking accident by 33% since laden truck trips would be reduced from 116 to 78, but spills due to a leak or rupture in the Phillips 66 Pipeline Alternative connection pipeline could also occur (see also Impact RISK-2 below). The impact consequences for contaminating biological resources through accidental release caused by pipeline rupture or trucking accident is the same as described for the proposed Project.
Alternative 4 – Plains Pipeline Alternative	The Plains Pipeline Alternative would reduce the risk of accidental spills from a trucking accident by 35% since laden truck trips would be reduced from 116 to 75, but spills due to a leak or rupture in the Plains Pipeline Alternative connection pipeline could also occur (see also Impact RISK-2 below). The impact consequences for contaminating biological resources through accidental release caused by pipeline rupture or trucking accident is the same as described for the proposed Project.
Alternative 5 – Natural Gas Pipeline Reroute Alternative	N/A – As with the proposed Project natural gas pipeline, the Natural Gas Pipeline Reroute Alternative would not affect the oil spill potential associated with oil field operations and crude oil transport.
Conclusion (Preferred alternative for specific impact)	<p>Proposed Project, Reduced Footprint Alternative, and Oak Avoidance Alternative would have identical impacts related to accidental spills given the same maximum crude oil production volumes.</p> <p>The Plains Pipeline Alternative would reduce the risk of accidental spills from a trucking accident by 35% since laden truck trips would be reduced from 116 to 75 (compared to 33% for the Phillips 66 Pipeline Alternative), The connection pipelines for the Plains and Phillips 66 Pipeline Alternative would introduce additional spill risk, but given their short lengths 6.0 and 4.5 miles respectively, the increased spill risk is nominal. See Impact RISK-2 below.</p> <p>Impact BIO-1 would still be considered significant and unavoidable (Class I). Same mitigation and regulatory requirements would be required.</p>

Table 5-6. Alternatives Comparison

Impact BIO-4: Project construction has the potential to result in a net loss or permanent change in the extent or functional value of sensitive vegetation communities and loss of individual oak trees. (Oak woodland and individual oaks)	
Proposed Project	The proposed Project would remove approximately 1,500 oak trees with a diameter at breast height (dbh) of six (6) inches or larger, primarily located within the 29.2 acres of oak woodland that would be directly affected.
Alternative 1 – Reduced Footprint Alternative	Total impacts to oak woodland would be reduced by 21.7 acres or 74.3 percent. This Alternative would reduce oak removals from 1,500 to 735 coast live oak trees, a 51% reduction.
Alternative 2 – Oak Avoidance Alternative	Total impacts to oak woodland would be reduced by 25.8 acres or 88.4 percent. This Alternative would reduce oak removals from 1,500 to 281 coast live oak trees, a 81% reduction.
Alternative 3 – Phillips 66 Pipeline Alternative	Likely to be greater impacts to oaks and oak woodlands compared to the proposed Project. The Phillips 66 Pipeline Alternative alignment would require oak woodland disturbance to install the transport pipeline.
Alternative 4 – Plains Pipeline Alternative	May be greater impacts to oaks and oak woodlands compared to the proposed Project. The Plains Pipeline Alternative alignment is primarily within existing roads, but may require impacts to adjacent oaks.
Alternative 5 – Natural Gas Pipeline Reroute Alternative	Likely to be greater impacts to oaks and oak woodlands compared to the proposed Project. The Natural Gas Pipeline Reroute Alternative alignment would cross open space in several locations, resulting in greater impacts to vegetation and wildlife habitat compared with the proposed Project, which would be entirely within road shoulders.
Conclusion (Preferred alternative for specific impact)	<p>Oak Avoidance Alternative is preferred over the proposed Project and the Reduced Footprint Alternative as it would impact the least amount of oak woodland and the fewest individual oak trees (81% reduction).</p> <p>Proposed Project preferred over Phillips 66 Pipeline Alternative, Plains Pipeline Alternative, and Natural Gas Pipeline Reroute Alternative given increased potential of those alternatives to impact additional oaks.</p> <p>Impacts to oaks and oak woodlands under Impact BIO-4 would still be considered significant and unavoidable (Class I). Same mitigation and regulatory requirements would be required.</p>

Table 5-6. Alternatives Comparison

SURFACE/GROUNDWATER RESOURCES	
Impact SGW-1: An accidental rupture or leak from oil production facilities, pipelines, or transport trucks has the potential to result in a substantial adverse effect on surface or groundwater quality.	
Proposed Project	Impacts to surface and/or groundwater resources from an oil or other hazardous material spill (including seep/surface expression) associated with the proposed Project would be significant, should they occur.
Alternative 1 – Reduced Footprint Alternative	Reduced Footprint Alternative would have the same number of wells as the proposed Project. Consequently, Impact SGW-1 is approximately the same as described for the proposed Project.
Alternative 2 – Oak Avoidance Alternative	Oak Avoidance Alternative would have the same number of wells as the proposed Project. Consequently, Impact SGW-1 is approximately the same as described for the proposed Project.
Alternative 3 – Phillips 66 Pipeline Alternative	The Phillips 66 Pipeline Alternative would reduce the risk of accidental spills from a trucking accident by 33% since laden truck trips would be reduced from 116 to 78, but spills due to a leak or rupture in the Phillips 66 Pipeline Alternative connection pipeline could also occur (see also Impact RISK-2 below). The impact consequence for contaminating surface water through accidental release caused by pipeline rupture or trucking accident is the same as described for the proposed Project.
Alternative 4 – Plains Pipeline Alternative	The Plains Pipeline Alternative would reduce the risk of accidental spills from a trucking accident by 35% since laden truck trips would be reduced from 116 to 75, but spills due to a leak or rupture in the Phillips 66 Pipeline Alternative connection pipeline could also occur (see also Impact RISK-2 below). The impact consequence for contaminating surface water through accidental release caused by pipeline rupture or trucking accident is the same as described for the proposed Project.
Alternative 5 – Natural Gas Pipeline Reroute Alternative	N/A – As with the proposed Project natural gas pipeline, the Natural Gas Pipeline Reroute Alternative would not affect the oil spill potential associated with oil field operations and crude oil transport.
Conclusion (Preferred alternative for specific impact)	<p>The proposed Project, Reduced Footprint Alternative, and Oak Avoidance Alternative would have the same number of wells; therefore, potential impacts under Impact SGW-1 would be approximately the same.</p> <p>The Plains Pipeline Alternative would reduce the risk of accidental spills from a trucking accident by 35% since laden truck trips would be reduced from 116 to 75 (compared to 33% for the Phillips 66 Pipeline Alternative). The connection pipelines for the Plains and Phillips 66 Pipeline Alternative would introduce additional spill risk, but given their short lengths 6.0 and 4.5 miles respectively, the increased spill risk is nominal. See Impact RISK-2 below. Impacts under Impact SGW-1 would still be considered significant and unavoidable (Class I) for the proposed Project and Alternatives 1 through 4. Same mitigation and regulatory requirements would be required.</p>

Table 5-6. Alternatives Comparison

SIGNIFICANT AND MITIGABLE (CLASS II) IMPACTS	
AIR QUALITY	
Impact AQ-1: Construction emissions could result in a considerable net increase of pollutants that would violate air quality standards or contribute substantially to an existing or projected air quality violation.	
Proposed Project	Construction-phase emissions would require mitigation for onsite dust control and reducing exhaust emissions from the construction fleet.
Alternative 1 – Reduced Footprint Alternative	Construction emissions would slightly increase due to the increased well drilling activities would warrant a greater level of equipment use resulting in a greater level of air pollutant emissions during construction.
Alternative 2 – Oak Avoidance Alternative	Construction emissions would slightly increase due to the increased well drilling activities would warrant a greater level of equipment use resulting in a greater level of air pollutant emissions during construction.
Alternative 3 – Phillips 66 Pipeline Alternative	A relatively minor increase in construction-phase air pollutant emissions would occur for the construction of the pipeline connection.
Alternative 4 – Plains Pipeline Alternative	A relatively minor increase in construction-phase air pollutant emissions would occur for the construction of the pipeline connection and intra-field piping.
Alternative 5 – Natural Gas Pipeline Reroute Alternative	A relatively minor increase in construction-phase air pollutant emissions would occur for the construction of the longer Natural Gas Pipeline Reroute Alternative pipeline alignment (17.4 vs 14 miles).
Conclusion (Preferred alternative for specific impact)	The proposed Project would have lower levels of construction-related emissions than the alternatives.
Impact AQ-2: Operational emissions could result in a considerable net increase of pollutants that would violate air quality standards or contribute substantially to an existing or projected air quality violation.	
Proposed Project	Operation-phase air pollutant emissions would require mitigation in the form of performance standards for O&M fleet engines and tanker truck engines and through emission reduction credits for proposed emissions increases.
Alternative 1 – Reduced Footprint Alternative	Operation-phase air pollutant emissions would likely increase because wells under this Alternative could require more effort to drill, operate, and maintain.
Alternative 2 – Oak Avoidance Alternative	Operation-phase air pollutant emissions would likely increase because wells under this Alternative could require more effort to drill, operate, and maintain.
Alternative 3 – Phillips 66 Pipeline Alternative	A decrease in operation-phase emissions would occur by reducing crude oil tanker truck trips from 190 to 156 per day under the Phillips 66 Pipeline Alternative.
Alternative 4 – Plains Pipeline Alternative	A decrease in operation-phase emissions would occur by reducing crude oil tanker truck trips from 190 to 150 per day under the Plains Pipeline Alternative, although additional truck trips might be required for disposal of BS&W solids.
Alternative 5 – Natural Gas Pipeline Reroute Alternative	No significant change in operation-phase emissions would occur with this Alternative in comparison to the proposed Project natural gas pipeline.
Conclusion (Preferred alternative for specific impact)	<p>The proposed Project could have slightly lower operation-phase air pollutant emissions versus the Reduced Footprint Alternative and Oak Avoidance Alternative.</p> <p>The Phillips 66 Pipeline Alternative offers the greatest reduction in operation-phase air pollutant emissions over the life of the Project, in comparison to the Plains Pipeline Alternative, since Plains Pipeline Alternative requires the operations of the BS&W processing facilities and possibly additional trucking for solids disposal. However, both the Phillips 66 Pipeline Alternative and the Plains Pipeline Alternative would reduce proposed Project mobile source emissions related to the trucking of crude by about 20%.</p>

