

SECTION 5.0 PROJECT ALTERNATIVES

5.1 CALIFORNIA ENVIRONMENTAL QUALITY ACT REQUIREMENTS FOR ALTERNATIVE ANALYSIS

This section discusses the alternatives to the Inglewood Oil Field Specific Plan Project (Specific Plan or Project) that would potentially avoid or lessen the significant environmental impacts while obtaining most of the basic Project Objectives. Sufficient information about each alternative is included to allow meaningful evaluation, analysis, and comparison with the Project. Per Section 15126.6(d) of the California Environmental Quality Act (CEQA) Guidelines, potential significant effects of the alternatives are discussed in less detail than the significant effects of the Project as proposed.

Sections 15126.6(a) through 15126.6(f) of the State CEQA Guidelines (14 *California Code of Regulations* [CCR]) provide guidance on the alternatives to a project that must be evaluated in an Environmental Impact Report (EIR). Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (*California Public Resources Code*, Section 21002.1), the discussion of alternatives must focus on alternatives to the project or its location that are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.

An EIR must describe a range of reasonable and of potentially feasible alternatives to the Project, or to the location of the Project, which would feasibly attain most of the basic Project Objectives but would avoid or substantially lessen any significant effects. The comparative merits of the alternatives must be evaluated.

An EIR need not consider every conceivable alternative, but it must consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation. An EIR is not required to consider alternatives that are infeasible. The range of alternatives is governed by a “rule of reason” that requires discussion of only those alternatives necessary for the City of Culver City (Lead Agency) to make a reasoned choice.

Key provisions of the CEQA Guidelines on alternatives (Section 15126.6[b] through [f]) are summarized below to explain the foundation and legal requirements for the alternatives analysis in the EIR:

- The discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly (15126.6[b]).
- The range of potential alternatives to the project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects. The EIR should briefly describe the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency’s determination. Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (i) failure to meet most of the basic project objectives, (ii)

infeasibility, or (iii) inability to avoid significant environmental impacts (15126.6[c]).

- The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the 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 , the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as (15126.6[d]).
- The specific alternative of “no project” shall also be evaluated along with its impact (15126.6[e][1]). The “no project” analysis shall discuss the existing conditions at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services. If the environmentally superior alternative is the “no project” alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives (15126.6[e][2]).
- The range of alternatives required in an EIR is governed by a “rule of reason” that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project. The range of feasible alternatives shall be selected and discussed in a manner to foster meaningful public participation and informed decision making (15126.6[f]).
- For alternative locations, “Only locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR” (15126.6[f][2][A]).
- If the lead agency concludes that no feasible alternative locations exist, it must disclose the reasons for this conclusion, and should include the reasons in the EIR (15126.6[f][2][B]).
- An EIR need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative (15126.6[f][3]).

Pursuant to the CEQA Guidelines summarized above, a reasonable range of alternatives to the Project is considered and evaluated in this Draft EIR.

5.2 PROJECT GOAL AND OBJECTIVES

5.2.1 PROJECT GOAL

The goal of the Specific Plan is to establish safeguards and controls for activities related to drilling for and production of oil, gas, and other hydrocarbon substances within the City's portion of the Inglewood Oil Field. The following Project Objectives are consistent with the Specific Plan's Objectives (Culver City 2017).

5.2.2 PROJECT OBJECTIVES

Consistent with the proposed Inglewood Oil Field Specific Plan, the City of Culver City has identified the following objectives for the proposed Project:

1. To maximize the potential for Oil Operations are conducted in a comprehensively coordinated manner consistent with a programmatic plan for a defined physical and in harmony with adjacent land uses and in a manner that protects the public health, safety and welfare, and the environment;
2. To facilitate cooperation with affected and adjacent government agencies in implementing all reasonable measures to reduce impacts to the surrounding communities;
3. To facilitate cooperation and coordination for multi-agency response to Oil Field emergency situations;
4. To minimize or eliminate potential adverse environmental, public health and safety impacts of Oil Operations by the implementation of area-specific regulations and mitigation measures;
5. To ensure, that existing Oil Field facilities are in compliance with the requirements of this Specific Plan before any new Oil Field drilling activities are permitted;
6. To minimize Oil Field emergencies and ensure that appropriate regulations are in place to assist affected and adjacent government agencies in identifying all reasonable measures to reduce impacts to surrounding communities in the event that an emergency occurs;
7. To enhance the appearance of the Oil Field site is enhanced with landscaping and other property maintenance requirements in order to preserve and improve the visual character and quality of the surrounding uses; and
8. To ensure that new applications for oil and gas Drilling Use Permits address the consolidation of Oil Field facilities to reduce odor, visual, noise, safety, health, and environmental impacts from Oil Operations to surrounding land uses and City residents.

5.3 SUMMARY OF THE PROJECT

The primary entitlement action associated with the Project would be the adoption of the Inglewood Oil Field Specific Plan (Specific Plan). Secondary entitlement actions include modifications to the City's existing plans and regulations affecting oil drilling and oil operations activity to ensure consistency between the new requirements and existing policies and standards. The Specific Plan includes a set of oil drilling regulations designed to protect the public health, safety, and welfare of the environment and citizens of City of Culver City and surrounding communities. The Specific Plan would update and supersede the City's existing oil drilling regulations and is intended to address the changes in the last decade in oil production-related technology, legislation, public concerns and environmental considerations.

This EIR analyzes a “Maximum Buildout Scenario,” which is defined by a set of assumptions that identify and quantify potential oil field related activities that are reasonably foreseeable through the implementation of and compliance with the Specific Plan. Defining oil field related activities based on the practices (past, present or future) of a specific leaseholder or operator is not reliable, as these may change over time. The Maximum Buildout Scenario sets forth a combination of activities (e.g., construction, maintenance, and operation) that conservatively represents the potential impacts of City IOF development in the context of the requirements and restrictions set forth in the Specific Plan.

The Specific Plan would permit development of the City IOF over a period of 15 years, assumed to range from 2018 through 2032. However, once the maximum cap on new wells has been met, no further development would be allowed. Drilling Regulation Section 31.B.1 provides that up to two wells may be drilled or redrilled each year, with the possibility of a third well included annually (subject to City approval) following the second year, provided that the total number of new or redrilled wells does not exceed the maximum cap of 30 wells. Under an accelerated development scenario (i.e., drilling three wells per year), it is possible that the span of development could be as short as 11 years, rather than 15 years as allowed under the Specific Plan. Ultimately, the actual span of development will be based on future market conditions and other factors as determined by the holder(s) of the lease of the Oil Field. Because the Project would allow for activities within the Oil Field to occur over time at an unknown rate of implementation through 2032, construction, maintenance, and operation activities would likely occur at the same time. Therefore, there would not be a defined short-term construction period and defined long-term operational period, like there is for most land development projects. Hence, the impact analyses rely on the Maximum Buildout Scenario to set forth a conservative development scenario for activities within the City IOF for the purposes of assessing environmental impacts, which includes the assumption that development activity would be consolidated into a shorter 11 year timeframe. A complete description of the Maximum Buildout Scenario assumptions are defined in Section 3.0, Project Description, and is assumed for all topical impact areas (EIR Sections 4.1 through 4.15) unless otherwise specified within the topical section, as well as for the development scenarios for comparative purposes in the following Project Alternatives analysis. A summary of the key Maximum Buildout Scenario assumptions is provided below.

5.3.1 WELL PAD GRADING AND OTHER EARTHMOVING

This EIR assumes that in the Maximum Buildout Scenario, one well pad would be under construction on the Project Site. Development of the well pad would include grading equipment, on-site workers, and earthmoving of cut materials (presumed to be reused onsite). It is assumed that no new access roads would need to be constructed to support any well pad construction. Table 3-1 in Section 3.0, Project Description, summarizes the assumptions for equipment and personnel for well pad development on the peak day of construction.

5.3.2 NEW WELL DRILLING ACTIVITIES

Drilling Regulation Section 31.B.1. restricts the maximum number of wells to be drilled or redrilled on an annual basis to two wells per year for the first two years. If the Community Development Director determines that the Specific Plan is protective of the public health, safety and welfare, and the environment, then three wells per year may be drilled. Portable temporary tanks (e.g., Baker tanks) would be used to collect drilling fluids. No pits would be constructed or used to store drilling fluids. It is assumed that 100 barrels (4,200 gallons) of potable water would be used per day for the drilling process.

The maximum total number of 30 wells may be drilled (i.e., new wells) or redrilled (i.e., work on existing wells that does not meet the definition of “rework”) on the Project Site. This EIR assumes that in the Maximum Buildout Scenario, the allowable maximum of 30 wells are “new” wells, rather than redrilled wells, because that is the most environmentally impactful assumption. Additionally, it is assumed that no wells are decommissioned during this time.

Drilling Regulation Section 21.J. requires a setback of at least 400 feet from Developed Areas and at least 75 feet from any public roadway within the City IOF for drilling or redrilling. Drilling Regulation Section 33.A. requires that no more than two rigs for reworking, maintenance and/or abandonment shall be present within the Project Site at any one time unless an emergency condition requires additional rigs.

This EIR assumes that in the Maximum Buildout Scenario, new drilling and redrilling activities would only be allowed in the areas shown on Exhibit 3-3, Maximum Buildout Scenario Constraints (see Section 3.0, Project Description), and that no high-volume or high-energy well stimulation would occur within the 400-foot buffer area. Drill rigs used at the Project Site are anticipated to be as tall as 180 feet (LACDRP 2008). Limits on simultaneous activity include one drill rig occurring at the same time as two rigs for reworking (see discussion below). New tanks may not be located within the shaded area depicted on Exhibit 3-3, Maximum Buildout Scenario Constraints, and the ideal locations for future tanks that have minimal visibility from surrounding land uses are outlined on the graphic.

5.3.3 WELL STIMULATION ACTIVITIES

The Specific Plan currently does not have any restrictions on the number of wells that may be subject to well stimulation treatments and does not restrict deep-well wastewater injection. Instead, a determination as to whether and upon what terms the adopted Specific Plan would allow well stimulation treatments to be conducted within the Project Site will be determined by the City Council after having reviewed the information available, including this Specific Plan EIR. To that end, the maximum number of wells that may be subject to well stimulation treatments, specifically hydraulic fracturing at one time for the purpose of the Maximum Buildout Scenario, is assumed to be one.

5.3.4 REWORK AND MAINTENANCE ACTIVITIES

Rework rigs used at the Project Site are anticipated to be as tall as 80 feet in height (LACDRP 2008). Drilling Regulation Section 33.A. requires that no more than two rigs for reworking, maintenance and/or abandonment shall be present within the Project Site at any one time unless an emergency condition requires additional rigs. For the Maximum Buildout Scenario, it is assumed that no wells are abandoned or plugged. However, worker and other truck trips associated with other routine operation and maintenance activities would occur.

5.3.5 OTHER APPURTENANT FACILITIES

Drilling Regulation Section 14 prohibits construction of Major Facilities (e.g., refineries, fractionation/distillation activities, absorption plants, gas plants, gas processing, bioremediation facility, steam drive plant, oil cleaning plant, carbon dioxide separation or recovery plant, or water treating and processing facility) on the Project Site. Construction of new storage tanks would be in accordance with the Specific Plan.

Drilling Regulation Section 16.C. prohibits the construction of new storage tanks closer than 500 feet from any Developed Area or closer than 200 feet from a public road. No building shall be

constructed within 50 feet of any oil storage tank. Whenever feasible, new tanks will not be placed on ridgelines and will be located such that they are not visible from residences, parks or other public area unless screened. Lighting on the Project Site would be in accordance with Drilling Regulation Section 36, which provides provisions concerning screening and preparing a Lighting Plan.

5.4 SUMMARY OF THE PROJECT'S SIGNIFICANT AND UNAVOIDABLE IMPACTS

Alternatives to the Project include those that would attain most of the Project Objectives listed above, while reducing one or more of the significant and unavoidable impacts of the Project. Based on the analyses in Sections 4.1 through 4.15 of this Draft EIR, the Project could result in significant environmental effects after implementation of mitigation for the following environmental topics.

- **Section 4.2: Localized Air Quality**

Significant Unavoidable Impact AQ-1: With implementation of MM AQ-1, MM AQ-2, and MM AQ-3, the Maximum Buildout Scenario could generate localized emissions of NOx, PM10 and PM2.5 at levels that exceed the operational localized significance threshold. While MM AQ-3 requires that additional emissions reductions be implemented to reduce Project impacts, MM AQ-3 does not specifically require that the Oil Field Operator reduce emissions locally through the use of electric engines. Additionally, the use of regional offsets (see Option 2) or offsets within the larger County IOF (see Option 3) were determined to be ineffective at reducing localized impacts at a specific sensitive receptor site. Therefore, even with MM AQ-3, the Project could result in significant and unavoidable direct and cumulative impacts for localized NOx, PM10, and PM2.5 emissions at some potential well locations where sensitive receptors are close enough to be affected.