Table 5-6. Alternatives Comparison

Impact AQ-5: Proposed Project activities could conflict with or obstruct implementation of the applicable air quality management plans.	
Proposed Project	Proposed Project air pollutant emissions increases would require mitigation in the form of emission reduction credits to avoid the potential to conflict with or obstruct implementation of the applicable air quality management plans.
Alternative 1 – Reduced Footprint Alternative	Operation-phase air pollutant emissions could slightly increase although, as with the proposed Project, mitigation would avoid the potential to conflict with or obstruct implementation of the applicable air quality management plans.
Alternative 2 – Oak Avoidance Alternative	Operation-phase air pollutant emissions could slightly increase although, as with the proposed Project, mitigation would avoid the potential to conflict with or obstruct implementation of the applicable air quality management plans.
Alternative 3 – Phillips 66 Pipeline Alternative	A decrease in operation-phase emissions would occur by reducing crude oil tanker truck trips from 190 to 156 per day under the Phillips 66 Pipeline Alternative. As with the proposed Project, mitigation would avoid the potential to conflict with or obstruct implementation of the applicable air quality management plans.
Alternative 4 – Plains Pipeline Alternative	A decrease in operation-phase emissions would occur by reducing crude oil tanker truck trips from 190 to 150 per day under the Plains Pipeline Alternative, although additional truck trips might be required for disposal of BS&W solids. As with the proposed Project, mitigation would avoid the potential to conflict with or obstruct implementation of the applicable air quality management plans.
Alternative 5 – Natural Gas Pipeline Reroute Alternative	No reduction or increase in operation-phase emissions would occur with this Alternative.
Conclusion (Preferred alternative for specific impact)	<p>The proposed Project could have lower levels operation-phase air pollutant emissions versus the Reduced Footprint Alternative and Oak Avoidance Alternative.</p> <p>The Phillips 66 Pipeline Alternative offers the greatest reduction in operation-phase air pollutant emissions over the life of the Project, in comparison to the Plains Pipeline Alternative, since the Plains Pipeline Alternative requires the operations of the BS&W processing facilities and possibly additional trucking for solids disposal. However, both the Phillips 66 Pipeline Alternative and the Plains Pipeline Alternative would reduce mobile source emissions related to the trucking of crude by about 20%.</p>

Table 5-6. Alternatives Comparison

BIOLOGICAL RESOURCES	
Impact BIO-2: Project construction and routine operations have the potential for degradation and loss of habitat for listed and other special-status species. See Impact BIO-1 for accidental oil spill impacts.	
Proposed Project	<p>The proposed Project would permanently impact approximately 201.4 acres of native and non-native vegetation that could provide habitat for special-status species, including listed species. Temporary impacts would total approximately 103.3 acres, with an additional 30.5 acres impacted from fuel zone management. Proposed Project impacts in areas that are already disturbed/ruderal (66.9 acres; 20 percent of total ground disturbance) would not directly affect special-status species habitat, but indirect impacts during construction and operation could result in degradation of nearby habitats.</p> <p>The CTS reproductive value of habitats impacted by the proposed Project would be 31,443 units. The proposed Project would result in a total of 185.48 acres of impacts that would not impede CTS migration from pond SISQ-19 (temporarily disturbed areas and roadways/pads). A total of 4.32 acres of impacts that would impede migration (permanent above ground structures) would occur.</p> <p>The natural gas pipeline is within one mile of a known CTS breeding pond located near East Clark Avenue and Dominion Road, and the work area would be within the dispersal distance from this pond. In addition, the proposed 1-acre Staging Area B for the gas pipeline would be within designated CTS critical habitat on the north side of Clark Avenue west of Dominion Road.</p>
Alternative 1 – Reduced Footprint Alternative	<p>The Reduced Footprint Alternative would reduce permanent impacts to native and nonnative vegetation by 59.7 acres, or 44 percent compared with the proposed Project.</p> <p>The CTS reproductive value of the Reduced Footprint Alternative impacts would be 14,167 units, compared with 31,443 units for the proposed Project (a 55 percent reduction). The Reduced Footprint Alternative would result in a total of 93.77 acres of impacts that would not impede CTS migration from pond SISQ-19 (temporarily disturbed areas and roadways/pads), compared with 185.48 acres for the proposed Project. A total of 1.12 acres of impacts that would impede migration (permanent above ground structures) would occur, compared with 4.32 acres for the proposed Project.</p>
Alternative 2 – Oak Avoidance Alternative	<p>The Oak Avoidance Alternative would reduce permanent impacts to native and nonnative vegetation by 80.5 acres, or 59 percent compared with the proposed Project.</p> <p>The CTS reproductive value of Oak Avoidance Alternative impacts would be 11,865 units, compared with 31,443 units for the proposed Project (a 62 percent reduction). The Oak Avoidance Alternative would result in a total of 71.77 acres of impacts that would not impede CTS migration from pond SISQ-19 (temporarily disturbed areas and roadways/pads), compared with 185.48 acres for the proposed Project. A total of 0.88 acre of impacts that would impede migration (permanent above ground structures) would occur, compared with 4.32 acres for the proposed Project.</p>
Alternative 3 – Phillips 66 Pipeline Alternative	<p>The Phillips 66 Pipeline Alternative connection pipeline alignment would increase temporary impacts to native and nonnative vegetation compared with the proposed Project, potentially including listed and special-status species habitats. The Phillips 66 Pipeline Alternative alignment is within dispersal distance from several ponds that could support CTS and CRLF breeding, including a known CTS breeding pond.</p>
Alternative 4 – Plains Pipeline Alternative	<p>The majority of the Alternative connection pipeline alignment would be installed within or adjacent to paved roads with unpaved shoulders as well as agricultural land. During construction, there would be a minor increase in temporary impacts to native and nonnative vegetation from installation of the 6-mile connection pipeline. The Alternative pipeline alignment is within the dispersal distance of several agricultural ditches that could potentially support CTS or CRLF breeding.</p>

Table 5-6. Alternatives Comparison

Alternative 5 – Natural Gas Pipeline Reroute Alternative	<p>Impacts along the gas pipeline would be greater during construction because the Natural Gas Pipeline Reroute Alternative alignment would cross open space in several locations, resulting in greater impacts to vegetation and wildlife habitat compared with the proposed Project, which would be entirely within road shoulders.</p> <p>The Natural Gas Pipeline Reroute Alternative alignment is within dispersal distance from several ponds that could support CTS and CRLF breeding, although it does not cross any designated critical habitat for listed species.</p>
Conclusion (Preferred alternative for specific impact)	<p>Oak Avoidance Alternative is preferred over the proposed Project and the Reduced Footprint Alternative as it would impact the least amount of native and nonnative vegetation.</p> <p>Proposed Project preferred over Phillips 66 Pipeline Alternative, Plains Pipeline Alternative, and the Natural Gas Pipeline Reroute Alternative given increased potential of those alternatives to impact additional habitat during pipeline construction.</p> <p>Impacts to listed and special-status species habitat under Impact BIO-2 would still be considered significant, but mitigable (Class II). Same mitigation and regulatory requirements would be required.</p>
<p>Impact BIO-3: Project construction and routine operations have the potential to injure or take listed and other special-status species. See Impact BIO-1 for accidental oil spill impacts.</p>	
Proposed Project	<p>Direct and indirect impacts could occur to special-status plants, vernal pool fairy shrimp, monarch butterfly, CTS and CRLF, other special-status reptiles and amphibians, special-status and native birds, and special-status mammals on the proposed Project site during construction and operations. During operation, the 0.3-mile 115 kV overhead power line could cause bird mortality through collision or electrocution. The least Bell's vireo could breed in riparian habitats along the natural gas pipeline alignment and could be impacted during construction, if present.</p>
Alternative 1 – Reduced Footprint Alternative	<p>The Reduced Footprint Alternative would result in 115.2 acres of permanent ground disturbance compared with 201.4 acres under the proposed Project. Temporary disturbance from construction of the natural gas pipeline and power line would be the same as the proposed Project. The Reduced Footprint Alternative would have a proportionally reduced impact on listed and other special-status species compared with the proposed Project.</p>
Alternative 2 – Oak Avoidance Alternative	<p>The Oak Avoidance Alternative would result in 95.5 acres of permanent ground disturbance compared with 201.4 acres under the proposed Project. Temporary disturbance from construction of the natural gas pipeline and power line would be the same as the proposed Project. Oak Avoidance Alternative would have a proportionally reduced impact on listed and other special-status species compared with the proposed Project.</p>
Alternative 3 – Phillips 66 Pipeline Alternative	<p>During construction, the Phillips 66 Pipeline Alternative connection pipeline would be installed primarily within native and nonnative vegetation that could support special-status species. The Phillips 66 Pipeline Alternative would result in an increase in temporary ground disturbance compared with the proposed Project and therefore would proportionally increase the potential to injure or take listed or other special-status species. During operation, the reduced amount of truck traffic (laden truck trips would be reduced from 116 to 78) would decrease the Phillips 66 Pipeline Alternative's potential to take listed and other special-status species (such as CTS) as roadkill, compared with the proposed Project.</p>
Alternative 4 – Plains Pipeline Alternative	<p>During construction, the Plains Pipeline Alternative connection pipeline would be installed primarily within roads and road shoulders, resulting in a minor increase in temporary ground disturbance compared with the proposed Project and therefore would proportionally increase the potential to injure or take listed or other special-status species. During operation, the reduced amount of truck traffic (laden truck trips would be reduced from 116 to 75) would decrease the Plains Pipeline Alternative's potential to take listed and other special-status species (such as CTS) as roadkill, compared with the proposed Project.</p>
Alternative 5 – Natural Gas Pipeline Reroute Alternative	<p>Impacts along the gas pipeline would be greater during construction because the Natural Gas Pipeline Reroute Alternative alignment would cross open space in several locations. In addition, the Natural Gas Pipeline Reroute Alternative alignment is within dispersal distance from several ponds that could support CTS and CRLF breeding, although it does not cross any designated critical habitat for listed species.</p>

Table 5-6. Alternatives Comparison

<p>Conclusion (Preferred alternative for specific impact)</p>	<p>Oak Avoidance Alternative is preferred as it would result in the least amount of permanent and temporary ground disturbance.</p> <p>Construction: Proposed Project preferred over Phillips 66 Pipeline Alternative, Plains Pipeline Alternative, and Natural Gas Pipeline Reroute Alternative as it would have less temporary ground disturbance and construction activity compared with the pipeline alternatives.</p> <p>Operation: Phillips 66 Pipeline Alternative and Plains Pipeline Alternative would reduce potential for roadkill of special-status species from transport trucks than the proposed Project. The Plains Pipeline Alternative would require the fewest truck trips (150 compared with 156 for the Phillips 66 Pipeline Alternative and 190 for the proposed Project).</p> <p>Impacts to listed and special-status species under Impact BIO-3 would still be considered significant, but mitigable (Class II). Same mitigation and regulatory requirements would be required.</p>
<p>Impact BIO-4: Project construction has the potential to result in a net loss or permanent change in the extent or functional value of sensitive vegetation communities. (Riparian habitats, California walnut, and California coastal scrub)</p>	
<p>Proposed Project</p>	<p>Direct impacts to riparian vegetation at the proposed Project site would be limited to the three proposed access road crossings of Cat Canyon and Long Canyon Creeks. These crossings would temporarily impact a total of 0.17 acres of riparian vegetation, with a total of 0.11 acres of permanent impacts.</p> <p>Approximately 184.5 acres of coastal sage scrub would be removed. Of this, 96.3 acres (9.4 percent) of impacts would be permanent.</p>
<p>Alternative 1 – Reduced Footprint Alternative</p>	<p>Permanent impacts to sensitive coastal sage scrub would be reduced by 43.4 acres or 45 percent.</p>
<p>Alternative 2 – Oak Avoidance Alternative</p>	<p>Permanent impacts to sensitive coastal sage scrub would be reduced by 59.3 acres or 61.6 percent.</p>
<p>Alternative 3 – Phillips 66 Pipeline Alternative</p>	<p>The Phillips 66 Pipeline Alternative connection pipeline alignment would increase temporary impacts to native and nonnative vegetation compared with the proposed Project, potentially including sensitive habitats such as California coastal scrub and riparian vegetation.</p>
<p>Alternative 4 – Plains Pipeline Alternative</p>	<p>The majority of the Alternative connection pipeline alignment would be installed within or adjacent to paved roads with unpaved shoulders as well as agricultural land. During construction, there would be a minor increase in temporary impacts to native and nonnative vegetation from installation of the 6-mile connection pipeline.</p>
<p>Alternative 5 – Natural Gas Pipeline Reroute Alternative</p>	<p>Impacts along the gas pipeline would be greater during construction because the Natural Gas Pipeline Reroute Alternative alignment would cross open space in several locations, resulting in greater impacts to vegetation compared with the proposed Project natural gas pipeline, which would be entirely within road shoulders. No field surveys of the Natural Gas Pipeline Reroute Alternative alignment have been conducted, but sensitive vegetation types identified via desktop review and aerial imagery along the Natural Gas Pipeline Reroute Alternative route include California coastal scrub, coast live oak woodland, and wetland features potentially supporting riparian vegetation.</p>
<p>Conclusion (Preferred alternative for specific impact)</p>	<p>Oak Avoidance Alternative is preferred over the proposed Project and the Reduced Footprint Alternative as it would impact the least amount of sensitive vegetation (it would reduce impacts to coastal sage scrub by 61.6 percent).</p> <p>Proposed Project preferred over Phillips 66 Pipeline Alternative and Plains Pipeline Alternative given increased potential of those alternatives to impact sensitive vegetation due to connection pipeline construction.</p> <p>Proposed Project natural gas pipeline preferred over Natural Gas Pipeline Reroute Alternative given shorter length (14 versus 17.4 miles) and given that proposed Project pipeline is located primarily within roadbeds and their shoulders.</p> <p>Impacts to riparian habitats, California walnut, and California coastal scrub under Impact BIO-4 would still be considered significant, but mitigable (Class II). Same mitigation and regulatory requirements would be required.</p>