- **Section 4.5: Geology, Soils and Seismicity and Section 4.7: Hazards, Hazardous Materials, and Risk of Upset**

Significant Unavoidable Impact GEO-1: Even with implementation of MM GEO-1, which requires implementation of an Induced Seismicity Avoidance, Monitoring, Evaluation, and Mitigation Protocol (e.g. traffic-light system); MM GEO-2, which prohibits deep well wastewater disposal in the City IOF unless otherwise approved by the City; interim MMs GEO-3 and MM GEO-4, which address seismicity, fault rupture, and groundshaking hazards from well stimulation activities; and interim MM GEO-5, which addresses post-earthquake response requirements are part of the spill contingency plan for well stimulation treatments, the potential for well stimulation treatments to result in induced seismicity cannot definitively be reduced to a level less than significant. As such, the Project could result in both direct and cumulative significant and unavoidable impacts for induced seismicity, rupture of a known earthquake fault, and for strong seismic groundshaking, also resulting in significant and unavoidable direct and cumulative impacts related to accident conditions associated with induced seismicity.

- **Section 4.10: Noise**

Significant Unavoidable Impact NOI-1: Because noise reductions from the Specific Plan's Quiet Mode Drilling Plan requirement cannot be reasonably quantified, and because MM NOI-2 and MM NOI-3 would not adequately reduce new well drilling noise during nighttime hours at the closest sensitive receptor, direct impacts and cumulative impacts from 24-hour well drilling noise could be significant and unavoidable for some potential well locations located in proximity to residences.

5.5 ALTERNATIVES CONSIDERED AND REJECTED DURING THE SCOPING AND PROJECT PLANNING PROCESS

As discussed above, an EIR should identify alternatives that were considered by the Lead Agency but were eliminated from detailed consideration because they were determined to be infeasible during the scoping process and briefly explain the reasons underlying the Lead Agency's determination. Of the potential alternatives that were considered by the City of Culver City, three were eliminated from further consideration based on one or more of the following: (i) failure to meet most of the basic project objectives, (ii) infeasibility, or (iii) inability to avoid significant environmental impacts.

5.5.1 ADOPT THE COUNTY CSD PROGRAM

Discussion of adopting the County CSD was considered as a possible alternative to the Project, but it was rejected, and therefore not evaluated. The City is on public record with comments and concerns about the CSD program and its anticipated impacts to the Culver City community. City Council direction to prepare the Discussion Draft was predicated on certain Objectives that could not otherwise be met by the CSD Program alone. Therefore, the adoption of the CSD Program as an alternative to the Specific Plan would not meet the Project objectives (as already indicated through City Council direction to prepare a Specific Plan) and it can be assumed that the CSD Program would not reduce environmental impacts beyond those levels associated with the Project (which is designed to be more environmentally protective and to reflect the environmental performance criteria identified by the City of Culver City).

5.5.2 NO NEW DRILLING WITHIN THE BUFFER ZONE

This alternative would have eliminated the exemption under Drilling Regulation Section 21.J.1.c that would conditionally allow drilling within the 400-foot setback buffer zone only when it can be demonstrated that drilling activity within the setback area would not be detrimental to the public health, safety or welfare, or the environment. Potentially, this alternative would reinforce an overarching goal of the Project to consolidate drilling activities so as to further the Project objectives for enhancing the visual appearance and containing the extent of other environmental effects within a smaller physical footprint. This alternative would have affected possibly between 5 and 10 wells that are currently active within the buffer zone such that major re-work or re-drilling or well stimulation activities would not be conditionally allowed and thus could affect (i.e., shorten) the longevity of those existing wells within the setback area. This alternative was considered but rejected, and therefore not evaluated, because it is believed that both the No Project alternative and the Project, or partial aspects of each, effectively accomplish this scenario through the discretionary review process, which offers no certainty that new drilling or continued drilling or production within the 400-foot setback buffer area would be approved and because any such approval must be consistent with Drilling Regulation Section 21.J.1.c, which requires that new drilling within the buffer zone cannot generate any additional environmental impacts (presumably beyond those identified in the Draft EIR). this Draft EIR

5.5.3 ALTERNATIVE LAND USES

The community's feedback at two City Council community meetings (i.e. April 17, 2017, July 11, 2017) for the proposed Project included requests that the City (and EIR) consider and evaluate options to phase out oil production activities on the Project site and instead develop alternative land uses, such as a public park or facilities for renewable energy (i.e., solar, wind). These options were acknowledged by the City Council as potential alternatives for discussion. However, as discussed above, an EIR must describe a range of reasonable and of potentially feasible

alternatives to the Project, or to the location of the Project, which would feasibly attain most of the basic Project Objectives but would avoid or substantially lessen any significant effects.

Because this Draft EIR is addressing the Drilling Regulations of the Specific Plan, the Project Objectives (refer to Section 5.2.2) are related to oil production activities. Any alternative land use not based on continued operation of the City IOF in some manner would not meet any of the Objectives. The purpose of the Specific Plan is to adopt a comprehensive and updated set of regulations to govern the nonconforming oil production use within the City IOF. Alternative long-term land uses in replacement of the proposed Project are more appropriately addressed through a comprehensive planning program, such as the future Baldwin Hills/Blair Hills Focused Special Study or the Culver City General Plan. The City has recently initiated a General Plan Update and will be addressing the future of all land uses within City limits through this process, including the potential long-term land uses for Project site.¹

5.6 SUMMARY OF ALTERNATIVES UNDER CONSIDERATION

The City, as Lead Agency, has developed a reasonable range of potentially feasible alternatives that are intended to foster informed decision making and public participation, and would facilitate the City making a reasoned choice. On this basis, five alternatives have been evaluated to provide a meaningful comparison of a range of regulatory and/or technological approaches to the proposed Project. The following alternatives to the Project, which meet most of the most basic Project objectives and offer a measurable potential to reduce one or more significant impacts, are under consideration in this Draft EIR:

- Alternative 1: No Project
- Alternative 2: Prohibit Deep Wastewater Disposal Injection
- Alternative 3: Prohibit All Well Stimulation Treatments, including Hydraulic Fracturing
- Alternative 4: Mandatory Use of Electricity to Power Drill Rig and Hydraulic Fracturing Equipment
- Alternative 5: No Net Increase in Wells

The analysis of each of the Project alternatives identified below includes the following:

- A brief description of the alternative.
- An analysis of environmental impacts and a comparison to the possible impacts of the Project. Pursuant to Section 15126.6(e) the State CEQA Guidelines, if an alternative would cause one or more significant effects in addition to those that would be caused by the Project, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the Project.
- An assessment of the alternative's ability to meet the Project Objectives (which are listed in Sections 3.3 and 5.2.2 this Draft EIR).

The analysis of each alternative assumes that, unless specified otherwise or inherently implied, compliance with relevant Regulatory Requirements (RRs) as well as implementation of the Mitigation Measures (MMs) identified in Sections 4.1 through 4.15 of this Draft EIR and assumed applicable to the Project would also be implemented and/or required for each of the Project

¹ For further information regarding the General Plan Update, please contact Ashley Hefner, AICP, Advance Planning Manager at 310-253-5744 or ashley.hefner@culvercity.org.

alternatives, as appropriate. Further, the applicable assumptions of the Maximum Buildout Scenario are generally assumed for each alternative unless specified (or implied) otherwise.

5.7 ALTERNATIVE 1: NO PROJECT

Section 15126.6(e) of the State CEQA Guidelines requires that an EIR evaluate a “No Project” alternative in order to allow decision makers to compare the impacts of approving the Project with the impacts of not approving the Project. Section 15126.6(e)(2) of the CEQA Guidelines specifies that the “No Project analysis shall discuss the existing conditions at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, as well as what would be expected as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services”.

The CEQA Guidelines goes on to define two possible methods of analyzing the No Project alternative. CEQA Guidelines Section 15126.6(e)(3)(A), states that if the project is the revision of an existing land use or regulatory plan, policy, or ongoing operation, the analysis should assume the continuation of the existing plan, policy, or operation into the future. Typically this is a situation where other projects initiated under the existing plan will continue while the new plan is developed. Thus, the projected impacts of the plan or alternative plans would be compared to the impacts that would occur under the existing plan.

The Project, as defined in Section 3.0 Project Description this Draft EIR, would not change the intended long-term underlying land use, but would establish interim land use policies and regulatory standards to govern the oil operation activities at the Project Site for the term of the Specific Plan (i.e., for a minimum of 15 years). As such, this Alternative 1 discusses the environmental effects of the property continuing to operate under the existing City of Culver City Zoning Code requirements. The Zoning Code is contained in Culver City Municipal Code (CCMC) Title 17, Zoning (Zoning Code). The Project Site is zoned R1 (Residential Single Family); OS (Open Space) and IG (Industrial General). While oil and gas production is not a specifically permitted use in these zoning districts, oil and gas production is allowed in the City IOF as a continuing nonconforming use per Zoning Code Section 17.610.010.D.

Alternative 1 assumes that the Inglewood Oil Field Specific Plan would not be adopted. Therefore, Section 17.610.010.D of the Zoning Code would not be amended to specify that the Specific Plan regulations would apply to oil and gas production uses in the City IOF. Also, Alternative 1 assumes that Section 17.610.010.D of the Culver City Zoning Code would not be amended to establish updated development standards and conditions to address environmental impacts of well drilling and the operation of wells and other oil and gas production related equipment and facilities, including production, completion, stimulation, reworking, injection, monitoring, and plugging and abandonment. Moreover, Alternative 1 assumes that Chapter 11.12, Oil, Gas and Hydrocarbons, of the Culver City Municipal Code would not be repealed and replaced by the Specific Plan and that Section 9.07 (Noise Regulations) of the Municipal Code would not be modified to clarify noise regulations within the Specific Plan area.

In summary, the comprehensive program proposed by the Specific Plan, which specifies setback buffers from developed areas and sensitive uses, limitations on the frequency and intensity of drilling activities, restrictions on simultaneous or concurrent activities, and requires coordination with other agencies for activities within the Specific Plan area, would not be implemented. Instead, existing and potential future City IOF activities and CEQA review of individual applications that could be processed under the current No Project regulations would continue in a piecemeal manner limited to a case-by-case basis that is not comprehensively planned or coordinated.

5.7.1 COMPARATIVE ANALYSIS OF ENVIRONMENTAL IMPACTS

Alternative 1 would represent a scenario where oil drilling/production could continue to occur in the City IOF, but without the higher level of oversight and comprehensive program management that would be established by the Specific Plan. In concept, the Project could be characterized as an action that removes an impediment to drilling in Culver City because it offers (potentially) a more streamlined process and a greater degree of certainty for future drilling permit requests that does not currently exist under the City's oil permitting process. Alternately, the Project could be characterized as an action that is more restrictive than the current regulatory oversight requirements due to the requirement to adhere to Specific Plan mandates to protect the health, safety and welfare of City residents, as well as due to quantitative limitations on the number and location of future drilling activities. It is difficult to determine whether maintaining the City's existing regulations and project review process would be an incentive, a disincentive, or have no measurable influence in the number of new well applications in either the short run or long run. Because it would be speculative to estimate the intensity and type of future activities in the City IOF that would occur without the Project, no such evaluative comparison of environmental impacts on that basis has been performed.

It cannot be known how the Oil Field Operators would operate under future conditions without the Specific Plan; as such, it cannot be determined whether the Alternative 1 would be an environmentally superior alternative. Under the Alternative 1, any new drilling would still require a permit, which is a discretionary action by the City, and an environmental review pursuant to CEQA. Hence, even though quantifying impacts of Alternative 1 would be speculative, it is reasonable to assume that any environmental impacts would be mitigated to the fullest extent reasonable (as required under CEQA). Additionally, because Alternative 1 would be approached on a permit-by-permit approach, it is possible that the City could disallow new wells considerably below the 30 new-well limit under the Specific Plan should any of the first few permits demonstrate or result in significant impacts. However, Alternative 1 is less favorable than the Project because it results in a piecemeal approach to City IOF development.

Alternative 1 Environmental Impact Summary

It is difficult to determine whether maintaining the City's existing regulations and project review process would be an incentive, a disincentive, or have no measurable influence in the number of new well applications. Under Alternative 1, the City would maintain control over the decision of whether to issue drilling permits, would conduct environmental review on a permit-by-permit basis, and would still have the option whether to adjust the regulations at some other point in the future.

However, under Alternative 1, the City would not have the opportunity to devise a comprehensive and coordinated programmatic plan that: a) specifies setback buffers from developed areas and sensitive uses; b) identifies limitations on the frequency and intensity of drilling activities; c) recommends restrictions on simultaneous or concurrent activities; and d) requires coordination with other agencies for activities within the Specific Plan area. For these reasons, the Alternative 1 cannot with any degree of certainty guarantee that environmental impacts would be reduced below those levels determined for the proposed Project.

Alternative 1: Project Objectives Consistency Summary

As presented in Table 5-1 below, Alternative 1 would not fully meet the Project's Objectives.