Table 5-6. Alternatives Comparison

Impact BIO-5: Project construction and routine operations have the potential to adversely affect waters of the U.S. and waters of the State. See Impact BIO-1 for accidental oil spill impacts.	
Proposed Project	The proposed Project would temporarily or permanently impact a total of 0.43 acres of jurisdictional wetland and riparian habitat.
Alternative 1 – Reduced Footprint Alternative	Impacts would be the same as the proposed Project.
Alternative 2 – Oak Avoidance Alternative	Impacts would be the same as the proposed Project.
Alternative 3 – Phillips 66 Pipeline Alternative	Impacts would be increased compared with the proposed Project, since the connection pipeline would cross Cat Canyon Creek and up to three additional locations that are considered waters of the United States and/or waters of the State.
Alternative 4 – Plains Pipeline Alternative	Impacts would be increased compared with the proposed Project, since the Plains Pipeline Alternative connection pipeline route intersects or runs parallel to several ephemeral drainages that are considered waters of the United States and/or waters of the State, including Long Canyon Creek, Olivera Canyon Creek, and Asphaltum Creek.
Alternative 5 – Natural Gas Pipeline Reroute Alternative	Impacts would be greater to waters of the U.S. and Waters of the State compared with the proposed Project, since the Natural Gas Pipeline Reroute Alternative would cross several creeks and canals, including San Antonio Creek and its tributaries approximately four times along Highway 135. Ephemeral pools and swales (primarily roadside ditches and culverts) as well as agricultural ditches are also present.
Conclusion (Preferred alternative for specific impact)	<p>The proposed Project, Reduced Footprint Alternative, and Oak Avoidance Alternative would have the same impacts to waters of the U.S. and waters of the State.</p> <p>The Phillips 66 Pipeline Alternative, Plains Pipeline Alternative, and Natural Gas Pipeline Reroute Alternative would have greater impacts compared to the proposed Project due to increased crossings of jurisdictional features.</p> <p>Impacts to waters of the U.S. and waters of the State under Impact BIO-5 would still be considered significant, but mitigable (Class II). Same mitigation and regulatory requirements would be required.</p>
Impact BIO-6: Project construction and routine operations have the potential to impair movement, migration, or dispersal of resident and migratory fish and wildlife species. See Impact BIO-1 for accidental oil spill impacts.	
Proposed Project	Development of wells and appurtenant facilities in the Aera East Cat Canyon Oil Field could interfere with terrestrial wildlife movement primarily during construction. During operations, proposed Project activities that could interfere with wildlife movements include vehicles traversing the area, personnel onsite for well inspection and maintenance, and access road maintenance, truck transport of light crude oil to the field and produced oil from the field, and unanticipated spills and spill response activities. During operation, the power line could have minor effects to bird movement if it results in collisions.
Alternative 1 – Reduced Footprint Alternative	The Reduced Footprint Alternative would result in 115.2 acres of permanent ground disturbance compared with 201.4 acres under the proposed Project. Temporary disturbance from construction of the natural gas pipeline and power line would be the same as the proposed Project. The Reduced Footprint Alternative would have a proportionally reduced impact on wildlife movement compared with the proposed Project.
Alternative 2 – Oak Avoidance Alternative	The Oak Avoidance Alternative would result in 95.5 acres of permanent ground disturbance compared with 201.4 acres under the proposed Project. Temporary disturbance from construction of the natural gas pipeline and power line would be the same as the proposed Project. The Oak Avoidance Alternative would have a proportionally reduced impact on wildlife movement compared with the proposed Project.
Alternative 3 – Phillips 66 Pipeline Alternative	Increased potential to impact wildlife movement during connection pipeline construction compared with the proposed Project due to the increase in construction activities and duration, and the fact that the Phillips 66 Pipeline Alternative connection pipeline would cross open space.
Alternative 4 – Plains Pipeline Alternative	Increased potential to impact wildlife movement during connection pipeline construction compared with the proposed Project due to the increase in construction activities and duration.

Table 5-6. Alternatives Comparison

Alternative 5 – Natural Gas Pipeline Reroute Alternative	Increased potential to impact wildlife movement during natural gas pipeline construction compared with the proposed Project due to the increase in length and associated increase in construction duration, and the fact that the Natural Gas Pipeline Reroute Alternative pipeline would cross open space.
Conclusion (Preferred alternative for specific impact)	<p>The Oak Avoidance Alternative is preferred to the proposed Project and the Reduced Footprint Alternative as it would result in the least amount of permanent and temporary ground disturbance, and proportionally reduced impact on wildlife movement.</p> <p>Construction: Proposed Project preferred over the Phillips 66 Pipeline Alternative, Plains Pipeline Alternative, and Natural Gas Pipeline Reroute Alternative as it would have less temporary ground disturbance and construction.</p> <p>Operation: The Phillips 66 Pipeline Alternative and Plains Pipeline Alternative would reduce potential for interference with wildlife movement due to transport truck traffic than the proposed Project. The Plains Pipeline Alternative would require the fewest truck trips (150 compared with 156 for the Phillips 66 Pipeline Alternative and 190 for the proposed Project).</p> <p>Impacts to wildlife movement under Impact BIO-6 would still be considered significant, but mitigable (Class II). Same mitigation and regulatory requirements would be required.</p>
Impact BIO-7: An unanticipated surface expression of drilling fluid at HDD crossings under Cat Canyon Creek and other drainages has the potential to result in a substantial adverse effect on native species and habitats, special-status species and their habitats, and sensitive vegetation communities.	
Proposed Project	Unanticipated direct effects to special-status species, habitat, vegetation communities, and jurisdictional resources could occur during construction of the 14-mile natural gas pipeline if surface expression of drilling fluid occurs during HDD crossings of Cat Canyon Creek and other drainages.
Alternative 1 – Reduced Footprint Alternative	The Reduced Footprint Alternative does not affect the natural gas pipeline alignment and required HDD crossings.
Alternative 2 – Oak Avoidance Alternative	The Oak Avoidance Alternative does not affect the natural gas pipeline alignment and required HDD crossings.
Alternative 3 – Phillips 66 Pipeline Alternative	Impacts could be increased compared with the proposed Project, since the connection pipeline would cross Cat Canyon Creek and up to three additional locations that are considered waters of the United States and/or waters of the State that would require HDD crossings.
Alternative 4 – Plains Pipeline Alternative	Impacts could be increased compared with the proposed Project, since the Plains Pipeline Alternative connection pipeline route intersects or runs parallel to several ephemeral drainages that are considered waters of the United States and/or waters of the State, including Long Canyon Creek, Olivera Canyon Creek, and Asphaltum Creek, and may require HDD crossings.
Alternative 5 – Natural Gas Pipeline Reroute Alternative	Increased potential to result in unanticipated surface expression of drilling fluids compared with the proposed Project, since the Natural Gas Pipeline Reroute Alternative would cross several creeks and canals, including San Antonio Creek and its tributaries approximately four times along Highway 135.
Conclusion (Preferred alternative for specific impact)	<p>The Phillips 66 Pipeline Alternative, Plains Pipeline Alternative, and Natural Gas Pipeline Reroute Alternative could have greater impacts than the proposed Project due to increased crossings of jurisdictional features requiring HDD.</p> <p>Impacts from unanticipated surface expression of drilling fluid at HDD crossings under Impact BIO-7 would still be considered significant, but mitigable (Class II). Same mitigation and regulatory requirements would be required.</p>

Table 5-6. Alternatives Comparison

CLIMATE CHANGE / GREENHOUSE GASES	
Impact GHG-1: Proposed Project emissions could generate greenhouse gas emissions (GHG) that may have a significant impact on the environment.	
<p>Proposed Project</p> <ul style="list-style-type: none"> ▪ Oil field construction & operations ▪ Power line construction ▪ Natural gas pipeline construction 	<p>Peak year GHG construction emissions are estimated at 14,746 MTCO₂e.</p> <p>Proposed Project operations GHG emissions are estimated at 302,532 MTCO₂e per year, of which 14,126 MTCO₂e are contributed due to trucking (approximately 5% of total operations emissions).</p>
<p>Alternative 1 – Reduced Footprint Alternative</p>	<p>Construction GHG emissions would be reduced given the smaller disturbance area (164 vs 305 acres).</p> <p>Although the same number of wells would be drilled under the Reduced Footprint Alternative, operations GHG emissions would likely increase given the additional test bores, drilling lengths, and greater reliance on horizontal drilling. Trucking GHG would not change.</p>
<p>Alternative 2 – Oak Avoidance Alternative</p>	<p>Construction GHG emissions would be reduced given the smaller disturbance area (136 vs 305 acres).</p> <p>Although the same number of wells would be drilled under the Reduced Footprint Alternative, operations GHG emissions would likely increase given the additional test bores, drilling lengths, and greater reliance on horizontal drilling. Trucking GHG would not change.</p>
<p>Alternative 3 – Phillips 66 Pipeline Alternative</p>	<p>Additional GHG emissions would be generated due to the construction of the 4.5 mile connection pipeline, in comparison to the proposed Project.</p> <p>Proposed Project crude oil truck trips would be reduced from 190 to 156 under the Phillips 66 Pipeline Alternative (an approximate 1.2% decrease in proposed Project operations emissions).</p>
<p>Alternative 4 – Plains Pipeline Alternative</p>	<p>Additional GHG emissions would be generated due to the construction of the 6-mile connection pipeline and construction of the BS&W processing facilities and 1.5 miles of intra-field piping.</p> <p>Proposed Project truck trips from 190 to 150 under the Plains Pipeline Alternative (an approximate 1.2% decrease in proposed Project operations emissions; additional truck trips might be required for disposal of BS&W solids).</p>
<p>Alternative 5 – Natural Gas Pipeline Reroute Alternative</p>	<p>Additional GHG emissions would be generated due to the construction of the longer Natural Gas Pipeline Reroute Alternative alignment (17.4 vs 14 miles). Since construction GHG emissions due to the natural gas pipeline comprise only about one percent of the overall Project GHG emissions, additional construction GHG emissions due to the Natural Gas Pipeline Reroute Alternative would be negligible.</p>
<p>Conclusion (Preferred alternative for specific impact)</p>	<p>Construction. The Oak Avoidance Alternative offers the greatest reduction in construction related GHG emissions at the oil field versus the proposed Project.</p> <p>The Phillips 66 Pipeline Alternative offers negligible benefits to the Plains Pipeline Alternative for construction GHG emissions due to the shorter length of pipeline construction (4.5 vs 6.0 miles).</p> <p>Proposed Project natural gas pipeline alignment offers negligible benefits in less construction GHG emissions due to its shorter length (14 vs 17.4 miles).</p> <p>Operations. No preference for proposed Project versus Reduced Footprint Alternative and Oak Avoidance Alternative since operations would be the same.</p> <p>Both the Phillips 66 Pipeline Alternative and Plains Pipeline Alternative are preferred versus the Proposed Project because they reduce trucking of crude by about 20%, but Phillips 66 Pipeline Alternative offers greatest reduction in GHG operations emissions over the life of the Project, in comparison to the Plains Pipeline Alternative, since the Plains Pipeline Alternative requires the operations of the BS&W processing facilities and possibly additional trucking for solids disposal.</p> <p>GHG emissions are considered significant (Class II). Same mitigation for reducing/offsetting GHG emissions would apply.</p>