**TABLE 5-1
ALTERNATIVE 1: NO PROJECT
EVALUATION OF PROJECT OBJECTIVES**

Objective	Consistency Analysis
<p>1. To maximize the potential for Oil Operations to be conducted in a comprehensively coordinated manner consistent with a programmatic plan for a defined physical area and in harmony with adjacent land uses in a manner that protects the public health, safety and welfare, and the environment.</p>	<p>Partially Consistent: Under Alternative 1, it is reasonable to assume that any environmental impacts of development within the City IOF would be mitigated to the fullest extent reasonable by the City on a permit-by-permit basis, as required under CEQA. Additionally, it is possible that the City could disallow new wells considerably below the 30 new-well limit under the Specific Plan and/or curtail other development in the City IOF in response to significant environmental impacts.</p> <p>However, current regulatory requirements in the City IOF are not as comprehensive or restrictive as the Specific Plan requirements. The Specific Plan sets forth standards and/or requirements for all environmental topical areas addressed in this Draft EIR, which are more restrictive than the Chapter 11.12, Oil, Gas and Hydrocarbons, of the Culver City Municipal Code. Importantly, Drilling Regulation Section 4 requires the Oil Field Operator to set forth a Comprehensive Drilling Plan that will guide the development of Annual Drilling Plans and the issuance of Drilling Use Permits. This requirement would inform the City about the Oil Field Operator's future wells, locations of drill sites, and the type and nature of anticipated oil recovery methods. This allows the City to anticipate long-term consequences of Oil Field development and to plan ahead for remedies that maximize the harmonious co-existence of the oil field and adjacent land uses. The Specific Plan also places a maximum allowable number of wells that can be drilled through 2032, which provides clarity regarding future buildout.</p> <p>Under Alternative 1, there would be no opportunity for: 1) a comprehensive and coordinated approach to City IOF development afforded by the Comprehensive Drilling Plan because development on the City IOF would be evaluated on a permit-by-permit basis; 2) applying mitigations that are most feasible for the entire City IOF area that may not be applied or eligible under the permit-by-permit approach (e.g., due to an inability to apply economy of scale factors); and 3) thorough assessment of and mitigation for cumulative impacts. It is possible that future City Councils would come to the same restrictive measures as set forth in the Specific Plan for each future application for development on the Oil Field; however, this could not be assured, and it therefore does not "maximize" the potential for Oil Operations to be conducted in harmony with adjacent land uses in a manner that protects the public health, safety and welfare, and protects the environment.</p>
<p>2. To facilitate cooperation and coordination among affected and adjacent government agencies in implementing all reasonable measures to reduce impacts to the surrounding communities.</p>	<p>Partially Consistent: In the current condition, the City does not have explicit mandates to facilitate cooperation and coordination among affected and adjacent government agencies in implementing all reasonable measures to reduce impacts to the surrounding communities. Although Alternative 1 does allow for a discretionary action for which adjacent agencies may provide comments and that may include conditions of approval that direct certain compliance requirements with other agencies, this objective would not be satisfied to the same level that could be accomplished through the Specific Plan.</p>

**TABLE 5-1
ALTERNATIVE 1: NO PROJECT
EVALUATION OF PROJECT OBJECTIVES**

Objective	Consistency Analysis
3. To facilitate cooperation and coordination for multi-agency response to Oil Field emergency situations.	Partially Consistent: In the current condition, the City does not have explicit mandates to facilitate cooperation and coordination for multi-agency response to Oil Field emergency situations. Although Alternative 1 does allow for a discretionary action for which emergency-response and mutual-response agencies may provide comments and that may include conditions of approval that direct certain compliance requirements and facilitate coordinated emergency response, this objective would not be satisfied to the same level that could be accomplished through the Specific Plan.
4. To minimize or eliminate potential adverse environmental, public health, and safety impacts of Oil Operations by the implementation of area-specific regulations and mitigation measures.	Partially Consistent: See discussion under Objective 1. In addition, the development of the Specific Plan has allowed for the comprehensive evaluation of development in the City IOF pursuant to CEQA, as set forth in this Draft EIR, which includes required mitigation measures (MMs) to further reduce potentially significant direct and cumulative environmental impacts, taking into consideration the full buildout of the City IOF. Alternative 1 would not ensure that new applications for oil and gas Drilling Use Permits would address the cumulative odor, visual, noise, safety, health, and environmental impacts from Oil Operations to surrounding land uses and City residents to the same extent because approvals would be considered on a permit-by-permit basis.
5. To ensure that existing Oil Field facilities are in compliance with the requirements of this Specific Plan before any new Oil Field drilling activities are permitted.	Partially Consistent: Drilling Regulation Section 9 requires that prior to the approval of the Comprehensive Drilling Plan, a covenant and agreement, on a form provided by the Community Development Director and in form and substance acceptable to the City Attorney, acknowledging and agreeing to comply with all established terms and conditions, must be signed by the Operator and property owner(s) and recorded in the County Recorder's Office. The covenant and agreement runs with the land and is binding on any subsequent Operators, owners, and tenants or occupants of the Oil Field. Under Alternative 1, the City does not require compliance with a Comprehensive Drilling Plan prior to approval of individual project applications. Although Alternative 1 does allow for a discretionary action that may include conditions of approval that direct certain compliance requirements, this objective would not be satisfied to the same level that could be accomplished through the Specific Plan.
6. To minimize Oil Field emergencies and ensure that appropriate regulations are in place to assist affected and adjacent government agencies in identifying all reasonable measures to reduce impacts to surrounding communities in the event that an emergency occurs.	Partially Consistent: Drilling Regulation Section 12; Section 15; Section 16; Section 17; Section 18; Section 20; Section 21; Section 28; Section 34; Section 49; Section 53; and Section 54 contain measures that address emergency prevention and/or preparedness. The Specific Plan contains guidance to help reduce hazards and hazardous materials. These generally include requirements for a Stormwater Pollution Prevention Plan (SWPPP); Spill Prevention, Control, and Countermeasure Plan (SPCCP); Groundwater Monitoring Program; Water Management Plan; remediation of any hazardous substance that is discharged, dispersed, released or that escapes into soils, water or groundwater; vapor recovery systems for produced water tanks; closed systems for produced oil and water; requirements for water injection processing operations; and compliance with DOGGR and other applicable local, State and federal regulations. The Oil Field Operator is already required to prepare an Emergency Response Plan as required by Section 5192 of Title 8 of the California Code of Regulations and the EPA requirements set forth in 40 Code of

**TABLE 5-1
ALTERNATIVE 1: NO PROJECT
EVALUATION OF PROJECT OBJECTIVES**

Objective	Consistency Analysis
	Federal Regulations 112. However, Section 12 includes measures that exceed State requirements. Although Alternative 1 does allow for a discretionary action that may include conditions of approval that direct certain compliance requirements, this objective would not be satisfied to the same level that could be accomplished through the Specific Plan.
7. To enhance the appearance of the Oil Field site with landscaping and other property maintenance requirements in order to preserve and improve the visual character and quality of the surrounding uses.	<p>Partially Consistent: Drilling Regulation Section 11; Section 16; Section 21; Section 31; Section 36; Section 37; and Section 41 contain measures that are intended to enhance the appearance of the Oil Field with landscaping and other property maintenance requirements.</p> <p>Under Alternative 1, the City does not have such comprehensive requirements, and would make decisions about individual Oil Field project activities on a case-by-case basis, which does not allow for consideration of the anticipated totality of actions and consequences. It is possible that future City Councils would come to the same restrictive measures as set forth in the Specific Plan for each future application for development on the Oil Field; however, this objective would not be satisfied to the same level that could be accomplished through the Specific Plan.</p>
8. To ensure that new applications for oil and gas Drilling Use Permits address the consolidation of Oil Field facilities to reduce odor, visual, noise, safety, health, and environmental impacts from Oil Operations to surrounding land uses and City residents.	<p>Partially Consistent: Drilling Regulation Section 11; Section 12; Section 15; Section 16,, Section 17; Section 18; Section 20; Section 21; Section 22; Section 23; Section 28; Section 31; Section 34; Section 36; Section 37; Section 41; Section 49; Section 53; and Section 54 contain measures that address odor, visual, noise, safety, health, and other general environmental impacts of oil field development in the City IOF.</p> <p>These requirements include emission offsets; development of an odor minimization plan; air monitoring for hydrogen sulfide (H₂S) and total hydrocarbon vapors; a portable flare for drilling; oil tank pressure monitoring and venting; closed systems for produced oil and water; drilling and redrilling setbacks that require drilling to be at least 400 feet from developed areas and at least 75 feet from any public roadway; slant drilling requirements for deep-zone and mid-zone wells; Fugitive Dust Control Plan; landscaping and fencing; lighting standards; noise limits and quiet mode drilling plan; vibration monitoring; inspection and maintenance program information requirements; and greenhouse gas recordkeeping and cap and trade program information.</p> <p>In addition, the development of the Specific Plan has allowed for the comprehensive evaluation of development in the City IOF pursuant to CEQA, as set forth in this Draft EIR, which includes required mitigation measures (MMs) to further reduce potentially significant direct and cumulative environmental impacts, taking into consideration the full buildout of the City IOF. Alternative 1 would not ensure that new applications for oil and gas Drilling Use Permits would address the cumulative odor, visual, noise, safety, health, and environmental impacts from Oil Operations to surrounding land uses and City residents to the same extent because approvals would be considered on a permit-by-permit basis.</p>

5.8 **ALTERNATIVE 2: PROHIBIT DEEP WELL WASTEWATER DISPOSAL**

As currently proposed, the Project would not specifically prohibit the construction and operation of wells within the Project Site for the disposal of wastewater (e.g., flowback) through injection into a non-hydrocarbon zone in the deeper strata beneath the Inglewood Oil Field. However, recommended mitigation measure MM GEO-2, if adopted, would prohibit such deep well injection of wastewaters for an indeterminate period of time, subject to the discretion of the City of Culver City. Under the Project, the prohibition may be lifted in total or partially with the provision of a site-specific geotechnical investigation prepared by a qualified engineer that demonstrates the feasibility of deep well wastewater disposal on the Project Site while adequately mitigating for hazards associated with induced seismicity.

Alternative 2 allows for the environmental consequences of the interim prohibition set forth in MM GEO-2 to be evaluated, and also considers the consequences of a permanent prohibition of deep well wastewater disposal. Although Alternative 2 appears similar to a mitigated version of the Project, it additionally defines a specific process for disposal of hydraulic fracturing wastewater and assumes that hydraulic fracturing would be allowed. Also, unlike the Project, for which MM GEO-2 could possibly allow for deep well wastewater disposal at some time in the future if adequate scientific evidence is available to indicate it is safe, Alternative 2 would simply prohibit it out-right for the life of activities in the City IOF.

Drilling Regulation Section 13, prohibits the use or maintenance of any sumps for storing well stimulation or flowback liquids. Additionally, surface sumps and evaporation ponds have been eliminated from the Inglewood Oil Field and according to the Oil Field Operator, are not anticipated to be a viable means of disposing of wastewater. Drilling Regulation Section 26, prohibits the use of produced water from wells that have undergone well stimulation treatment for the purposes of irrigation. Therefore, on-site evaporation ponds/sumps and irrigation are not allowable options for disposal of wastewater generated from hydraulic fracturing activities under the Specific Plan.

Under Alternative 2, any wastewater generated by any hydraulic fracturing within the City IOF would be transported to the County IOF through existing pipeline infrastructure for treatment at the existing processing facility located on the County IOF, and treated water would be then be disposed consistent with general non-deep well injection disposal methods used in the Inglewood Oil Field (e.g., through waterflooding). The City IOF is approximately 10 percent of the Inglewood Oil Field and, as such, the generation of wastewater from the City IOF is not anticipated to generate the need to expand pipelines or water treatment/storage tank capacity beyond what is already provided within the County IOF.

Waterflooding typically aims to keep the fluid pressure in the oil producing formation near original level. Well injection of other (non-hydraulic fracturing) produced wastewater, as well as injection of flowback water from hydraulic fracturing that has been treated at the County IOF, would be allowed by waterflooding into the hydrocarbon-bearing strata, consistent with DOGGR requirements for the Underground Injection Control (UIC) Program, in order to address subsidence.

As previously discussed in Section 4.5, Geology, Soils and Seismicity, potentially three high-volume hydraulic fracture jobs were conducted at separate wells on the Inglewood Oil Field for the purposes of addressing feasibility and potential impacts of hydraulic fracturing. As documented by Cardno Entrix (2012), the first hydraulic fracture completion was conducted on September 15 and 16, 2011, at the VIC1-330 well. The second completion was conducted on January 5 and 6, 2012, at the VIC1-635 well. Water produced during these two hydraulic fracturing operations was transported by pipeline to the field water treatment plant where it was mixed with

other produced water generated on the Inglewood Oil Field. The treated water was then reinjected into the oil and gas producing formations as part of the waterflood process (Cardno Entrix 2012). As available through DOGGR records, a third well identified as VIC1-38-A was established in 2013 and was utilized for hydraulic fracturing between 2013 and 2014. Although specific details of hydraulic fracturing activity conducted at this well are not specifically known, it is assumed that the fracturing activity and wastewater handling was conducted in a manner similar to that of the previous two wells noted above. Due to this precedent for the disposal of flowback water within the Inglewood Oil Field, Alternative 2 assumes that flowback would be of adequate quality to be used for waterflooding.

Because the nature of the hydraulic fracturing fluids that may be used in the Inglewood Oil Field are unknown, it cannot be said for certain that flowback would be of a quality that could be used for waterflooding. If flowback of fluids used for hydraulic fracturing have impurities that could render it unusable for waterflooding, then either deep well wastewater disposal within the County IOF and/or transport to an off-site treatment facility or injection site would be required. It is too speculative to evaluate the off-site disposal scenario due to the wide range of variability of assumptions that would need to be made, including the cost/benefit of deep well wastewater disposal within the County IOF from the perspective of the Oil Field Operator, as well as the feasibility of off-site transport for treatment/disposal. As such, the speculative scenario of off-site disposal is not evaluated in Alternative 2, except to the extent that such wastewater could reasonably be treated and utilized for routine waterflooding operations. Alternative 2 would not influence the amount of oil/gas production at the City IOF or have any impact on the continued use of the Inglewood Oil Field for oil/gas production.