Table 5-6. Alternatives Comparison

CULTURAL/HISTORIC RESOURCES	
Impact CULT-1: Construction of the proposed project may cause a substantial adverse change in the significance of a historical resource, unique archaeological resource, or tribal cultural resource.	
Proposed Project	No historical resources, unique archaeological resources, or tribal cultural resources have been identified within the Project site, but presently unidentified resources could be impacted as a result of ground disturbing activities in previously undisturbed Holocene sediments.
Alternative 1 – Reduced Footprint Alternative	Preferred due to reduced area of ground disturbance; thereby, reducing the potential to encounter unknown cultural resources.
Alternative 2 – Oak Avoidance Alternative	Preferred due to reduced area of ground disturbance; thereby, reducing the potential to encounter unknown cultural resources.
Alternative 3 – Phillips 66 Pipeline Alternative	Greater ground disturbance and potential to encounter unknown cultural resources with construction of the new 4.5-mile connection pipeline.
Alternative 4 – Plains Pipeline Alternative	Greater ground disturbance and potential to encounter unknown cultural resources with construction of the new 6-mile connection pipeline, although the connection pipeline would be located primarily under existing roadways and their shoulders.
Alternative 5 – Natural Gas Pipeline Reroute Alternative	Greater ground disturbance and potential to encounter unknown cultural resources with the 3.4-mile increased length of the natural gas pipeline (17.4 miles versus 14 miles for the proposed Project), and overland alignment (proposed Project natural gas pipeline located primarily under existing roadways and their shoulders).
Conclusion (Preferred alternative for specific impact)	<p>The Oak Avoidance Alternative is preferred over the proposed Project and the Reduced Footprint Alternative, because it would require the least ground disturbance and resulting potential to encounter and adversely impact historical resources, unique archaeological resources, or tribal cultural resources.</p> <p>The proposed Project is preferred over the Phillips 66 Pipeline Alternative and Plains Pipeline Alternative, because it does not require construction of a connection pipeline and associated ground disturbance.</p> <p>Likewise, the proposed Project is preferred over the Natural Gas Pipeline Reroute Alternative due to a shorter length of pipeline construction.</p> <p>Impact CULT-1 would still be considered significant, but mitigable (Class II). Same mitigation and regulatory requirements would be required.</p>

Table 5-6. Alternatives Comparison

Impact CULT-2: Construction of the proposed Project could damage human remains during ground disturbing activities.	
Proposed Project	No human remains have been found within the proposed Project area, but it is possible that previously unidentified remains may be damaged during ground disturbing activities.
Alternative 1 – Reduced Footprint Alternative	Preferred due to reduced area of ground disturbance, thereby reducing the potential to encounter human remains.
Alternative 2 – Oak Avoidance Alternative	Preferred due to reduced area of ground disturbance, thereby reducing the potential to encounter human remains.
Alternative 3 – Phillips 66 Pipeline Alternative	Greater ground disturbance and potential to encounter human remains with construction of the new 4.5-mile connection pipeline.
Alternative 4 – Plains Pipeline Alternative	Greater ground disturbance and potential to encounter human remains with construction of the new 6-mile connection pipeline, although the connection pipeline would be located primarily under existing roadways and their shoulders.
Alternative 5 – Natural Gas Pipeline Reroute Alternative	Greater ground disturbance and potential to encounter human remains with the 3.4-mile increased length of the natural gas pipeline (17.4 miles versus 14 miles for the proposed Project), and overland alignment (proposed Project natural gas pipeline located primarily under existing roadways and their shoulders).
Conclusion (Preferred alternative for specific impact)	<p>The Oak Avoidance Alternative is preferred over the proposed Project and Reduced Footprint Alternative, because it would require the least ground disturbance and resulting potential to encounter and adversely impact human remains.</p> <p>The proposed Project is preferred over the Phillips 66 Pipeline Alternative and Plains Pipeline Alternative, because it does not require construction of a connection pipeline and associated ground disturbance.</p> <p>Likewise, the proposed Project is preferred over the Natural Gas Pipeline Reroute Alternative due to a shorter length of pipeline construction.</p> <p>Impact CULT-2 would still be considered significant, but mitigable (Class II). Same mitigation and regulatory requirements would be required.</p>
Impact CULT-3: Construction of the proposed Project could cause direct or indirect destruction of unique paleontological resource.	
Proposed Project	No paleontological resources have been found within the proposed Project area, but it is possible that previously unidentified paleontological resources may be damaged during ground disturbing activities.
Alternative 1 – Reduced Footprint Alternative	Preferred due to reduced area of ground disturbance, thereby reducing the potential to encounter and adversely impact paleontological resources.
Alternative 2 – Oak Avoidance Alternative	Preferred due to reduced area of ground disturbance, thereby reducing the potential to encounter and adversely impact paleontological resources.
Alternative 3 – Phillips 66 Pipeline Alternative	Greater ground disturbance and potential to encounter and adversely impact paleontological resources with construction of the new 4.5-mile connection pipeline.
Alternative 4 – Plains Pipeline Alternative	Greater ground disturbance and potential to encounter and adversely impact paleontological resources with construction of the new 6-mile connection pipeline, although the connection pipeline would be located primarily under existing roadways and their shoulders.
Alternative 5 – Natural Gas Pipeline Reroute Alternative	Greater ground disturbance and potential to encounter and adversely impact paleontological resources with the 3.4-mile increased length of the natural gas pipeline (17.4 miles versus 14 miles for the proposed Project), and overland alignment (proposed Project natural gas pipeline located primarily under existing roadways and their shoulders).

Table 5-6. Alternatives Comparison

Conclusion (Preferred alternative for specific impact)	<p>The Oak Avoidance Alternative is preferred over the proposed Project and the Reduced Footprint Alternative, because it would require the least ground disturbance and resulting potential to encounter and adversely impact paleontological resources.</p> <p>The proposed Project is preferred over the Phillips 66 Pipeline Alternative and Plains Pipeline Alternative, because it does not require construction of a connection pipeline and associated ground disturbance.</p> <p>Likewise, the proposed Project is preferred over the Natural Gas Pipeline Reroute Alternative due to a shorter length of pipeline construction.</p> <p>Impact CULT-3 would still be considered significant, but mitigable (Class II). Same mitigation and regulatory requirements would be required.</p>
GEOLOGY PROCESSES/GEOLOGIC HAZARDS	
Impact GEO-4: Expose people or structures to potential risk of loss or injury where expansive or other unsuitable soils are present.	
Proposed Project <ul style="list-style-type: none"> ▪ Oil field facilities ▪ Power line facilities ▪ Natural gas pipeline facilities 	Expansive and corrosive soils could cause damage to proposed Project structures.
Alternative 1 – Reduced Footprint Alternative	Impact reduced compared to the proposed Project due to the significant decrease in the footprint size (164 vs 305 acres) although the same number of wells and operations facilities proposed; however, the amount of decrease would vary depending on the presence of unsuitable soils with the remaining footprint and location of Project components relative to these soils.
Alternative 2 – Oak Avoidance Alternative	Impact reduced compared to the proposed Project due to the significant decrease in the footprint size (136 vs 305 acres) although the same number of wells and operations facilities proposed; however, the amount of decrease would vary depending on the presence of unsuitable soils with the remaining footprint and location of Project components relative to these soils.
Alternative 3 – Phillips 66 Pipeline Alternative	Impact increased compared to the proposed Project due to the construction of the 4.5 mile connection pipeline.
Alternative 4 – Plains Pipeline Alternative	Impact increased compared to the proposed Project due to the construction of the 6 mile connection pipeline.
Alternative 5 – Natural Gas Pipeline Reroute Alternative	Impact increased compared to the proposed Project given the longer natural gas pipeline alignment (17.4 vs 14 miles).
Conclusion (Preferred alternative for specific impact)	<p>The Oak Avoidance Alternative offers the greatest reduction in oil field impacts related to expansive or other unsuitable soils due to smallest disturbance area.</p> <p>The Phillips 66 Pipeline Alternative is preferred over the Plains Pipeline Alternative given less linear pipeline (4.5 versus 6.0 miles).</p> <p>The Proposed Project preferred over the Natural Gas Pipeline Reroute Alternative given shorter length of natural gas pipeline (14 versus 17.4 miles).</p> <p>Impact GEO-4 would still be considered significant, but mitigable (Class II). Same mitigation and regulatory requirements would be required.</p>
Impact GEO-6: Encountering contaminated soils during construction	
Proposed Project <ul style="list-style-type: none"> ▪ Oil field construction ▪ Power line construction ▪ Natural gas pipeline construction 	Contaminated soils could be encountered during construction.
Alternative 1 – Reduced Footprint Alternative	Impact reduced due to the large decrease in ground disturbance (164 vs 305 acres); however, unknown contamination could be encountered anywhere on the site, and thus the likelihood of encountering it within the reduced footprint and potential amounts encountered is difficult to quantify.