Flowback from hydraulic fracturing could still be generated in the City IOF, piped to the County IOF for treatment, and then injected through Class II Injection Wells into the hydrocarbon-producing formation for the purpose of subsidence management. Therefore, the elimination of deep well wastewater disposal within the City IOF would not eliminate the injection of flowback into subterranean strata through injection wells. The transfer of flowback water from the Project Site to the County IOF for treatment would be pumped through existing piping and would add to the volume of fluids treated at the County IOF, requiring a slight increase in energy for the pumping and treatment compared to the Project.

Alternative 2 would not alter the allowable areas of earth/vegetation disturbance, the 400-foot buffer area, or any other aspects of earthmoving allowed under the Specific Plan. Under Alternative 2, all other requirements and standards set forth in the Specific Plan would remain applicable.

5.8.1 COMPARATIVE ANALYSIS OF ENVIRONMENTAL IMPACTS

The only environmental topic affected by Alternative 2 is Geology, Soils and Seismicity, as discussed below. All other environmental topics would have similar environmental impacts as analyzed under the Maximum Buildout Scenario.

Geology, Soils and Seismicity

Alternative 2 allows for the environmental consequences of MM GEO-2 to be evaluated by defining a specific process for disposal of hydraulic fracturing wastewater due to the prohibition of deep well wastewater disposal within the City IOF. Flowback water from hydraulic fracturing would be treated within the County IOF facilities and would then be used within the Inglewood Oil Field for waterflooding. Hydraulic fracturing would require increased water demands beyond the conventional oil/gas production activities; therefore, this additional water obtained for the purpose

of hydraulic fracturing would then be treated and made available for use in waterflooding. This additional water supply may prove to be beneficial to inject into the hydrocarbon-bearing strata to address the issue of subsidence within the Inglewood Oil Field, thereby putting this flowback to beneficial use. However, additional water supplies could be made available from the water suppliers for this purpose with or without hydraulic fracturing.

Because Alternative 2 would eliminate the possibility of deep well wastewater disposal all together, it would further reduce the possibility of induced seismicity, even if studies/evidence were presented that determined it would be a safe practice to implement in the Inglewood Oil Field, per the requirements of MM GEO-2. A permanent prohibition would ensure no direct, indirect, or cumulative impacts related to induced seismicity and associated risk of rupture of an earthquake fault and strong seismic ground shaking.

Alternative 2 would have no impact on subsidence because Class II well injection of other (non-hydraulic fracturing) produced wastewater, as well as injection of flowback water from hydraulic fracturing that has been treated at the County IOF, would be allowed for waterflooding into the hydrocarbon-bearing strata, consistent with DOGGR requirements for the UIC Program, in order to address subsidence.

Alternative 2 would result in ***slightly reduced impacts*** to geology, soils, and seismicity due to the permanent prohibition on deep well wastewater disposal, as discussed above; however, the *Significant Unavoidable Impact GEO-1* would remain unchanged due to hydraulic fracturing.

Hazards and Hazardous Materials

Because Alternative 2 would eliminate the possibility of deep well wastewater disposal all together, it would further reduce the possibility of induced seismicity. A permanent prohibition would ensure no direct, indirect, or cumulative impacts related to accidental upset conditions on the Project Site associated with induced seismicity and the associated risk of rupture of an earthquake fault and strong seismic ground shaking. Alternative 2 would result in ***slightly reduced impacts*** to hazards and hazardous materials due to the permanent prohibition on deep well wastewater disposal; however, the *Significant Unavoidable Impact GEO-1* would remain unchanged due to hydraulic fracturing.

Alternative 2: Environmental Impact Summary

As summarized in Table 5-2 below, Alternative 2 would not result in any substantive changes in environmental impacts when compared to the Maximum Buildout Scenario due in large part to the required implementation of MM GEO-1, which would prohibit the construction and operation of deep wastewater disposal injection wells within the Project Site for disposing wastewater (e.g., flowback) into a non-hydrocarbon zone in the deeper strata beneath the Inglewood Oil Field, subject to the discretion of the City of Culver City. Unlike the Project, for which MM GEO-2 could possibly allow for deep well injection at some time in the future if adequate scientific evidence is available to indicate it is safe, Alternative 2 would simply prohibit it out-right, which accounts for the slight reduction in impacts associated with the potential for induced seismicity.

**TABLE 5-2
SUMMARY OF ALTERNATIVE 2 ENVIRONMENTAL IMPACTS**

Environmental Issue	Potential Significance of Alternative 2 Impacts	Summary of Project Impacts	Alternative 2 Comparison to the Project After Mitigation
Aesthetics	Less Than Significant After Mitigation	Less Than Significant After Mitigation	Similar to Project
Air Quality	Significant and Unavoidable Direct and Cumulative Impacts	Significant and Unavoidable Direct and Cumulative Impacts	Similar to Project
Biological Resources	Less Than Significant After Mitigation	Less Than Significant After Mitigation	Similar to Project
Cultural Resources	Less Than Significant	Less Than Significant	Similar to Project
Geology, Soils, and Seismicity	Significant and Unavoidable Direct and Cumulative Impacts	Significant and Unavoidable Direct and Cumulative Impacts	Slightly Reduced Impacts
Greenhouse Gas Emissions	Less Than Significant	Less Than Significant	Similar to Project
Hazards, Hazardous Materials, Risk of Upset	Significant and Unavoidable Direct and Cumulative Impacts	Significant and Unavoidable Direct and Cumulative Impacts	Slightly Reduced Impacts
Hydrology and Water Quality	Less Than Significant After Mitigation	Less Than Significant After Mitigation	Similar to Project
Land Use and Planning	Less Than Significant	Less Than Significant	Similar to Project
Mineral Resources	Less Than Significant	Less Than Significant	Similar to Project
Noise	Significant and Unavoidable Direct Impacts	Significant and Unavoidable Direct Impacts	Similar to Project
Public Services	Less Than Significant	Less Than Significant	Similar to Project
Recreation	Less Than Significant	Less Than Significant	Similar to Project
Transportation and Traffic	Less Than Significant	Less Than Significant	Similar to Project
Utilities and Service Systems	Less Than Significant After Mitigation	Less Than Significant After Mitigation	Similar to Project

Alternative 2: Project Objectives Consistency Summary

As summarized in Table 5-3 below, Alternative 2 would be consistent with all of the Project Objectives.

**TABLE 5-3
ALTERNATIVE 2: EVALUATION OF PROJECT OBJECTIVES**

Objective	Consistency Analysis
1. To maximize the potential for Oil Operations to be conducted in a comprehensively coordinated manner consistent with a programmatic plan for a defined physical area and in harmony with adjacent land uses in a manner that protects the public health, safety and welfare, and the environment.	Consistent: Alternative 2 would “maximize” the potential for Oil Operations to be conducted in harmony with adjacent land uses in a manner that protects the public health, safety and welfare, and protects the environment in the same manner as the Project. The permanent prohibition of deep well wastewater disposal would not substantially alter the Project’s ability to meet this objective because MM GEO-2 would be required upon Project approval. Alternative 2 would not further this objective because it would not avoid or substantively reduce any of the significant and unavoidable environmental impacts.
2. To facilitate cooperation and coordination among affected and adjacent government agencies in implementing all reasonable measures to reduce impacts to the surrounding communities.	Consistent: Alternative 2 would not alter the Specific Plan requirements related to facilitating cooperation and coordination among affected and adjacent governmental agencies.
3. To facilitate cooperation and coordination for multi-agency response to Oil Field emergency situations.	Consistent: Alternative 2 would not alter the Specific Plan requirements related to facilitating cooperation and coordination for multi-agency response to Oil Field emergency situations.
4. To minimize or eliminate potential adverse environmental, public health, and safety impacts of Oil Operations by the implementation of area-specific regulations and mitigation measures.	Consistent: See discussion under Objective 1. Alternative 2 would not have any known secondary environmental impacts that would require additional mitigation beyond what has been recommended for the Specific Plan in this Draft EIR.
5. To ensure that existing Oil Field facilities are in compliance with the requirements of this Specific Plan before any new Oil Field drilling activities are permitted.	Consistent: Alternative 2 would not alter the Specific Plan requirements related to compliance with the Specific Plan prior to permitting any new Oil Field drilling activities.
6. To minimize Oil Field emergencies and ensure that appropriate regulations are in place to assist affected and adjacent government agencies in identifying all reasonable measures to reduce impacts to surrounding communities in the event that an emergency occurs.	Consistent: Alternative 2 would not alter the Specific Plan requirements related to minimizing Oil Field emergencies and reducing impacts to surrounding communities in the event that an emergency occurs.
7. To enhance the appearance of the Oil Field site with landscaping and other property maintenance requirements in order to preserve and improve the visual character and quality of the surrounding uses.	Consistent: Alternative 2 would not alter the Specific Plan requirements related to the appearance of the Oil Field.
8. To ensure that new applications for oil and gas Drilling Use Permits address the consolidation of Oil Field facilities to reduce odor, visual, noise, safety, health, and environmental impacts from Oil Operations to surrounding land uses and City residents.	Consistent: Alternative 2 would not alter the Specific Plan requirements related to ensuring that new applications address the reduction of odor, visual, noise, safety, health, and environmental impacts from Oil Field operations to surrounding land uses. Alternative 2 would not further this objective because it would not avoid or substantively reduce any of the significant and unavoidable environmental impacts.

5.9 ALTERNATIVE 3: PROHIBIT ALL WELL STIMULATION TREATMENTS, INCLUDING HYDRAULIC FRACTURING

Alternative 3 would prohibit all well stimulation treatments, including hydraulic fracturing, within the City IOF. As discussed in Section 3.0, Project Description, acid matrix stimulation and acid fracturing, which are most suitable for use in carbonate reservoirs, are well stimulation treatments that are not anticipated to be used for well completion in the Inglewood Oil Field; therefore, impacts of these treatments are not specifically addressed in the Specific Plan or in this Draft EIR. Because Alternative 3 would out-right prohibit hydraulic fracturing, wastewater generated by such activities would be avoided and thus the need for deep well injection disposal of wastewater generated from hydraulic fracturing activities would similarly be avoided in the City IOF. However, because activities that are prohibited in the City IOF would not necessarily be prohibited in the County IOF, this Alternative assumes that any prohibition of well stimulation treatments or coincidental avoidance of deep well wastewater disposal within the City IOF (see Alternative 2) would not be true of other non-City portions of the Inglewood Oil Field.

Alternative 3 would restrict the generation of wastewater derived from hydraulic fracturing, the disposal of which would be a significant impact within the City IOF. Hence, limitations on hydraulic fracturing within the City IOF would be an indirect means to limiting deep well wastewater disposal within the County IOF, if it were to be allowed. Hence, Alternative 3 may be characterized as an additive condition to Alternative 2.

Under Alternative 3, Class II well injection of other (non-hydraulic fracturing) produced wastewater, as well as injection of flowback water from hydraulic fracturing that has been treated at the County IOF, would be allowed for waterflooding into the hydrocarbon-bearing strata, consistent with DOGGR requirements for the UIC Program, in order to address subsidence.

The elimination of well stimulation treatments as presumed under Alternative 3 may result in slight reductions or reduced efficiencies in the volume of oil/gas to be extracted from the City IOF.

Alternative 3 would not alter the allowable areas of earth/vegetation disturbance, the 400-foot buffer area, or any other aspects of earthmoving allowed under the Specific Plan. Under Alternative 3, all requirements and standards set forth in the Specific Plan would remain applicable, with the exception of those requirements that directly address well stimulation treatments (e.g., Drilling Regulation Section 13; Section 21; Section 26; and Section 32).

5.9.1 COMPARATIVE ANALYSIS OF ENVIRONMENTAL IMPACTS

Aesthetics

Alternative 3 would not result in any substantive changes in visual impacts when compared to the Project, which would prohibit both hydraulic fracturing and deep well wastewater disposal within the City IOF. Class II Injection Wells are generally lower profile and smaller than a typical “pumpjack” used in the City IOF for oil/gas production. However, both are industrial in character, are permanent features within the Oil Field, and are connected to a larger network of pipes, tanks, and pumps. Alternately, hydraulic fracturing does not require a permanent facility or infrastructure, but rather involves the temporary set up and decommissioning of numerous trucks, tanks, pumps, and equipment used for the well completion activity.

The prohibition of hydraulic fracturing and the prohibition on the disposal of any wastewater into a non-hydrocarbon zone would have no impact on the maximum number of new wells allowed under the Specific Plan, or other aspects of the Specific Plan that may affect the aesthetics of the

City IOF, with the exception of the elimination of temporary equipment/trucks/tanks required for the 1-2 day well stimulation activity.

Therefore, Alternative 3 would result in ***slightly reduced impacts*** to aesthetics due to the elimination of temporary equipment for hydraulic fracturing when compared to the Maximum Buildout Scenario. Neither the Project nor Alternative 3 would result in significant and unavoidable impacts related to aesthetics.