Table 5-6. Alternatives Comparison

Alternative 2 – Oak Avoidance Alternative	Impact reduced due to the large decrease in ground disturbance (136 vs 305 acres); however, unknown contamination could be encountered anywhere on the site, and thus the likelihood of encountering it within the reduced footprint and potential amounts encountered is difficult to quantify.
Alternative 3 – Phillips 66 Pipeline Alternative	Impact potential increased compared to the proposed Project due to the construction of the 4.5-mile connection pipeline.
Alternative 4 – Plains Pipeline Alternative	Impact potential increased compared to the proposed Project due to the construction of the 6-mile connection pipeline.
Alternative 5 – Natural Gas Pipeline Reroute Alternative	Impact potential increased compared to the proposed Project given the longer natural gas pipeline alignment (17.4 vs 14 miles).
Conclusion (Preferred alternative for specific impact)	<p>The Oak Avoidance Alternative offers the greatest reduction in impacts related to unknown contamination due to smallest disturbance area.</p> <p>The Phillips 66 Pipeline Alternative is preferred over the Plains Pipeline Alternative given less linear pipeline (4.5 versus 6.0 miles).</p> <p>The Proposed Project is preferred over the Natural Gas Pipeline Reroute Alternative given shorter length of natural gas pipeline (14 versus 17.4 miles).</p> <p>Impact GEO-6 would still be considered significant, but mitigable (Class II). Same mitigation and regulatory requirements would be required.</p>
Impact GEO-7: Surface fault rupture could cause damage to Project structures or result in injury or death to people.	
Proposed Project ▪ Natural Gas Pipeline	The proposed natural gas pipeline does not cross a mapped active fault or Alquist-Priolo fault zone; however, the alignment does cross the potentially active Casmalia fault.
Alternative 1 – Reduced Footprint Alternative	The Reduced Footprint Alternative is limited to the oil field which is not crossed by any faults.
Alternative 2 – Oak Avoidance Alternative	The Oak Avoidance Alternative is limited to the oil field which is not crossed by any faults.
Alternative 3 – Phillips 66 Pipeline Alternative	The Phillips 66 Pipeline Alternative connection pipeline doesn't cross any faults.
Alternative 4 – Plains Pipeline Alternative	The Plains Pipeline Alternative connection pipeline crosses the Garey Fault.
Alternative 5 – Natural Gas Pipeline Reroute Alternative	The Natural Gas Pipeline Reroute Alternative crosses the potentially active Casmalia Fault and the northern mapped trace of the Los Alamos fault of the Los Alamos-Baseline fault zone.
Conclusion (Preferred alternative for specific impact)	<p>The Phillips 66 Pipeline Alternative is preferable to the Plains Pipeline Alternative since it doesn't cross any mapped active or potentially active fault traces.</p> <p>Proposed Project natural gas pipeline alignment is preferable over the Natural Gas Pipeline Reroute Alternative since it crosses one instead of two mapped fault traces.</p> <p>Impact GEO-7 would still be considered significant, but mitigable (Class II). Same mitigation and regulatory requirements would be required.</p>
HAZARDOUS MATERIALS AND RISK OF UPSET	
Impact RISK-2: The proposed Project could generate risks to public safety by exposing the public to hazards from truck transport of light crude oil (LCO) and blended crude oil product.	
Proposed Project ▪ Oil field operations/crude transportation	The proposed Project would include 116 laden one-way truck trips per day (21 LCO and 95 blended). The Aera TQRA concludes that release of hazardous materials during a trucking accident occurs 0.1044 times per year for 116 laden trucks with an average spill volume of 108 barrels.
Alternative 1 – Reduced Footprint Alternative	The Reduced Footprint Alternative would not change the number of wells developed, so resultant trucking needs would remain the same as the proposed Project.
Alternative 2 – Oak Avoidance Alternative	The Oak Avoidance Alternative would not change the number of wells developed, so resultant trucking needs would remain the same as the proposed Project.

Table 5-6. Alternatives Comparison

Alternative 3 – Phillips 66 Pipeline Alternative	The Phillips 66 Pipeline Alternative would reduce the number of one-way laden truck trips from 116 to 78 (all LCO), but requires a 4.5 mile connection pipeline. The Phillips 66 Pipeline Alternative incident/year rate for reduced laden truck trips and the connection pipeline ranges between 0.0842 to 0.0871, whereas the proposed Project incident/year rate is 0.1044.
Alternative 4 – Plains Pipeline Alternative	The Plains Pipeline Alternative would reduce the number of one-way laden truck trips from 116 to 75 (all LCO), but requires a 6.0 mile connection pipeline. The Plains Pipeline Alternative incident/year rate for reduced laden truck trips and the connection pipeline ranges between 0.0861 to 0.0900, whereas the proposed Project incident/year rate is 0.1044.
Alternative 5 – Natural Gas Pipeline Reroute Alternative	n/a – The natural gas pipeline alignment will not affect the number of laden truck trips.
Conclusion (Preferred alternative for specific impact)	The Phillips 66 Pipeline Alternative is slightly preferred over the Plains Pipeline Alternative given that it has the lowest incident/year rate for release of hazardous materials during a trucking accident. . Impact RISK-2 would still be considered significant, but mitigable (Class II). Same mitigation and regulatory requirements would be required.
Impact HAZ-1: Release of hazardous materials during construction.	
Proposed Project <ul style="list-style-type: none"> ▪ Oil field construction ▪ Power line construction ▪ Natural gas pipeline construction 	Hazardous materials that would be used during project construction activities include gasoline, diesel fuel, oil, lubricants, paint and small quantities of solvents. Small volumes of these materials would be temporarily stored on-site.
Alternative 1 – Reduced Footprint Alternative	By reducing the total disturbance area (permanent and temporary) under the Reduced Footprint Alternative (164 versus 305 acres for the proposed Project), there would be a reduction in the volume of hazardous materials required for well pad, access road, and other disturbance area construction. However, 296 wells would still be drilled and since many of these angled drills would be longer in length, additional hazardous materials could be required.
Alternative 2 – Oak Avoidance Alternative	By reducing the total disturbance area (permanent and temporary) under the Oak Avoidance Alternative (136 versus 305 acres for the proposed Project), there would be a reduction in the volume of hazardous materials required for well pad, access road, and other disturbance area construction. However, 296 wells would still be drilled and since many of these angled drills would be longer in length, additional hazardous materials could be required.
Alternative 3 – Phillips 66 Pipeline Alternative	The Phillips 66 Pipeline Alternative would require the construction of an approximate 4.5-mile connection pipeline; therefore, requiring the use of additional hazardous materials when compared to the proposed Project.
Alternative 4 – Plains Pipeline Alternative	The Plains Pipeline Alternative would require the construction a new 6 mile connection pipeline; therefore, requiring the use of additional hazardous materials when compared to the proposed Project.
Alternative 5 – Natural Gas Pipeline Reroute Alternative	The Natural Gas Pipeline Reroute Alternative would increase the use of hazardous materials during construction given its increased length (17.4 miles versus 14).
Conclusion (Preferred alternative for specific impact)	The Oak Avoidance Alternative offers the greatest reduction in use of hazardous materials during construction due to smallest disturbance area. The Proposed Project is preferred over the Phillips 66 Pipeline Alternative and Plains Pipeline Alternative given no connection pipeline construction. The Proposed Project is preferred over the Natural Gas Pipeline Reroute Alternative given shorter length of natural gas pipeline (14 versus 17.4 miles). Impact HAZ-1 would still be considered significant, but mitigable (Class II). Same mitigation and regulatory requirements would be required.

Table 5-6. Alternatives Comparison

Impact HAZ-2: Release of hazardous materials during routine operations and maintenance. See Impacts BIO-1 SGW-1 for accidental oil spill impacts.	
Proposed Project <ul style="list-style-type: none"> ▪ Oil field operations ▪ Power line operations 	The proposed Project includes the operation and maintenance of 296 wells which would generate crude oil and produced gas and water which contain naturally occurring chemicals that in the appropriate concentration are detrimental to human health. In addition, during operations and maintenance, chemicals will be brought on site to facilitate operations.
Alternative 1 – Reduced Footprint Alternative	Under the Reduced Footprint Alternative, 296 wells and associated processing facilities would still be operated. Since many of the angled well drills would be longer in length, additional well workovers and associated hazardous materials could be required.
Alternative 2 – Oak Avoidance Alternative	Under the Oak Avoidance Alternative, 296 wells and associated processing facilities would still be operated. Since many of the angled well drills would be longer in length, additional well workovers and associated hazardous materials could be required.
Alternative 3 – Phillips 66 Pipeline Alternative	The Phillips 66 Pipeline Alternative would require the use of hazardous materials for the operation and maintenance of the 4.5-mile connection pipeline.
Alternative 4 – Plains Pipeline Alternative	The Plains Pipeline Alternative would require the use of hazardous materials for the operation and maintenance of the 6 mile connection pipeline.
Alternative 5 – Natural Gas Pipeline Reroute Alternative	The Natural Gas Pipeline Reroute Alternative would increase the use of hazardous materials associated with operations and maintenance given its increased length (17.4 miles versus 14).
Conclusion (Preferred alternative for specific impact)	<p>The Proposed Project is slightly preferred over the Reduced Footprint Alternative and Oak Avoidance Alternative given less potential well workover work.</p> <p>The Proposed Project is preferred over the Phillips 66 Pipeline Alternative and Plains Pipeline Alternative given no connection pipeline operation.</p> <p>The Proposed Project is preferred over the Natural Gas Pipeline Reroute Alternative given shorter length of natural gas pipeline (14 versus 17.4 miles).</p> <p>Impact HAZ-2 would still be considered significant, but mitigable (Class II). Same mitigation and regulatory requirements would be required.</p>
Impact FIRE-1: Introduction of development into an existing high fire hazard area.	
Proposed Project <ul style="list-style-type: none"> ▪ Oil field construction & operations ▪ Power line construction & operations ▪ Natural gas pipeline construction 	Construction and operation of new well/steam generator pads, wells, tanks, heaters and associated equipment, pipelines, roadways, and power line would present new ignition sources that could potentially start a structure or brush fire within a high fire hazard area. Much of the proposed Project natural gas pipeline would traverse agricultural and urban environments which are not considered high fire hazard areas.
Alternative 1 – Reduced Footprint Alternative	By reducing the total disturbance area (permanent and temporary) under the Reduced Footprint Alternative (164 versus 305 acres for the proposed Project), there would be a reduction in potential ignition sources during construction. However, 296 wells and associated processing facilities would still be developed and operated.
Alternative 2 – Oak Avoidance Alternative	By reducing the total disturbance area (permanent and temporary) under the Oak Avoidance Alternative (136 versus 305 acres for the proposed Project), there would be a reduction in potential ignition sources during construction. However, 296 wells and associated processing facilities would still be developed and operated.
Alternative 3 – Phillips 66 Pipeline Alternative	The Phillips 66 Pipeline Alternative would require the construction of an approximate 4.5-mile connection pipeline. Construction of the noted pipelines would introduce additional ignition sources when compared to the proposed Project. Fire hazards associated with operations would be comparable to the proposed Project given that the new pipelines would be underground.
Alternative 4 – Plains Pipeline Alternative	The Plains Pipeline Alternative would require the construction a new 6-mile connection pipeline. Construction of the new connection pipeline would introduce additional ignition sources when compared to the proposed Project. Fire hazards associated with operations would be comparable to the proposed Project given that the new connection pipeline would be underground.