Air Quality

The prohibition of hydraulic fracturing would reduce emissions of VOC, CO, SOx, NOx, PM10 and PM2.5, all of which would be less than significant with mitigation for regional emissions. However, Alternative 3 would not eliminate the *Significant Unavoidable Impact AQ-1* for localized NOx, PM10, or PM2.5. Table 5-4 below itemizes the emissions generated by well drilling and by hydraulic fracturing, in combination with other City IOF activities that are assumed to be occurring in the Maximum Buildout Scenario.

**TABLE 5-4
MM AQ-1 AND MM AQ-2: MITIGATED PEAK DAILY EMISSIONS**

Project Activity	CO (lb/day)	NO _x (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
REGIONAL EMISSIONS				
Well Drilling	494	89	10	1.9
Well Stimulation (Hydraulic Fracturing)	474	486	16	2.8
+ Other City IOF Activities ¹	126	102	59	8.4
Operational Emissions	1.5	0.1	2	0.2
Peak Daily Regional Emissions	621	588	77	11
Regional CEQA Thresholds	550	55	150	55
MM AQ-3 Required?	Yes	Yes	No	No
LOCALIZED SIGNIFICANCE EMISSIONS				
Localized CEQA Thresholds	1482.5	128.7	8.5	2.7
MM AQ-3 Required?	No	Yes	Yes	Yes
^a Other City IOF activities, for the purpose of this evaluation are those that occur only the Culver City IOF. Other activities include general site preparation, drilling mobilization and setup, grading, demobilization, well completion, well stimulation site preparation and flow-back, and well rework. Note that this also includes the incidental operational emissions from worker activities (passenger vehicles, etc.), and fugitive emissions from piping and connections throughout the City IOF. Source: Yorke Engineering 2017b.				

As shown, even with the elimination of hydraulic fracturing, the combination of well drilling and “Other City IOF Activities” on the peak day would continue to exceed the localized threshold for NOx, PM10, and PM2.5.

The Maximum Buildout Scenario assumes that hydraulic fracturing would only occur one time per year within the City IOF, and the process only occurs for 1-2 days. Therefore, the elimination of hydraulic fracturing would have a negligible impact on health risks (cancer burden), which is considered in the context of continuous exposure to toxic air contaminants (TACs) over a period of 30 years for residential receptor locations.

Because Alternative 3 would potentially reduce the amount of oil/gas that could be produced within the City IOF due to the elimination of high-pressure well stimulation treatments, including hydraulic fracturing. Emissions of H₂S and odors associated with oil/gas production would be reduced. However, VOC and H₂S emissions from drill engines and degassing drilling mud in the shale shakers would remain largely unchanged because well drilling activity would continue.

Alternative 3 would result in **reduced impacts** for all criteria pollutants and for odors when compared to the Maximum Buildout Scenario. However, Alternative 3 would not eliminate *Significant and Unavoidable Impact AQ-1*.

Geology, Soils and Seismicity

Alternative 3 would disallow hydraulic fracturing, which is the source of the *Significant and Unavoidable Impact GEO-1*. Alternative 3 would eliminate the need for MM GEO-1, which is specifically intended to avoid or minimize the potential for induced seismicity through the development of an Induced Seismicity Avoidance, Monitoring, Evaluation, and Mitigation Protocol (i.e., traffic light system). Alternative 3 would **eliminate the direct and cumulative significant and unavoidable impact** in Impact GEO-1 to geology, soils, and seismicity due to the permanent prohibition of well stimulation treatments, including hydraulic fracturing, as discussed above, and would ensure no direct, indirect, or cumulative impacts related to induced seismicity and associated risk of rupture of an earthquake fault and strong seismic ground shaking.

Greenhouse Gas Emissions

The prohibition of hydraulic fracturing would reduce emissions of greenhouse gases. The Maximum Buildout Scenario assumes that hydraulic fracturing would only occur one time per year within the City IOF, and the process only occurs for 1-2 days; therefore, the elimination of hydraulic fracturing would have a minimal impact on climate change, which is a global phenomenon. Alternative 4 would result in **reduced impacts** to greenhouse gas emissions when compared to the Maximum Buildout Scenario. Neither the Project nor Alternative 3 would result in significant and unavoidable impacts related to greenhouse gas emissions.

Hazards, Hazardous Materials, and Risk of Upset

Alternative 3 would **eliminate the direct and cumulative significant and unavoidable impact** in Impact GEO-1 to potential upset or accident conditions involving the release of hazardous materials from induced seismicity. The scenarios evaluated in the Risk of Upset analysis can be initiated by upsets (e.g., accidents, breaks) at oil or gas wells, pipes, or tanks. Potential physical hazards from these upsets include fire or explosions. Fires can result if flammable materials (e.g., oil and gas) are contacted by ignition sources (e.g., open flames, electrical sparks) in the presence of an oxidizer (e.g., oxygen in air). These factors would also be slightly reduced through the elimination of the 1-2 day hydraulic fracturing processes, which involves the handling and disposal of hazardous materials and the set-up, operation and decommissioning of heavy equipment.

Alternative 3 would also reduce risks associated with the routine transport, use or disposal of hazardous materials associated with exposure to silica dust from hydraulic fracturing operations at the City IOF and would not create a significant hazard to the public, the environment, or to workers through the routine use of silica. Alternative 3 would eliminate the need for MM HAZ-7 related to silica.

Hydrology and Water Quality

The prohibition of hydraulic fracturing and deep well injection would reduce the potential for adversely impacting groundwater quality through surface spills or leaks, or through improper zonal isolation. Zonal isolation means that the injection of produced water into the strata would be isolated from other subsurface strata and prevented from migrating into other zones, including potable groundwater aquifers, through proper construction and maintenance of well casings. No flowback from hydraulic fracturing would be generated in the City IOF, and no injection of flowback into the hydrocarbon-producing strata would be required. The possibility of surface spills and leaks associated with the 1-2 day hydraulic fracturing process would also be eliminated. Alternative 3 would result in **reduced impacts** to hydrology and water quality when compared to the Maximum Buildout Scenario. Neither the Project nor Alternative 3 would result in significant and unavoidable impacts related to hydrology or water quality.

Land Use and Planning

The permanent prohibition of well stimulation treatments would further support the consistency of the Specific Plan with the goals, objectives, and policies from the 1995 General Plan due to the slight increase in protections for health, safety and welfare of the community and the environment. Alternative 3 would result in **reduced impacts** to land use when compared to the Maximum Buildout Scenario. Neither the Project nor Alternative 3 would result in significant and unavoidable impacts related to land use.

Mineral Resources

Petroleum resources in the Inglewood Oil Field are considered of value to the region and the residents of the State, and continued oil and gas production on the Project Site would be considered a beneficial use as it relates to the availability of valuable mineral resources and their use for the production of gasoline, heating oil, diesel fuel, jet fuel, propane, asphalt, and petrochemical products and for direct use for energy. Alternative 3 would allow for conventional oil and gas production within the City IOF, subject to the requirements and restrictions set forth in the Specific Plan. Therefore, it is not anticipated that elimination of hydraulic fracturing would significantly reduce the Oil Field Operator's ability to access oil/gas resources, as the City IOF would be able to continue to operate and expand the number of new wells by a total of 30 by 2032. Alternative 3 would result in **slightly increased impacts** related to the accessibility of known mineral resources that would be of value to the region and residents of the state when compared to the Maximum Buildout Scenario because elimination of well stimulation treatments may result in slight reductions or reduced efficiencies in the volume of oil/gas extracted from the City IOF. However, this impact is not considered to be significant. Neither the Project nor Alternative 3 would result in significant and unavoidable impacts related to mineral resources.

Noise

The permanent prohibition of well stimulation treatments would eliminate the 1-2 day activity of hydraulic fracturing, which would reduce noise that would otherwise occur during that event, but Alternative 3 would not alter the number or rate of allowable wells to be drilled in the City IOF, the requirement for 24-hour drilling, or alter other sources of operational noise. Alternative 3 would result in **slightly reduced impacts** to noise when compared to the Maximum Buildout Scenario due to the elimination of short-term noise associated with hydraulic fracturing events; however, the direct impacts and cumulative impacts described in *Significant Unavoidable Impact NOI-1* associated with nighttime well drilling noise would not be altered by Alternative 3.

Public Services

The permanent prohibition of well stimulation treatments would eliminate the 1-2 day activity, which would reduce hazards, the risk of upset or accident conditions involving the release of hazardous materials, and reduce the number on-site workers that would be generated by the short-term event. Alternative 3 would result in ***slightly reduced impacts*** to public services when compared to the Maximum Buildout Scenario. Neither the Project nor Alternative 3 would result in significant and unavoidable impacts related to public services.

Transportation and Traffic

Alternative 3 would eliminate the vehicle trips associated with the 1-2 day well stimulation activities. Other than the elimination of the worker and truck trips associated with this periodic and short-term event, the number of anticipated vehicle trips to and from the City IOF would not be substantively different than the Project. Alternative 2 would result in ***slightly reduced impacts*** to transportation and traffic when compared to the Maximum Buildout Scenario. Neither the Project nor Alternative 3 would result in significant and unavoidable impacts related to traffic.

Utilities and Service Systems

Alternative 3 would eliminate hydraulic fracturing, which is the primary contributor to cumulative water supply impacts, and would eliminate the Project's contribution of potentially unanticipated demand for water supplies that may not have been fully considered through California American's Urban Water Management Plan (UWMP) due to the fact that the amount of future hydraulic fracturing within the Inglewood Oil Field has not been quantified. Therefore, Alternative 3 result in ***reduced impacts*** to water supply when compared to the Maximum Buildout Scenario. Neither the Project nor Alternative 3 would result in significant and unavoidable impacts related to water supply.

Alternative 3 Environmental Impact Summary

As summarized in Table 5-5 below, Alternative 3 would eliminate the *Significant Unavoidable Impact GEO-1* related to induced seismicity from deep well wastewater disposal and from hydraulic fracturing. Other environmental topical areas that would result in reduced/slightly reduced impacts when compared to the Maximum Buildout Scenario include aesthetics, air quality, greenhouse gas emissions, hazards and hazardous materials, water quality, land use, noise, public services, traffic, and water supply. However, Alternative 3 would result in slightly increased impacts related to the accessibility of known mineral resources that would be of value to the region and residents of the state when compared to the Project. However, this impact is not considered to be significant.

**TABLE 5-5
SUMMARY OF ALTERNATIVE 3 ENVIRONMENTAL IMPACTS**

Environmental Issue	Potential Significance of Alternative 3 Impacts	Summary of Project Impacts	Alternative 3 Comparison to the Project After Mitigation
Aesthetics	Less Than Significant After Mitigation	Less Than Significant After Mitigation	Slightly Reduced Impacts
Air Quality	Significant and Unavoidable Direct and Cumulative Impacts	Significant and Unavoidable Direct and Cumulative Impacts	Reduced Impacts
Biological Resources	Less Than Significant After Mitigation	Less Than Significant After Mitigation	Similar to Project
Cultural Resources	Less Than Significant	Less Than Significant	Similar to Project
Geology, Soils, and Seismicity	Significant and Unavoidable Direct and Cumulative Impacts	Significant and Unavoidable Direct and Cumulative Impacts	Elimination of Significant and Unavoidable Direct and Cumulative Impacts
Greenhouse Gas Emissions	Less Than Significant	Less Than Significant	Reduced Impacts
Hazards, Hazardous Materials, and Risk of Upset	Significant and Unavoidable Direct and Cumulative Impacts	Significant and Unavoidable Direct and Cumulative Impacts	Elimination of Significant and Unavoidable Direct and Cumulative Impacts
Hydrology and Water Quality	Less Than Significant After Mitigation	Less Than Significant After Mitigation	Reduced Impacts
Land Use and Planning	Less Than Significant	Less Than Significant	Reduced Impacts
Mineral Resources	Less Than Significant	Less Than Significant	Slightly Increased Impacts
Noise	Significant and Unavoidable Direct Impacts	Significant and Unavoidable Direct Impacts	Slightly Reduced Impacts
Public Services	Less Than Significant	Less Than Significant	Slightly Reduced Impacts
Recreation	Less Than Significant	Less Than Significant	Similar to Project
Transportation and Traffic	Less Than Significant	Less Than Significant	Slightly Reduced Impacts
Utilities and Service Systems	Less Than Significant After Mitigation	Less Than Significant After Mitigation	Reduced Impacts

Alternative 3 Project Objectives Consistency Summary

As presented in Table 5-6 below, Alternative 3 would meet all of the Project's objectives.