Table 5-6. Alternatives Comparison

Alternative 5 – Natural Gas Pipeline Reroute Alternative	The Natural Gas Pipeline Reroute Alternative would introduce additional ignition sources during construction given its increased length (17.4 miles versus 14).
Conclusion (Preferred alternative for specific impact)	<p>The Oak Avoidance Alternative offers the greatest reduction in potential ignition sources during construction due to smallest disturbance area. Potential operations fire impacts comparable for the proposed Project, and Reduced Footprint Alternative and Oak Avoidance Alternative.</p> <p>The Proposed Project is preferred over the Phillips 66 Pipeline Alternative and Plains Pipeline Alternative given no connection pipeline construction and operation.</p> <p>The Proposed Project is preferred over the Natural Gas Pipeline Reroute Alternative given shorter length of natural gas pipeline (14 versus 17.4 miles), and that much of the proposed Project alignment is located outside of the high fire hazard area; agricultural and urban areas.</p> <p>Impact FIRE-1 would still be considered significant, but mitigable (Class II). Same mitigation and regulatory requirements would be required.</p>
Impact FIRE-2: Introduction of development into an area without adequate water pressure, fire hydrants, or adequate access for firefighting.	
Proposed Project <ul style="list-style-type: none"> ▪ Oil field construction & operations ▪ Power line construction & operations ▪ Natural gas pipeline construction 	Construction and operation of the proposed Project new wells, tanks, heaters, access roads, pipelines, and power line would present new ignition sources that could potentially start a brush or structure fire in an area with limited firefighting capability. Much of the proposed Project natural gas pipeline would traverse agricultural and urban environments with additional fire hydrants, water pressure, and access.
Alternative 1 – Reduced Footprint Alternative	By reducing the total disturbance area (permanent and temporary) under the Reduced Footprint Alternative (164 versus 305 acres for the proposed Project), there would be a reduction in potential ignition sources during construction. However, 296 wells and associated processing facilities would still be developed and operated.
Alternative 2 – Oak Avoidance Alternative	By reducing the total disturbance area (permanent and temporary) under the Oak Avoidance Alternative (136 versus 305 acres for the proposed Project), there would be a reduction in potential ignition sources during construction. However, 296 wells and associated processing facilities would still be developed and operated.
Alternative 3 – Phillips 66 Pipeline Alternative	The Phillips 66 Pipeline Alternative would require the construction of an approximate 4.5-mile connection pipeline. Construction of the noted pipeline would introduce additional ignition sources when compared to the proposed Project. Fire hazards associated with operations would be comparable to the proposed Project given that the new connection pipeline would be underground.
Alternative 4 – Plains Pipeline Alternative	The Plains Pipeline Alternative would require the construction a new 6-mile connection pipeline. Construction of the new pipeline would introduce additional ignition sources when compared to the proposed Project. Fire hazards associated with operations would be comparable to the proposed Project given that the new connection pipeline would be underground
Alternative 5 – Natural Gas Pipeline Reroute Alternative	The Natural Gas Pipeline Reroute Alternative would introduce additional ignition sources during construction given its increased length (17.4 miles versus 14).
Conclusion (Preferred alternative for specific impact)	<p>The Oak Avoidance Alternative offers the greatest reduction in potential ignition sources during construction due to smallest disturbance area. Potential operations fire impacts comparable for the proposed Project, and Reduced Footprint Alternative and Oak Avoidance Alternative.</p> <p>The Proposed Project is preferred over the Phillips 66 Pipeline Alternative and Plains Pipeline Alternative given no connection pipeline construction. No preference for operations.</p> <p>The Proposed Project is preferred over the Natural Gas Pipeline Reroute Alternative given shorter length of natural gas pipeline (14 versus 17.4 miles), and that much of the proposed Project alignment is located with agricultural and urban areas with better fire-fighting capability.</p> <p>Impact FIRE-2 would still be considered significant, but mitigable (Class II). Same mitigation and regulatory requirements would be required.</p>

Table 5-6. Alternatives Comparison

NOISE	
Impact NOISE-1: Construction noise.	
Proposed Project <ul style="list-style-type: none"> ▪ Oil field construction (well drilling) ▪ Power line construction ▪ Natural gas pipeline construction 	<p>With the implementation of AMMs, temporary noise during well drilling would not significantly impact any NSR location. Because well drilling on other proposed well pads (besides the four analyzed) would be at much greater distances to any NSR, noise levels would be similar or less.</p> <p>Pipeline and power line construction would be temporary.</p> <p>MM NOISE-1, which incorporates the AMMs, identifies additional noise abatement measures, as well as monitoring and notification requirements.</p>
Alternative 1 – Reduced Footprint Alternative	<p>By reducing the total disturbance area (permanent and temporary) under the Reduced Footprint Alternative (164 versus 305 acres for the proposed Project), there would be a reduction in the duration of construction noise impacts, reducing the total duration of construction and number of locations where impacts from well pad development could occur. However, 296 wells would still be drilled, the primary source of construction noise, and many of these angled drills would be longer in length, increasing the duration of drilling at each well.</p>
Alternative 2 – Oak Avoidance Alternative	<p>By reducing the total disturbance area (permanent and temporary) under the Oak Avoidance Alternative (136 versus 305 acres for the proposed Project), there would be a reduction in the duration of construction noise impacts, reducing the total duration of construction and number of locations where impacts from well pad development could occur. However, 296 wells would still be drilled, the primary source of construction noise, and many of these angled drills would be longer in length, increasing the duration of drilling at each well.</p>
Alternative 3 – Phillips 66 Pipeline Alternative	<p>The Phillips 66 Pipeline Alternative would require the construction of an approximate 4.5-mile connection pipeline. Construction of the connection pipeline would result in temporary noise increases along the alignment, increasing the overall temporary construction noise generated when compared to the proposed Project. Land uses along the connection pipeline alignment are primarily existing oil and gas development.</p>
Alternative 4 – Plains Pipeline Alternative	<p>The Plains Pipeline Alternative would require the construction a new 6-mile connection pipeline. Construction of the new connection pipeline would result in temporary noise increases along their alignments, increasing in the regional temporary construction noise generated when compared to the proposed Project. Land uses near the connection pipeline and Line 901/903 replacement routes include existing oil and gas development, open space, agriculture, and several rural residences.</p>
Alternative 5 – Natural Gas Pipeline Reroute Alternative	<p>Land uses along the Alternative route include existing oil and gas development, open space, agriculture, and vineyards. Therefore, this Alternative would significantly reduce the number of sensitive receptors temporarily affected by construction noise associated with natural gas pipeline construction under the proposed Project which traverses the community of Orcutt. The pipeline would no longer be constructed in existing public roadways that traverse residential areas, including through the Community of Orcutt.</p>
Conclusion (Preferred alternative for specific impact)	<p>The Proposed Project well development scenario is preferred to that of the Reduced Footprint Alternative and Oak Avoidance Alternative, since the duration of drilling could be shorter given the angled drills required for the Reduced Footprint Alternative and Oak Avoidance Alternative.</p> <p>The Proposed Project is preferred over the Phillips 66 Pipeline Alternative and Plains Pipeline Alternative given no connection pipeline construction.</p> <p>The Natural Gas Pipeline Reroute Alternative preferred over proposed Project given that it would avoid many residential areas, including the Community of Orcutt, associated with the proposed Project.</p>
Impact NOISE-2: Operational noise	
Proposed Project <ul style="list-style-type: none"> ▪ Oil field operations (well workovers) 	<p>Well workover drill rig operations noise levels would be similar to or less than those identified for initial well development. Number of well workovers required per year is unknown.</p>
Alternative 1 – Reduced Footprint Alternative	<p>The Reduced Footprint Alternative would not change the number of wells developed, so operational noise impacts would remain the same as the proposed Project.</p>

Table 5-6. Alternatives Comparison

Alternative 2 – Oak Avoidance Alternative	The Oak Avoidance Alternative would not change the number of wells developed, so operational noise impacts would remain the same as the proposed Project.
Alternative 3 – Phillips 66 Pipeline Alternative	Under the Phillips 66 Pipeline Alternative, operational trucking would be reduced by approximately 20%, resulting in a comparable reduction in operational trucking noise. Oil field operations and related noise would remain unchanged.
Alternative 4 – Plains Pipeline Alternative	Under the Plains Pipeline Alternative, operational trucking would be reduced by approximately 20%, resulting in a comparable reduction in operational trucking noise. Oil field operations and related noise would remain unchanged.
Alternative 5 – Natural Gas Pipeline Reroute Alternative	During operations, the natural gas pipeline would only require occasional maintenance that would not generate significant noise (Class III).
Conclusion (Preferred alternative for specific impact)	No preference over the proposed Project versus the Reduced Footprint Alternative, Oak Avoidance Alternative, or Natural Gas Pipeline Reroute Alternative. The Phillips 66 Pipeline Alternative and Plains Pipeline Alternative are preferred over the proposed Project due to reduced trucking. The Phillips 66 Pipeline Alternative is slightly preferred over the Plains Pipeline Alternative since no BS&W processing facility required under the Phillips 66 Pipeline Alternative.

SURFACE/GROUNDWATER RESOURCES

Impact SGW-2: Project construction and routine operations have the potential to violate water quality standards or waste discharge requirements, or otherwise degrade water quality. See Impact SGW-1 for accidental oil spill impacts.

Proposed Project	Disturbance of soil during construction has the potential to reduce surface water quality through the introduction of disturbed sediments into local streams or other water bodies. Spills or disposal of potentially harmful materials used during construction and routine operations could occur as a result of on-site refueling and equipment maintenance activities, leaks from defective or poorly maintained equipment, or other construction-related activities.
Alternative 1 – Reduced Footprint Alternative	Construction-related impacts would be reduced by approximately half, due to the reduction in total disturbed area. Operations impacts, including the potential for spills, would be approximately the same as for the proposed Project due to the total number of wells being the same.
Alternative 2 – Oak Avoidance Alternative	Construction-related impacts would be reduced by a little more than half, due to the reduction in total disturbed area. Operations impacts, including the potential for spills, would be approximately the same as for the proposed Project due to the total number of wells being the same.
Alternative 3 – Phillips 66 Pipeline Alternative	Construction impacts would be greater given the construction of the 4.5 mile connection pipeline. Likewise, a leak or rupture from the connection pipeline would increase the potential proposed Project impacts during routine operations.
Alternative 4 – Plains Pipeline Alternative	Construction impacts would be greater given the construction of the 6 mile connection pipeline. Likewise, a leak or rupture from the connection pipeline would increase the potential proposed Project impacts during routine operations.
Alternative 5 – Natural Gas Pipeline Reroute Alternative	Construction impacts would be increased by approximately 25% greater due to the longer pipeline. Impacts would occur to a different watershed.
Conclusion (Preferred alternative for specific impact)	The Oak Avoidance Alternative is preferred over the proposed Project and the Reduced Footprint Alternative during construction, because it would require the least ground disturbance. Operational impacts would be similar. The proposed Project is preferred over the Phillips 66 Pipeline Alternative and Plains Pipeline Alternative, because it does not require construction and operation of a connection pipeline and its associated spill risk. Likewise, the proposed Project is preferred over the Natural Gas Pipeline Reroute Alternative due to a shorter length of pipeline construction. Impact SGW-2 would still be considered significant, but mitigable (Class II). Same mitigation and regulatory requirements would be required.