**TABLE 5-6
ALTERNATIVE 3: EVALUATION OF PROJECT OBJECTIVES**

Objective	Consistency Analysis
1. To maximize the potential for Oil Operations to be conducted in a comprehensively coordinated manner consistent with a programmatic plan for a defined physical area and in harmony with adjacent land uses in a manner that protects the public health, safety and welfare, and the environment.	Consistent: Alternative 3 would “maximize” the potential for Oil Operations to be conducted in harmony with adjacent land uses in a manner that protects the public health, safety and welfare, and protects the environment in the same manner as the Project. The permanent prohibition of hydraulic fracturing and deep well wastewater disposal would increase the Project’s ability to meet this objective. Alternative 3 would further this objective because it would eliminate <i>Significant Unavoidable Impact GEO-1</i> .
2. To facilitate cooperation and coordination among affected and adjacent government agencies in implementing all reasonable measures to reduce impacts to the surrounding communities.	Consistent: Alternative 3 would not alter the Specific Plan requirements related to facilitating cooperation and coordination among affected and adjacent governmental agencies.
3. To facilitate cooperation and coordination for multi-agency response to Oil Field emergency situations.	Consistent: Alternative 3 would not alter the Specific Plan requirements related to facilitating cooperation and coordination for multi-agency response to Oil Field emergency situations.
4. To minimize or eliminate potential adverse environmental, public health, and safety impacts of Oil Operations by the implementation of area-specific regulations and mitigation measures.	Consistent: See discussion under Objective 1. Alternative 3 would not have any known secondary environmental impacts that would require additional mitigation beyond what has been recommended for the Specific Plan in this Draft EIR.
5. To ensure that existing Oil Field facilities are in compliance with the requirements of this Specific Plan before any new Oil Field drilling activities are permitted.	Consistent: Alternative 3 would not alter the Specific Plan requirements related to compliance with the Specific Plan prior to permitting any new Oil Field drilling activities.
6. To minimize Oil Field emergencies and ensure that appropriate regulations are in place to assist affected and adjacent government agencies in identifying all reasonable measures to reduce impacts to surrounding communities in the event that an emergency occurs.	Consistent: Alternative 3 would not alter the Specific Plan requirements related to minimizing Oil Field emergencies and reducing impacts to surrounding communities in the event that an emergency occurs. Alternative 3 would further this objective because it would reduce the potential for emergency situations in the City IOF due to the elimination of well stimulation treatments when compared to the Project.
7. To enhance the appearance of the Oil Field site with landscaping and other property maintenance requirements in order to preserve and improve the visual character and quality of the surrounding uses.	Consistent: Alternative 3 would not alter the Specific Plan requirements related to the appearance of the Oil Field.
8. To ensure that new applications for oil and gas Drilling Use Permits address the consolidation of Oil Field facilities to reduce odor, visual, noise, safety, health, and environmental impacts from Oil Operations to surrounding land uses and City residents.	Consistent: Alternative 3 would not alter the Specific Plan requirements related to ensuring that new applications address the reduction of odor, visual, noise, safety, health, and environmental impacts from Oil Field operations to surrounding land uses. Alternative 3 would further this objective because it would eliminate <i>Significant Unavoidable Impact GEO-1</i> .

5.10 ALTERNATIVE 4: MANDATORY USE OF ELECTRIC ENGINES TO POWER DRILL RIG AND HYDRAULIC FRACTURING EQUIPMENT

Alternative 4 would mandate the use of electricity to power the drill rigs for all new wells and redrilled wells, and hydraulic fracturing (if permitted) pumps and equipment. The Maximum Buildout Scenario assumes up to three new wells are drilled per year, but only one at a time. The Specific Plan (as currently proposed) does not restrict the number of well stimulation events that can occur within the course of one year. In order to analyze a realistic but conservative impact scenario, the Maximum Buildout Scenario assumes that one hydraulic fracturing event would occur per year within the City IOF.

Hydraulic fracturing activities are known to require substantial power from high-capacity and high-pressure pumps to move water, sand, and chemicals into the well or geologic formation. Each pump unit would require approximately 2,500 hydraulic horsepower (HHP), which is most often met through the use of between one and four diesel-powered engines of approximately 2,500 HHP each pump unit, along with the blenders and other hydraulic fracturing equipment powered directly by diesel engines or portable electrical generators (Yorke Engineering 2017). Up to 4 pump units were assumed for the emission analysis for hydraulic fracturing, based on the Maximum Buildout Scenario (i.e. 2,500 HHP x 4 units = 10,000 HHP). To convert to electrical energy, 10,000 HHP would require 7,457 kilowatts (kW). Similarly, well drilling rigs generally require 750 brake horsepower (bhp) to power the drill and mud pumps. As such, well drilling activities were assumed to require four primary diesel-powered engines of approximately 750 brake horsepower (bhp) or less for each drilling unit (i.e., 750 bhp x 4 units = 3,000 bhp). Converted to electrical energy, this would require 2,237 kW.

Alternative 4 assumes that if upgrades to the utility facilities that serve the Inglewood Oil Field were made to accommodate the substantial electric demand from well drilling, redrilling, and hydraulic fracturing, then the infrastructure could feasibly be used for other diesel-powered engines that are used during "Other City IOF Activities." Such activities, according to the analysis presented in Section 4.2, Air Quality, could include general site preparation, drilling mobilization and setup, grading, demobilization, well completion, well stimulation site preparation and flow-back, well rework, and incidental operational emissions from worker activities (e.g., passenger vehicles).

As discussed in Section 4.2, Air Quality, all regional emissions and the health risk for cancer burden would be less than significant with the implementation of MM AQ-1, MM AQ-2, and MM AQ-3. However, without the use of offsets for localized emissions and/or without a mandate to use electricity to power well stimulation and well drilling activities, localized emissions of NOx and PM10 would remain significant and unavoidable. As such, Alternative 4 would mandate that the operation of any drill rig and any hydraulic fracturing activities must be powered by electricity from the Southern California Edison (SCE) power grid.

The use of electricity from the power grid would require more on-site equipment. The electrification of drill rigs and equipment used for hydraulic fracturing would involve the use of mobile transformer skid(s) to modulate electricity from the grid power, through tie-in to SCE facilities, to the appropriate level for the various equipment in operation at any given time. A transformer skid includes several components on a single platform, including a main switch, transformer, voltage regulators, harmonic filter, and incoming power connections (Chesapeake 2012). Diesel-powered back-up generators would be used in the event of a power failure (Bernard 2017).

Also, in order to accommodate an estimated 9,694² kW, or 9.69 megawatts (MW) of additional power that may be required under Alternative 4, upgrades to the existing SCE substations, transmission lines, and/or internal Inglewood Oil Field utility poles may be required. Power lines currently traverse throughout the City IOF. Other smaller substations throughout the Oil Field convert the 12 KV power to 4,160 or 2,300 V via overhead utility lines (LACDRP 2008). As shown on Exhibit 2-3, Specific Plan Boundary and Adjacent Land Uses located in Section 2.0, Environmental Setting of this Draft EIR, there are three SCE substations in proximity to the City IOF: the La Cienega Substation is located east of the West Los Angeles College campus; the Stanhill Substation is located 0.2-mile to the east of the La Cienega Substation within the County IOF; and the Windsor Hills Substation is located at the intersection of Stocker Street and La Brea Avenue. SCE was consulted regarding existing infrastructure and capacity to serve the IOF; however, SCE does not disclose details of individual facilities or provide capacity statements. SCE confirmed they are in receipt of the Notice of Preparation of the EIR, and will review the Draft EIR with regard to potential SCE facility impacts (Beard 2017).

Exhibit 2-3 provides an aerial view of the City IOF and a portion of the adjacent County IOF, which contain large areas of disturbed ground, including well pads and access roads that could accommodate the majority of the equipment, including one or more transformer skids. If electrical infrastructure improvements are required (e.g., new or upgraded utility poles or wires) within the Inglewood Oil Field or if improvements are required at the SCE substation(s), some additional soil disturbance for utility pole footings may be required. However, no substantive grading or earthmoving would be required to accommodate the transformer skid(s) or other infrastructure, as the Inglewood Oil Field is already populated with various facilities, including utility poles; the SCE substations are already developed sites.

Alternative 4 would not alter the number of wells, the requirements for pipeline management or air monitoring, the required 400-foot setback buffer area, number or location or leak detection requirements for tanks, or other Specific Plan requirements that could influence hazards, including but not limited to emergency response plans or the deterioration of oil field infrastructure that could reduce structural stability.

The exact utility improvements that would be required is unknown at this time; however, it is possible that new transformers and/or power line improvements may be required. Any environmental impacts associated with utility upgrades are not anticipated to result in significant environmental impacts that would require mitigation beyond what is required by this Draft EIR for the City IOF and by the requirements set forth in the CSD EIR for the County IOF. However, if additional off-site improvements are required, an analysis pursuant to the CEQA would be required to assess the specific environmental impacts of utility upgrades.

5.10.1 COMPARATIVE ANALYSIS OF ENVIRONMENTAL IMPACTS

Aesthetics

The City IOF is currently traversed with power lines and utility poles, which currently extend to each well pad to operate the well pump equipment. Currently, all utility lines within the Inglewood Oil Field are above ground. If upgrades to these power lines are required within the City IOF, views of the Project Site from the Baldwin Hills Scenic Overlook, the adjacent Blair Hills residential neighborhood and Culver City Park, and the Kenneth Hahn State Recreation Area (KHSRA) would be temporarily affected by construction activities and equipment. Permanent visual changes would occur related to new and/or more lines that may be strung on existing poles and/or

² 7,457 kW + 2,237 kW = 9,694 kW

new poles. However, because of the slim profile of utility poles and power lines, and due to the distance from adjacent land uses that generally have obscured views of most of the Project Site due to intervening topography and vegetation, and due to Drilling Regulation Section 37.A that requires the installation of landscaping for visual shielding of the City IOF equipment, impacts due to onsite utility upgrades would be less than significant.

The SCE substations and the infrastructure within the Inglewood Oil Field are industrial in function and visual character, and any upgrades would not result in a substantial change to the visual character of these facilities or to the Inglewood Oil Field as a whole.

The presence of transformer skids or other equipment to support electrification would be a temporary visual impact for approximately 1 month for well drilling or redrilling, and 1 to 2 days for hydraulic fracturing. These activities would not be overlapping within the City IOF; however, equipment associated with “Other City IOF Activities” are also assumed to be powered by electricity, so there could be multiple transformer skids within the Project Site at one time. Therefore, Alternative 4 would result in **increased impacts** to aesthetics when compared to the Maximum Buildout Scenario due to new and/or upgraded utility infrastructure within the City IOF and/or offsite at the SCE substation(s) and County IOF facilities, as well as the presence of transformer skids and/or other ancillary equipment for electrification of Oil Field activities. Neither the Project nor Alternative 4 would result in significant and unavoidable impacts related to aesthetics.

Air Quality

As discussed above, with implementation of MMs AQ-1, AQ-2, and AQ-3, the Maximum Buildout Scenario would generate localized emissions of NO_x, PM₁₀, and PM_{2.5} at levels that exceed the operational localized significance threshold due to potential new wells located in proximity to residences, while other air quality impacts would be mitigated to levels less than significant. MM AQ-3 includes a performance standard that allows the Oil Field Operator reasonable and substantial flexibility to accomplish the target reductions. The only absolute way that these criteria pollutants could be reduced to levels less than significant taking into account potential well locations would be to mandate the use of electricity to power the large equipment (e.g., drill rig, well stimulation rig), as required by Alternative 4, or accept the use of regional offsets for localized impacts as adequate mitigation.

As presented under Alternative 3, Table 5-4 itemizes the emissions generated by well drilling and by hydraulic fracturing, in combination with other City IOF activities that are assumed to be occurring in the Maximum Buildout Scenario. The use of electricity to power well drilling or redrilling would eliminate approximately 494 lbs/day of CO and the use of electricity to power hydraulic fracturing would eliminate approximately 474 lbs/day of CO, which would more than satisfy the required emissions reduction in order to meet regional thresholds of significance for CO. Similarly, the use of electricity to power well drilling or redrilling would eliminate approximately 89 lbs/day of NO_x, and the use of electricity to power hydraulic fracturing would eliminate approximately 486 lbs/day of NO_x. Even with the elimination of criteria pollutants from these activities, the 102 lbs/day of NO_x from “Other City IOF Activities” would exceed the threshold of significance. However, it is assumed that other equipment required for “Other City IOF Activities” could also be powered with electricity (as access to electric service may facilitate conversion of other engines and equipment), thereby further reducing the criteria pollutant emissions.

Additionally, other options for meeting the MM AQ-3 performance standard would be available, as presented in Section 4.2, Air Quality. As such, Alternative 4 would eliminate regional significant impacts of CO without the need for regional SCAQMD offsets or any other emissions reductions

options, as described in Section 4.2, Air Quality and allowed under MM AQ-3. Alternative 4 would eliminate regional significant impacts of NO_x only if other additional measures were taken by the Oil Field Operator, such as use of electric power for “Other City IOF Activities,” purchase of regional SCAQMD offsets, or other emissions reductions options, as described in Section 4.2, Air Quality and allowed under MM AQ-3.

For localized NO_x impacts, the use of electricity to power well drilling or redrilling would eliminate approximately 89 lbs/day of NO_x and the use of electricity to power hydraulic fracturing would eliminate approximately 486 lbs/day of NO_x, which would satisfy the required emissions reduction to meet localized thresholds of significance for NO_x.

For localized PM₁₀ impacts, the use of electricity to power well drilling, redrilling, and hydraulic fracturing would not reduce PM₁₀ emissions to below the threshold of significance. As shown in Table 5-4, “Other City IOF Activities” would generate 59 lbs/day of PM₁₀, which would exceed the localized 8.5 lbs/day significance threshold due to potential new wells located in proximity to residences, without consideration of well drilling, redrilling and hydraulic fracturing events. Similarly, PM_{2.5} impacts would not be reduced to less than significant. However, it is assumed that other equipment required for “Other City IOF Activities” could also be powered with electricity, thereby further reducing the criteria pollutant emissions. Therefore, Alternative 4 would eliminate localized significant impacts of PM₁₀ from all potential well locations only if other additional measures were taken by the Oil Field Operator, such as use of electric power for “Other City IOF Activities,” or other emissions reductions options, as described in Section 4.2, Air Quality and allowed under MM AQ-3.

Electrification of large engines would significantly reduce all pollutant emissions from internal combustion, but would have the most pronounced effect on reducing health risk (cancer burden) impacts due to the elimination of emissions of diesel PM. Table 5-7 below summarizes the change in cancer risk impacts under the Alternative 4, which would be reduced from the Maximum Buildout Scenario of 14.34 in-one-million (1.43E-05). This annual emissions of toxic air pollutants poses a potential cancer risk impact of 14 (cases) per million individuals, compared to the significance threshold of 10 per million. With electrification, health risks would be reduced to 4.26 per million.

**TABLE 5-7
SUMMARY OF TOXICS EMISSIONS AND CANCER RISK**

Project Activity	Culver City IOF Residential Cancer Risk	Electrification Option Culver City IOF Residual Cancer Risk
Well Drilling	9.86	---
Well Stimulation	0.22	---
Other IOF Well Activities	1.32	1.32
IOF Operations	2.94	2.94
Total	14.34	4.26
Other City IOF activities, for the purpose of this evaluation are those that occur only the Culver City IOF. Other activities include general site preparation, drilling mobilization and setup, grading, demobilization, well completion, well stimulation site preparation and flow-back, and well rework. Note that this also includes the incidental operational emissions from worker activities (passenger vehicles, etc.), and fugitive emissions from piping and connections throughout the City IOF.		
Source: Yorke Engineering 2017.		

For health risk, the use of electricity to power well drilling and hydraulic fracturing would eliminate the need for the use of an alternative fuel (e.g., natural gas or propane) for at least 33 percent of the required engine horsepower for drill rig operation, which is an emissions reductions options to address health risks, as described in Section 4.2, Air Quality and allowed under MM AQ-3. Use of electricity would result in reduced emissions associated with alternative fuels (e.g., NOx, CO).

For odors, the use of electricity to power well drilling and hydraulic fracturing would substantially reduce odors associated with the use of diesel fuels.

If electrical infrastructure improvements are required (e.g., new or upgraded utility poles or wires) within the Inglewood Oil Field or if improvements are required at the SCE substation(s), additional temporary construction emissions would occur. However, no substantive grading or earthmoving would be required, as the Inglewood Oil Field is already populated with utility poles and the SCE substations are already developed sites. Given the conservative assumptions set forth in the overlap of activities considered on the peak day in the Maximum Buildout Scenario, it can be assumed that construction of any electric infrastructure improvements would not be scheduled to also occur on the peak day. As such, any construction emissions from utility improvements are not anticipated to substantively alter the emissions estimated for the peak day of the Maximum Buildout Scenario.

In summary, Alternative 4 would not eliminate the need for MMs AQ-1, AQ-2, and AQ-3, although it would result in reduced impacts to air quality. Impacts for regional criteria pollutants would be reduced because significant impacts of CO would be eliminated, and significant impacts of NOx would be reduced, thereby requiring the purchase of fewer regional offsets. Alternative 4 would also ***eliminate the direct significant and unavoidable impact*** for localized NOx and PM10 emissions, assuming that the Oil Field Operator used the electric infrastructure to power “Other City IOF Activities” in addition to well drilling and well stimulation equipment.

Greenhouse Gas Emissions

As discussed above, with implementation of MMs GHG-1 through GHG-4, the Maximum Buildout Scenario would not conflict with AB 32 or SB 32, and contributions of GHG emissions would not be cumulatively considerable. Alternative 4 would replace diesel-powered equipment with electric-powered equipment, resulting in reduced emissions of CO; therefore, Alternative 4 would reduce emissions of greenhouse gas.

The projected GHG emissions that would result from Alternative 4 are shown in Table 5-8.

**TABLE 5-8
ALTERNATIVE 4 GHG EMISSIONS**

Project Activity	Number of Events per Year	MW-hr per Year	GHG Emissions (MT/yr) ^b
Well Drilling	3	1,610.6	1,280.5
Well Stimulation (Hydraulic Fracturing)	6 ^a	408.0	85.4
+ Other City IOF Activities ^c	--	N/A	51.2
City IOF Operations	--	N/A	42.7
<i>Annualized Total</i>	--	5,508.4	1,459.7
^a Includes one well stimulation, three well reworks, and two well completions. ^b Assumes a 0.265 MT/MW-hr GHG emissions intensity. ^c Other City IOF activities, for the purpose of this evaluation are those that occur only the Culver City IOF. Other activities include general site preparation, drilling mobilization and setup, grading, demobilization, well completion, well stimulation site preparation and flow-back, and well rework. Source: Yorke Engineering 2017b			

Table 5-9 shows the comparison of Alternative 4 to the Maximum Buildout Scenario as discussed in Section 4.6, Greenhouse Gas Emissions of this Draft EIR.

**TABLE 5-9
MAXIMUM BUILDOUT SCENARIO COMPARISON TO ALTERNATIVE 4**

Project Activity	Annualized Max Buildout CO ₂ e (MT/year)	Alternative 4 CO ₂ e (MT/year)
Construction Activities (see Table 4.6-2)	1,500	
Operational Activities (see Table 4.3-6)	5,581	
Total	7,081	1,460
Source: Yorke Engineering 2017b		

GHG emissions from Alternative 4 would be approximately 30 percent of the emissions that would have occurred if diesel-fueled engines were used to power drill rigs and hydraulic fracturing equipment. The reasons that electrification leads to lower emissions can be attributed to two factors: 1) modern combined cycle power plants are more efficient in converting fuel to electricity than diesel engines are, and 2) California derives a significant percentage of its power from low-GHG emitting sources such as hydro, solar, and wind (Yorke Engineering 2017b).

If electrical infrastructure improvements are required (e.g., new or upgraded utility poles or wires) within the Inglewood Oil Field or if improvements are required at the SCE substation, additional temporary construction emissions of greenhouse gas would occur. As shown above, Alternative 4 would substantially reduce greenhouse gas emissions over the Maximum Buildout Scenario; therefore, temporary increases in greenhouse gas emissions would not substantively effect the overall reductions in emissions from Alternative 4. Therefore, Alternative 4 would result in **reduced impacts** to greenhouse gas emissions when compared to the Maximum Buildout Scenario. Neither the Project nor Alternative 4 would result in significant and unavoidable impacts related to greenhouse gas emissions.

Hazards, Hazardous Materials, and Risk of Upset

Alternative 4 would reduce risks associated with potential upset or accident conditions involving the release of hazardous materials due to the substantial reduction in the amount of diesel-powered equipment and reduction in the routine transport, use and disposal of hazardous materials required for the use of diesel fuels. Reduced or eliminated use of diesel fuels would also reduce the risk of wildfires through the reduction of available fuels at the City IOF. The expansion of infrastructure and increase in the use of electric power would not increase any hazards on the City IOF when compared to the Maximum Buildout Scenario. Alternative 4 would result in **reduced impacts** to hazards, hazardous materials, and risk of upset when compared to the Maximum Buildout Scenario. However, Alternative 4 would not eliminate the significant and unavoidable impacts related to accident conditions associated with induced seismicity.

Hydrology and Water Quality

Alternative 4 would not result in any substantive changes in impacts to hydrology/drainage when compared to the Maximum Buildout Scenario because it would not alter any other aspects of earthmoving allowed under the Specific Plan that could affect drainage flows. The possibility of surface spills and leaks associated with the use of diesel fuel would be reduced or eliminated, but other fuels and petroleum products would still be used in the City IOF. Alternative 4 would result in **slightly reduced impacts** to hydrology and water quality when compared to the Maximum Buildout Scenario. Neither the Project nor Alternative 4 would result in significant and unavoidable impacts related to hydrology or water quality.

Land Use and Planning

The use of electric-powered equipment in the City IOF would further support the consistency of the Specific Plan with the goals, objectives, and policies from the 1995 General Plan due to the increase in protections for health, safety and welfare of the community and the environment associated with the reduced air quality, noise, and greenhouse gas emissions. Alternative 4 would result in **reduced impacts** to land use when compared to the Maximum Buildout Scenario. Neither the Project nor Alternative 4 would result in significant and unavoidable impacts related to land use.

Noise

Alternative 4 would substantially reduce noise when compared to the Project. All generator noise would be eliminated during normal operating conditions. Diesel-powered backup generators would only generate noise if the electrical tie-in did not provide sufficient power as would occur during a power outage. As discussed in Section 4.11, Noise, nighttime drilling noise with the including of soundwalls (MM NOI-2) would result in an exterior L_{eq} of 52 dBA, assuming the shortest allowable distance between drilling activities on the City IOF and the nearest sensitive receptor. The lowest hourly L_{eq} from the long-term measurement was 40 dBA from 2:30 AM to 3:30 AM. If the forecasted Project-generated drilling noise is added to the lowest measured noise, the noise level increase would be 12 dBA, which exceeds the 3 dBA nighttime significance criterion. With Alternative 4, this nighttime noise would be reduced to only mechanical noise related to drilling and other ancillary equipment. Motor noise associated with generators, pumps, and other equipment would be substantially reduced through the use of electric motors. Noise levels would be substantially below the City's nighttime noise limit.

Similarly, daytime noise associated with well drilling and hydraulic fracturing would be substantially reduced. If electrical infrastructure improvements are required (e.g., new or

upgraded utility poles or wires) within the Inglewood Oil Field or if improvements are required at the SCE substation, additional temporary construction noise would occur. However, Alternative 4 would substantially reduce temporary noise impacts when compared to the Maximum Buildout Scenario; therefore, any temporary increases in utility construction noise would not substantively effect the overall reductions in noise from Alternative 4. Alternative 4 would **eliminate the direct significant and unavoidable impact** for 24-hour nighttime drilling noise, while also reducing daytime noise impacts.

Public Services

Alternative 4 would reduce risks associated with potential accident conditions involving the release of hazardous materials due to the reduction/elimination of diesel-powered equipment and diesel fuels on-site, which would also reduce the risk of wild fires. This could translate to a reduce demand for fire protection services, although Alternative 4 would not substantively change the demand for public services or resources allocated for emergency response. Alternative 4 would result in **slightly reduced impacts** to public services when compared to the Maximum Buildout Scenario. Neither the Project nor Alternative 4 would result in significant and unavoidable impacts related to public services.

Transportation and Traffic

Alternative 4 would generate additional traffic associated with well drilling and hydraulic fracturing due to the increased pieces of equipment required (i.e., transformer skids) when compared to the Maximum Buildout Scenario. Alternative 4 would increase the number of trucks on the peak day, assumed to be 144 passenger car equivalents (PCE) as shown in Table 4.14-5 in Section 4.14, Transportation and Traffic. The exact number of additional truck trips required for the electric skids and/or for the construction vehicles associated with utility infrastructure improvements is not known at this time. For the purpose of comparison with the Project, the addition of up to 8 trucks on the peak day (16 PCE) to bring in the transformer skids and additional worker trips would result in an increase in traffic on the peak day of approximately 11 percent, assuming all other Maximum Buildout Scenario activities continue to occur on the peak day.

An increase of 32 peak hour trips or more for a critical movement at an intersection would be considered a significant impact. As shown in Table 4.14-6 in Section 4.14, Transportation and Traffic, the Maximum Buildout Scenario is expected to generate a maximum of 13 trips on any given movement during the AM peak hour and a maximum of 11 trips on any given movement during the PM peak hour. Any increase in truck traffic and worker commutes associated with Alternative 4 would not increase the maximum allowed critical movements at an intersection enough to result in a new significant impact. As discussed in Section 4.14, Transportation and Traffic, with the addition of Project-generated traffic, V/C ratios are expected to increase only slightly, if at all. Project traffic is not expected to have a significant impact on any of the facilities. Further, the LOS is not expected to change as a result of the added Project traffic. Additional short-term traffic associated with Alternative 4's trucking equipment and workers to and from the Project site are not expected to alter the conclusions for the Maximum Buildout Scenario or require mitigation, although Alternative 4 would result in **increased impacts** to transportation and traffic when compared to the Maximum Buildout Scenario. Neither the Project nor Alternative 4 would result in significant and unavoidable impacts related to traffic.

Alternative 4 Environmental Impact Summary

As summarized in Table 5-10 below, Alternative 4 would eliminate the *Significant Unavoidable Impact AQ-1* related to localized NOx and PM10 emissions; and eliminate the *Significant Unavoidable Impact NOI-1* associated with nighttime noise due to 24-hour drilling.

Environmental topics that would result in reduced/slightly reduced impacts when compared to the Maximum Buildout Scenario include greenhouse gas emissions, hazards/hazardous materials/risk of upset, hydrology and water quality, land use and planning, and public services. Environmental topics that would result in increased/slightly increased impacts when compared to the Maximum Buildout Scenario include aesthetics and transportation and traffic.