Table 5-6. Alternatives Comparison

Impact SGW-3: Place within a watercourse or flood hazard area structures which would impede or redirect flood flows, or otherwise alter the existing drainage pattern of the site or area, including through land disturbance or the alteration of the course of a stream or river, in a manner which would result in erosion, siltation, or mudflow.	
Proposed Project	Erosion and siltation impacts could occur primarily through ground disturbance associated with the proposed Project. Implementation of the BMPs and other requirements of an approved SWPPP would reduce the potential construction-related soil and erosion impacts of the proposed Project to less than significant. MM SGW-1 (Erosion and Sediment Control Plan) and AMM WATER-2 would address the issue of long-term erosion and ensure the use of BMPs for erosion control during operations.
Alternative 1 – Reduced Footprint Alternative	Potential erosion and siltation impacts would be reduced by a little more than half due to the reduced disturbed area.
Alternative 2 – Oak Avoidance Alternative	Potential erosion and siltation impacts would be reduced by approximately half due to the reduced disturbed area.
Alternative 3 – Phillips 66 Pipeline Alternative	Due to pipeline connection construction, potential erosion and siltation impacts would increase compared to the proposed Project.
Alternative 4 – Plains Pipeline Alternative	Due to pipeline connection construction, potential erosion and siltation impacts would increase compared to the proposed Project.
Alternative 5 – Natural Gas Pipeline Reroute Alternative	Due to longer pipeline construction, potential erosion and siltation impacts would increase those of the proposed Project.
Conclusion (Preferred alternative for specific impact)	<p>The Oak Avoidance Alternative is preferred over the proposed Project and Reduced Footprint Alternative, because it would require the least ground disturbance and resulting potential erosion and siltation impacts.</p> <p>The proposed Project is preferred over the Phillips 66 Pipeline Alternative and Plains Pipeline Alternative, because it does not require construction of a connection pipeline and associated ground disturbance.</p> <p>Likewise, the proposed Project is preferred over the Natural Gas Pipeline Reroute Alternative due to a shorter length of pipeline construction.</p> <p>Impact SGW-3 would still be considered significant, but mitigable (Class II). Same mitigation and regulatory requirements would be required.</p>

Table 5-6. Alternatives Comparison

Impact SGW-4: Increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site, create or contribute to runoff water which would exceed the capacity of existing or planned stormwater drainage systems, divert or obstruct flow in a manner that would induce or exacerbate flooding, or otherwise contribute to flood-related damage, on- or off-site.	
Proposed Project	Excavation and grading for well pads, foundations for new equipment, access roads, the NGF pipeline, and power line could increase the rate or amount of surface runoff in a manner which would result in flooding. None of the proposed Project features would be within the known floodplain.
Alternative 1 – Reduced Footprint Alternative	The Reduced Footprint Alternative would be expected to increase flood peaks on the same watercourses as described for the proposed Project, but at the magnitude of roughly half the proposed Project, because the total disturbed footprint would be reduced by roughly half. The Reduced Footprint Alternative would not alter the discharge points exiting the property, and detention basins would be installed to mitigate the effects of increased peak flows.
Alternative 2 – Oak Avoidance Alternative	The Oak Avoidance Alternative would be expected to increase flood peaks on the same watercourses as described for the proposed Project, but at the magnitude of a little less than half of the proposed Project, because the total disturbed footprint would be reduced by a little more than half. The Oak Avoidance Alternative would not alter the discharge points exiting the property, and detention basins would be installed to mitigate the effects of increased peak flows.
Alternative 3 – Phillips 66 Pipeline Alternative	The connection pipeline would be buried and the ground surface above the pipeline restored to the original contours. There would be negligible increase in impervious area and no obstruction of flood flows for the connection pipeline.
Alternative 4 – Plains Pipeline Alternative	The connection pipeline would be buried and the ground surface above the pipeline restored to the original contours. There would be negligible increase in impervious area and no obstruction of flood flows for the connection pipeline.
Alternative 5 – Natural Gas Pipeline Reroute Alternative	Except for being mostly in a different watershed and longer, the Natural Gas Pipeline Reroute Alternative impacts are the same as for the proposed Project.
Conclusion (Preferred alternative for specific impact)	The Oak Avoidance Alternative is preferred over the proposed Project and Reduced Footprint Alternative, because it would have the smallest disturbance footprint. No preference between the proposed Project and Phillips 66 Pipeline Alternative, Plains Pipeline Alternative, and Natural Gas Pipeline Reroute Alternative. Facility construction would be conducted in accordance with required mitigation, and local and State building codes and federal/State water agency permitting requirements apply (Class II impact).
Impact SGW-5: Cyclic steam or steam flooding injected under pressure to enhance oil recovery in oil-bearing formations or injection of produced water/brine could adversely affect groundwater quality.	
Proposed Project	During cyclic steam or steam flooding, a failure of the injection well casing or cement sheath could result in the migration of stimulation fluid (processed produced water) into fresh groundwater resources. Disposal well failure could release produced water and/or brine into the groundwater. Failure of oil production wells could release oil or produced water into the groundwater producing zone. Surface spills and leaks could percolate to groundwater, or to a subsurface path along damaged oil well casings/cement seals or natural subsurface pathways into the groundwater producing zone.
Alternative 1 – Reduced Footprint Alternative	Impacts would be similar to the proposed Project, because the Reduced Footprint Alternative does not change the amount of oil well drilling, high TDS groundwater extraction, steam injection, or brine/wastewater disposal.
Alternative 2 – Oak Avoidance Alternative	Impacts would be similar to the proposed Project, because the Reduced Footprint Alternative does not change the amount of oil well drilling, high TDS groundwater extraction, steam injection, or brine/wastewater disposal.

Table 5-6. Alternatives Comparison

Alternative 3 – Phillips 66 Pipeline Alternative	The Phillips 66 Pipeline Alternative addresses the transportation of produced crude oil, so therefore will not alter the amount of oil well drilling or produced water injection by the proposed Project.
Alternative 4 – Plains Pipeline Alternative	The Plains Pipeline Alternative addresses the transportation of produced crude oil, so therefore will not alter the amount of oil well drilling or produced water injection by the proposed Project.
Alternative 5 – Natural Gas Pipeline Reroute Alternative	The Natural Gas Pipeline Reroute Alternative addresses the alignment of the natural gas pipeline, so therefore will not alter the amount of oil well drilling or produced water injection by the proposed Project.
Conclusion (Preferred alternative for specific impact)	No preference between the proposed Project, Reduced Footprint Alternative, and Oak Avoidance Alternative. Well development and operation would be conducted in accordance with required mitigation, and local and State requirements (Class II impact).

TRAFFIC/TRANSPORTATION

Impact TR-3: Project-related heavy truck trips could impose safety hazards.

Proposed Project <ul style="list-style-type: none"> ▪ Oil field construction & operations/crude oil transportation ▪ Natural gas pipeline construction 	It is estimated that oil field construction would generate a maximum of 479 trips per day (including employee trips) and operations would generate 523 trips per day (including employee trips). Pipeline construction activities would generate a maximum of 194 trips per day (190 worker commute trips and 4 material deliveries), taking approximately 5-6 months to complete. During construction and operation, some heavy truck trips could be slow moving or oversized. Slow moving vehicles may result in passenger vehicles needing to brake, pass, or travel closely, thus potentially altering their typical driving behavior along these routes.
Alternative 1 – Reduced Footprint Alternative	By reducing the total disturbance area (permanent and temporary) under the Reduced Footprint Alternative (164 versus 305 acres for the proposed Project), there would be a reduction in the number of construction-related trips generated, reducing the potential effect construction-related trips could have on the study area circulation system. Given that the same number of wells would be operated, operations related truck trips would be the same as the proposed Project.
Alternative 2 – Oak Avoidance Alternative	By reducing the total disturbance area (permanent and temporary) under the Oak Avoidance Alternative (136 versus 305 acres for the proposed Project), there would be a reduction in the number of construction-related trips generated, reducing the potential effect construction-related trips could have on the study area circulation system. Given that the same number of wells would be operated, operations related truck trips would be the same as the proposed Project.
Alternative 3 – Phillips 66 Pipeline Alternative	The Phillips 66 Pipeline Alternative would add additional construction truck trips associated with the 4.5 mile connection pipeline. Operations truck trips related to crude transport would be reduced from 190 to 156 under the Phillips 66 Pipeline Alternative; other vehicle trips associated with operations would remain the same.
Alternative 4 – Plains Pipeline Alternative	The Plains Pipeline Alternative would add additional construction truck trips associated with the 6 mile connection pipeline. Operations truck trips related to crude transport would be reduced from 190 to 150 under the Plains Pipeline Alternative although additional truck trips might be required for disposal of BS&W sediment; other vehicle trips associated with operations would remain the same.
Alternative 5 – Natural Gas Pipeline Reroute Alternative	The Natural Gas Pipeline Reroute Alternative would significantly reduce the number of roadways affected by temporary lane closures necessary for natural gas pipeline construction under the proposed Project. The pipeline would no longer be constructed in existing public roadways that traverse populated areas, including through the community of Orcutt; thereby, minimizing associated safety hazards.

Table 5-6. Alternatives Comparison

Conclusion (Preferred alternative for specific impact)	<p>The Oak Avoidance Alternative is preferred given the greatest reduction in disturbance area (136 versus 305 acres for the proposed Project) and resultant construction truck trips. No preference for operations.,.</p> <p>The Plains Pipeline Alternative is preferred since it has the potential to result in the lowest number of truck trips (150 versus 190).</p> <p>The Natural Gas Pipeline Reroute Alternative is preferred over the proposed Project since it would reduce the number of roadways affected by heavy truck trips during construction and avoid populated areas.</p> <p>Same mitigation and regulatory requirements would apply (Class II).</p>
Impact TR-4: Project related heavy truck trips could degrade public roadway conditions.	
Proposed Project ▪ Oil field operations/crude oil transportation	The proposed Project 217 daily heavy truck trips would contribute to roadway damage and generally degrade pavement conditions due to an increase in long-term operational heavy truck trips along the local haul routes.
Alternative 1 – Reduced Footprint Alternative	The Reduced Footprint Alternative would not change the number of wells developed, so operational trucking impacts on local roadways would remain the same as the proposed Project.
Alternative 2 – Oak Avoidance Alternative	The Oak Avoidance Alternative would not change the number of wells developed, so operational trucking impacts on local roadways would remain the same as the proposed Project.
Alternative 3 – Phillips 66 Pipeline Alternative	Operations truck trips related to crude transport would be reduced from 190 to 156 under the Phillips 66 Pipeline Alternative; thereby, proportionally decreasing potential roadway degradation.
Alternative 4 – Plains Pipeline Alternative	Operations truck trips related to crude transport would be reduced from 190 to 150 under the Plains Pipeline Alternative; thereby, proportionally decreasing potential roadway degradation although additional truck trips might be required for disposal of BS&W sediment.
Alternative 5 – Natural Gas Pipeline Reroute Alternative	n/a – During operations, the natural gas pipeline would only require occasional maintenance that would not generate a significant number of vehicle trips (Class III).
Conclusion (Preferred alternative for specific impact)	<p>No preference between the proposed Project, Reduced Footprint Alternative, and Oak Avoidance Alternative, since the same number of wells and associated heavy truck trips would be the same.</p> <p>The Plains Pipeline Alternative is slightly preferred over the Phillips 66 Pipeline Alternative and the proposed Project given the potential to reduce heavy truck trips over the life of the proposed Project.</p> <p>Same mitigation applies (Class II impact).</p>

5.4 Environmentally Superior Alternative

As discussed in Section 5.2, the No Project Alternative is the environmentally superior alternative; however, this Alternative would not meet the major objectives of the project, which is the redevelopment of the East Cat Canyon Oil Field. If the environmentally superior alternative is the No Project Alternative, CEQA requires the identification of an environmentally superior alternative from among the other alternatives. As discussed in Section 5.1, the alternative screening analysis resulted in five alternatives that satisfied the basic objectives of the proposed Project while reducing potential impacts. These alternatives were carried forward for analysis in Sections 5.3.1 through 5.3.5. Section 5.3, Table 5-6, provides a side-by-side comparison of these alternatives to the proposed Project significant and unavoidable (Class I) and significant and mitigable (Class II) impacts by the various aspects of the proposed Project (i.e., oil field development and operation, crude oil transportation, and natural gas pipeline alignment). Table 5-7 summarizes the comparison provided in Table 5-6.

Table 5-7. Environmentally Superior Alternative Comparison			
IMPACT	OIL FIELD DEVELOPMENT & OPERATION PROPOSED PROJECT ALTERNATIVE 1 (Reduced Footprint Alternative) ALTERNATIVE 2 (Oak Avoidance Alternative)	CRUDE OIL TRANSPORTATION PROPOSED PROJECT ALTERNATIVE 3 Phillips 66 Pipeline Alternative ALTERNATIVE 4 Plains Pipeline Alternative	NATURAL GAS PIPELINE ALIGNMENT PROPOSED PROJECT ALTERNATIVE 5 Pipeline Reroute Alternative
Significant and Unavoidable (Class I) Impacts			
BIO-1: Operations, Accidental Spill, Onsite or Offsite	No preference	Plains Pipeline Alternative slightly preferred over Phillips 66 Pipeline Alternative	n/a
BIO-4: Oaks and Oak Woodlands	Oak Avoidance Alternative preferred	Proposed Project preferred	Proposed Project preferred
SGW-1: Operations, Accidental Spill, On or Offsite	No preference	Plains Pipeline Alternative slightly preferred over Phillips 66 Pipeline Alternative	n/a
Significant and Mitigable (Class II) Impacts			
AQ-1: Construction Emissions	Proposed Project slightly preferred	Proposed Project slightly preferred	Proposed Project slightly preferred
AQ-2: Operation Emissions	Proposed Project slightly preferred	Phillips 66 Pipeline Alternative slightly preferred over Plains Pipeline Alternative	No preference
AQ-5: Conflict with Air Quality Management Plans	Proposed Project slightly preferred	Phillips 66 Pipeline Alternative slightly preferred over Plains 66 Pipeline Alternative	No preference
BIO-2: Habitat Degradation or Loss	Oak Avoidance Alternative preferred	Proposed Project preferred	Proposed Project preferred
BIO-3: Injure or "Take" Special-status Species	Oak Avoidance Alternative preferred	Construction – Proposed Project preferred Operations – Plains Pipeline Alternative preferred	Proposed Project preferred
BIO-4: Sensitive Vegetation Other Than Oaks and Oak Woodlands	Oak Avoidance Alternative preferred	Proposed Project preferred	Proposed Project preferred
BIO-5: Adversely Affect Waters of the U.S. and Waters of the State	No preference	Proposed Project preferred	Proposed Project preferred
BIO-6: Impact Migration	Oak Avoidance Alternative preferred	Construction – Proposed Project preferred Operations – Plains Pipeline Alternative preferred	Proposed Project preferred
BIO-7: Frac-Out	n/a	Proposed Project preferred	Proposed Project preferred

Table 5-7. Environmentally Superior Alternative Comparison

IMPACT	OIL FIELD DEVELOPMENT & OPERATION PROPOSED PROJECT ALTERNATIVE 1 (Reduced Footprint Alternative) ALTERNATIVE 2 (Oak Avoidance Alternative)	CRUDE OIL TRANSPORTATION PROPOSED PROJECT ALTERNATIVE 3 Phillips 66 Pipeline Alternative ALTERNATIVE 4 Plains Pipeline Alternative	NATURAL GAS PIPELINE ALIGNMENT PROPOSED PROJECT ALTERNATIVE 5 Pipeline Reroute Alternative
GHG-1: GHG Emissions	Construction – Oak Avoidance Alternative preferred Operations – No preference	Construction – Phillips 66 Pipeline Alternative slightly preferred Operations – Phillips 66 Pipeline Alternative slightly preferred	Construction – Proposed Project slightly preferred Operations – n/a
CULT-1: Unknown Cultural Resources	Oak Avoidance Alternative preferred	Proposed Project preferred	Proposed Project preferred
CULT-2: Discovery of Human Remains	Oak Avoidance Alternative preferred	Proposed Project preferred	Proposed Project preferred
CULT-3: Unknown Paleontological Resources	Oak Avoidance Alternative preferred	Proposed Project preferred	Proposed Project preferred
GEO-4: Expansive/Unstable Soils	Oak Avoidance Alternative preferred	Phillips 66 Pipeline Alternative slightly preferred over Plains Pipeline Alternative	Proposed Project preferred
GEO-6: Contaminated Soils	Oak Avoidance Alternative preferred	Phillips 66 Pipeline Alternative slightly preferred over Plains Pipeline Alternative	Proposed Project preferred
GEO-7: Fault Crossings	n/a	Phillips 66 Pipeline Alternative preferred	Proposed Project preferred
RISK-2: Crude Oil Transportation	No preference	Phillips 66 Pipeline Alternative slightly preferred over Plains Pipeline Alternative	n/a
HAZ-1: Construction Hazardous Materials	Oak Avoidance Alternative preferred	Proposed Project preferred	Proposed Project preferred
HAZ-2: O&M Hazardous Materials	Proposed Project slightly preferred	Proposed Project preferred	Proposed Project preferred
FIRE-1: High Fire Hazard Area	Oak Avoidance Alternative preferred	Proposed Project preferred	Proposed Project preferred
FIRE-2: Fire Fighting Capability	Oak Avoidance Alternative preferred	Proposed Project preferred	Proposed Project preferred
NOISE-1: Construction Noise	Proposed Project preferred	Proposed Project preferred	Natural Gas Pipeline Reroute Alternative preferred
NOISE-2: Operations Noise	No preference	Phillips 66 Pipeline Alternative preferred	n/a
SGW-2: Violate Standards or Degrade Water Quality	Oak Avoidance Alternative preferred	Proposed Project preferred	Proposed Project preferred
SGW-3: Alter Existing Drainage Patterns	Oak Avoidance Alternative preferred	Proposed Project preferred	Proposed Project preferred

Table 5-7. Environmentally Superior Alternative Comparison			
IMPACT	OIL FIELD DEVELOPMENT & OPERATION PROPOSED PROJECT ALTERNATIVE 1 (Reduced Footprint Alternative) ALTERNATIVE 2 (Oak Avoidance Alternative)	CRUDE OIL TRANSPORTATION PROPOSED PROJECT ALTERNATIVE 3 Phillips 66 Pipeline Alternative ALTERNATIVE 4 Plains Pipeline Alternative	NATURAL GAS PIPELINE ALIGNMENT PROPOSED PROJECT ALTERNATIVE 5 Pipeline Reroute Alternative
SGW-4: Increase Surface Runoff or Erosion	Oak Avoidance Alternative preferred	No preference	No preference
SGW-5: Affect Groundwater Quality from Produced Water	No preference	n/a	n/a
TR-3: Trucking Safety	Oak Avoidance Alternative preferred	Plains Pipeline Alternative slightly preferred over Phillips 66 Pipeline Alternative	Natural Gas Pipeline Reroute Alternative preferred
TR-4: Operations Roadway Degradation	No preference	Plains Pipeline Alternative slightly preferred over Phillips 66 Pipeline Alternative	n/a

Oil Field Development and Operation. As presented in Tables 5-6 and 5-7, Alternative 2, Oak Tree Avoidance Alternative, is preferable in terms of reducing potential Class I impacts identified for the proposed Project related to the potential to result in a net loss or permanent change in the extent or functional value of sensitive vegetation communities and loss of individual oak trees (Impact BIO-4), as well as numerous Class II impacts, primarily related to its reduced ground disturbance. However, none of the significance levels (Class I and II) of the impacts identified for the proposed Project would be reduced under the Reduced Footprint Alternative and Oak Avoidance Alternative, and all recommended mitigation would apply, as well as local and State regulatory requirements. Impacts during operation would be largely similar between the proposed Project, Reduced Footprint Alternative, and Oak Avoidance Alternative, because the number of wells drilled and associated production levels would be the same.

Crude Oil Transportation. The Phillips 66 Pipeline Alternative and Plains Pipeline Alternative both reduce the laden tanker truck trips associated with proposed Project operations by about 33% to 35%, respectively; thereby, reducing the incident/year rate for release of hazardous materials during a trucking accident (Impact RISK-2) in comparison to the proposed Project. Overall truck trips (LCO/blended crude and empty) would be reduced from 190 to 150 under the Plains Alternative and 190 to 156 under the Phillips 66 Alternative; thereby, reducing operational emissions (Impact AQ-2), operational GHG emissions (Impact GHG-1), operational noise (Impact NOISE-2), roadway degradation (Impact TR-4), and trucking hazards (Impact TR-3) in comparison to the proposed Project. Since the proposed Project doesn't require the construction of the connection pipelines, it would avoid the temporary impacts associated with pipeline construction. As presented in Table 5-7, depending on the impact, the overall benefits offered by the Phillips 66 and Plains Alternatives are comparable.

Natural Gas Pipeline Alignment. The Natural Gas Pipeline Reroute Alternative would traverse much less densely populated lands than the proposed alignment and avoid sensitive land uses such as schools and churches. By routing the natural gas pipeline farther from population centers and sensitive land uses, the consequences to the public in the event of upset or a pipeline leak would be reduced in comparison to the proposed Project; however, the overall fatality and serious injury risks to the public due to accidental natural gas release and ignition are within the zones of less than significant (Class III) for Impact RISK-3

under the proposed Project. Furthermore, the Natural Gas Pipeline Reroute Alternative would minimize construction noise impacts on nearby land uses (Impact NOISE-1), trucking related safety (Impact TR-3), and roadway degradation (Impact TR-4). The Natural Gas Pipeline Reroute Alternative natural gas pipeline alignment would cross open space in several locations, resulting in greater impacts to vegetation and wildlife habitat (Impact BIO-4), potential cultural resources (Impact CULT-1 thru CULT-3), and waterways (Impact BIO-5) compared with the proposed Project natural gas pipeline, which would be entirely within roadbeds and their shoulders. In addition, the Natural Gas Pipeline Reroute Alternative would be 3.4 miles longer resulting in greater ground disturbance and associated construction-related impacts. Because the Natural Gas Pipeline Reroute Alternative would avoid risk of upset impacts on sensitive land uses over the operational life of the proposed Project, although short term construction impacts would be approximately 25% greater, it is considered to be the environmentally preferred natural gas pipeline route.

Conclusion for the Environmentally Superior Alternative. As discussed in Section 5.1, under CEQA, 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 that are generally given more weight in comparing alternatives are those with longer-term impacts (e.g., permanent loss of habitat or as a result of life time Project operations). Impacts that are short-term (e.g., construction-related impacts) or those that are easily mitigable to less than significant levels are generally considered to be less important. In the case of the permanent loss of vegetation, mitigation is required to restore the various vegetation types that would be lost. As proposed, the operating life of the Project would be 30 to 50 years or more. As a result, impacts related to operations are considered to be most important.

In summary, a combination of the Oak Avoidance Alternative for oil field development, Plains or Phillips 66 Pipeline Alternatives for crude oil truck transport, and the Natural Gas Pipeline Reroute Alternative offer environmental advantages over the entire proposed Project. The significance levels (Class I and II) of the impacts identified for the proposed Project would not be reduced under these alternatives and all recommended mitigation measures and local and State regulations would apply.

Based on the foregoing, a combination of ***the Oak Avoidance Alternative for the proposed oil field development and operation, Plains or Phillips 66 Pipeline Alternatives for crude oil transport, and the Natural Gas Pipeline Reroute Alternative are considered to be the Environmentally Superior Alternative.***