**TABLE 5-10
SUMMARY OF ALTERNATIVE 4 ENVIRONMENTAL IMPACTS**

Environmental Issue	Potential Significance of Alternative 4 Impacts	Summary of Project Impacts	Alternative 4 Comparison to the Project After Mitigation
Aesthetics	Less Than Significant After Mitigation	Less Than Significant After Mitigation	Slightly Increased Impacts
Air Quality	Less Than Significant After Mitigation	Significant and Unavoidable Direct and Cumulative Impacts	Elimination of Significant and Unavoidable Direct Impacts
Biological Resources	Less Than Significant After Mitigation	Less Than Significant After Mitigation	Similar to Project
Cultural and Tribal Cultural Resources	Less Than Significant	Less Than Significant	Similar to Project
Geology, Soils, and Seismicity	Significant and Unavoidable Direct and Cumulative Impacts	Significant and Unavoidable Direct and Cumulative Impacts	Similar to Project
Greenhouse Gas Emissions	Less Than Significant	Less Than Significant	Reduced Impacts
Hazards, Hazardous Materials, and Risk of Upset	Significant and Unavoidable Direct and Cumulative Impacts	Significant and Unavoidable Direct and Cumulative Impacts	Reduced Impacts
Hydrology and Water Quality	Less Than Significant After Mitigation	Less Than Significant After Mitigation	Slightly Reduced Impacts
Land Use and Planning	Less Than Significant	Less Than Significant	Reduced Impacts
Mineral Resources	Less Than Significant	Less Than Significant	Similar to Project
Noise	Less Than Significant After Mitigation	Significant and Unavoidable Direct Impacts	Elimination of Significant and Unavoidable Direct Impacts
Public Services	Less Than Significant	Less Than Significant	Slightly Reduced Impacts
Recreation	Less Than Significant	Less Than Significant	Similar to Project
Transportation and Traffic	Less Than Significant	Less Than Significant	Increased Impacts
Utilities and Service Systems	Less Than Significant After Mitigation	Less Than Significant After Mitigation	Similar to Project

Alternative 4 Project Objectives Consistency Summary

As presented in Table 5-11 below, Alternative 4 would meet all of the Project's objectives.

TABLE 5-11
ALTERNATIVE 4: EVALUATION OF PROJECT OBJECTIVES

Objective	Consistency Analysis
1. To maximize the potential for Oil Operations to be conducted in a comprehensively coordinated manner consistent with a programmatic plan for a defined physical area and in harmony with adjacent land uses in a manner that protects the public health, safety and welfare, and the environment.	Consistent: Alternative 4 would “maximize” the potential for Oil Operations to be conducted in harmony with adjacent land uses in a manner that protects the public health, safety and welfare, and protects the environment in a manner similar to the Project. The requirement to use equipment powered from the electric grid for well drilling and well stimulation activities, rather than allowing the use of diesel-powered engines, would increase the Project’s ability to meet this objective. Alternative 4 would further this objective because it would avoid the <i>Significant Unavoidable Impact AQ-1</i> and <i>Significant Unavoidable Impact NOI-1</i> and would substantially reduce impacts associated with diesel odors and associated with hazards from the transport, handling, and use of diesel fuels.
2. To facilitate cooperation and coordination among affected and adjacent government agencies in implementing all reasonable measures to reduce impacts to the surrounding communities.	Consistent: Alternative 4 would not alter the Specific Plan requirements for facilitating cooperation and coordination among affected and adjacent governmental agencies.
3. To facilitate cooperation and coordination for multi-agency response to Oil Field emergency situations.	Consistent: Alternative 4 would not alter the Specific Plan requirements for facilitating cooperation and coordination for multi-agency response to Oil Field emergency situations.
4. To minimize or eliminate potential adverse environmental, public health, and safety impacts of Oil Operations by the implementation of area-specific regulations and mitigation measures.	Consistent: See discussion under Objective 1. Alternative 4 may require improvements/upgrades to off-site utility infrastructure including SCE substations(s) and/or utility lines within the Inglewood Oil Field. However, off-site impacts associated with utility upgrades are not anticipated to result in significant environmental impacts that would require mitigation beyond what is required by this Draft EIR for the City IOF and by the requirements set forth in the CSD EIR for the County IOF. However, if additional off-site improvements are required, whether at the County IOF or at SCE facilities, an analysis pursuant to the California Environmental Quality Act (CEQA) would be required to assess the specific environmental impacts of utility upgrades.
5. To ensure that existing Oil Field facilities are in compliance with the requirements of this Specific Plan before any new Oil Field drilling activities are permitted.	Consistent: Alternative 4 would not alter requirements related to ensuring that existing City IOF facilities are operating in compliance with the Specific Plan prior to permitting any new Oil Field drilling activities. However, if Alternative 4 were to be implemented, the Oil Field Operator would be mandated to make appropriate utility infrastructure improvements prior to the approval of an Annual Drilling Plan that included any new wells, redrilled wells, or well stimulation treatments.
6. To minimize Oil Field emergencies and ensure that appropriate regulations are in place to assist affected and adjacent government agencies in identifying all reasonable measures to reduce impacts to surrounding communities in the event that an emergency occurs.	Consistent: See discussion under Objective 1. Alternative 4 would not alter the Specific Plan requirements related to minimizing Oil Field emergencies and reducing impacts to surrounding communities in the event that an emergency occurs.

**TABLE 5-11
ALTERNATIVE 4: EVALUATION OF PROJECT OBJECTIVES**

Objective	Consistency Analysis
7. To enhance the appearance of the Oil Field site with landscaping and other property maintenance requirements in order to preserve and improve the visual character and quality of the surrounding uses.	Consistent: Alternative 4 would not alter the Specific Plan requirements related to the appearance of the Oil Field. Alternative 4 may require the construction and operation of utility infrastructure both within the City IOF and County IOF, as well as within SCE substations; however, existing topography, distance from sensitive receptors, and intervening landscaping would reduce permanent impacts the Inglewood Oil Field appearance. Impacts to the appearance of the Oil Field may result from new/upgraded utility infrastructure; however, this would not affect Alternative 4's ability to meet this objective because landscaping requirements to obscure new facilities would still be required.
8. To ensure that new applications for oil and gas Drilling Use Permits address the consolidation of Oil Field facilities to reduce odor, visual, noise, safety, health, and environmental impacts from Oil Operations to surrounding land uses and City residents.	Consistent: See discussion under Objective 1. Alternative 4 would not alter the Specific Plan requirements related to ensuring that new applications address the reduction of odor, visual, noise, safety, health, and environmental impacts from Oil Field operations to surrounding land uses. Any such off-site improvements to implement supporting electrical infrastructure that requires discretionary approvals would be subject to review under CEQA.

5.11 ALTERNATIVE 5: NO NET INCREASE IN WELLS

Alternative 5 would seek to maintain the status quo in oil and gas production operations while also allowing for new well drilling and redrilling. With this alternative, the drilling of any new well or redrilling of any existing well would require that at least one existing well be permanently removed from operation, thus maintaining a no net increase in the number of wells in the City IOF. Old, existing wells would be phased out (through reciprocal replacement with new wells) and plugged/abandoned consistent with DOGGR regulations as new wells are established.

As listed in Table 2-2, List of On-Site Wells, of this Draft EIR, based on DOGGR data available at the time of the issuance of the Notice of Preparation (NOP), there are a total 69 wells (i.e., active, idle, and abandoned) having top-hole locations within the City IOF, of which 41 are active/potentially active and 28 are plugged/abandoned (DOGGR 2015). Under Alternative 5, at no point would the total number of active or idle (i.e., operational or potentially operational) wells within the City IOF exceed the existing total of 41 (to be formally documented and confirmed in the Comprehensive Drilling Plan, as the first step of implementation of the Specific Plan). The net difference between this alternative and the proposed Project is that upon Maximum Buildout, Alternative 5 would result in 30 fewer wells.

The proposed Project does not mandate the abandonment of any wells. As such, the Maximum Buildout Scenario set forth in Section 3.2, Oil Field Construction and Operational Assumptions, assumes that no existing wells in the City IOF are abandoned or plugged in order to provide the most conservative consideration of long-term operations at the City IOF. However, Alternative 5 would mandate that one well be abandoned for each well drilled or redrilled. As such, impacts associated with well abandonment are considered under this Alternative 5. Additionally, the analysis of Alternative 5 considers the net operational condition due to the elimination of up to 30 existing wells, many of which are 50 or more years old.

Under this alternative, the net decrease of 30 wells would reinforce an overarching goal of the Project to consolidate drilling activities, and also would affect the visual appearance within the

400-foot setback buffer (where existing wells would be abandoned), and contain the extent of many environmental effects within a smaller physical footprint. In many respects, the Alternative 5 would be similar to the Project's Maximum Buildout Scenario (i.e., allowing up to 30 new or redrilled wells over a maximum 15-year time span) because the impacts associated with new drilling/redrilling activity would not change with this alternative. However, with implementation of the added requirement to eliminate one existing older well as each new or redrilled well is developed, Alternative 5 would involve new construction activity (not evaluated for the Project) related to abandonment of as many as 30 wells. Quantitatively, the "net change" that would occur with the addition of each new/redrilled well under Alternative 5 is as follows:

1. A "construction activity" related to the physical abandonment procedures for each well would occur that would not otherwise be mandated with the proposed Project.
2. An overall reduction of operational activities by 30 fewer wells.
3. A perceived or realized "holistic effect" of containing the project within a smaller physical footprint, reducing the intensity (i.e., well count) within the 400-foot setback buffer area, and elimination of up to 30 older wells. This net holistic effect may be either quasi-quantitative (e.g., as in a net reduction and intensity of visible well operations) or qualitative (e.g., as in a level of improved safety anticipated through the elimination of aged or obsolete well production infrastructure).

Except for a requirement to cap the total number of new or redrilled operational or potentially operational wells at 30, and to implement a phased plan for abandonment of existing wells, the analysis for Alternative 5 assumes that all other provisions of the proposed Drilling Regulations and Specific Plan would remain and that all mitigation measures recommended in this Draft EIR for the proposed Project would be implemented. Provisions in the Drilling Regulations addressing well abandonment procedures and requirements for site restoration and revegetation would also apply. Implementation of Alternative 5 would be monitored through each Annual Drilling Plan as proposed under the Draft Drilling Regulations.

Because it is difficult to predict the precise timing of any potential well abandonment program and because it is assumed the Oil Field Operator would choose to maintain the maximum number of allowed wells at any given time, the analysis for Alternative 5 considers that well abandonment activity would be phased over time in a schedule that parallels that assumed for new drilling, as set forth below. As shown in Table 5-12, the total of 30 new/redrilled and abandoned wells would be reached by 2028 under this scenario.

**TABLE 5-12
ALTERNATIVE 5: ANNUAL NEW/REDRILLED AND
ABANDONED WELLS**

Year	Annual Maximum Number of New/Redrilled Wells	Annual Number of Abandoned Wells	Total Net Increase in the Number of Active and/or Idle Wells (i.e., Operational or Potentially Operational)
Year 1: 2018	2	2	0
Year 2: 2019	2	2	0
Year 3: 2020	3	3	0
Year 4: 2021	3	3	0
Year 5: 2022	3	3	0
Year 6: 2023	3	3	0
Year 7: 2024	3	3	0
Year 8: 2025	3	3	0
Year 9: 2026	3	3	0
Year 10: 2027	3	3	0
Year 11: 2028	2	2	0
Totals	30	30	0

This alternative assumes that the Oil Field Operator would have considerable flexibility in determining which existing wells would be abandoned, and in which order or according to what schedule.

5.11.1 COMPARATIVE ANALYSIS OF ENVIRONMENTAL IMPACTS

Aesthetics

As part of the abandonment process, all surface appurtenances related to operation of the well and the upper 5 to 10 feet of well casing are removed, this segment of borehole is filled with soil (above the concrete/mud), and a stake or other location marker is placed. Additionally, consistent with the Drilling Regulations, the abandoned well sites would be revegetated with native plant species. Therefore, with the exception of the location marker, the abandoned well sites would appear as though oil production activities had not occurred.

There are up to 26 existing well locations within the 400-foot setback that may be eliminated. Alternative 5 is assumed to result in a greater number of decommissioned wells than anticipated under the proposed Project. Permanent visual changes would occur due to elimination of these wells accompanied by the associated surficial alterations to a pre-drilling condition. Also, this alternative would result in 30 fewer wells throughout the City IOF. Over time, the observed location of visible wells would shift due to the consolidation of wells to within the “allowed drilling” area, and having less wells remaining within the 400-foot setback buffer. Therefore, while Alternative 5 would result in similar visual impact related to the temporary construction of new or redrilled wells, it also would result in **reduced impacts** to aesthetics when compared to the Maximum Buildout Scenario due to 30 fewer visible wells, including the elimination of as many as 26 locations in the 400-foot buffer. Neither the Project nor Alternative 5 would result in significant and unavoidable impacts related to aesthetics.

Air Quality

With implementation of MMs AQ-1, AQ-2, and AQ-3, the Maximum Buildout Scenario would generate localized emissions of NO_x, PM₁₀, and PM_{2.5} at levels that exceed the operational localized significance threshold (LST) due to potential new wells being drilled in proximity to residences, while other air quality impacts would be mitigated to levels less than significant.

Based on consultation with the DOGGR, for purposes of air quality modeling, abandonment of a well in the Inglewood Oil Field would require use of a workover rig for approximately 2 weeks (during allowed daily work hours, not continuously over 24 hours), 6 deliveries of concrete or mud over the course of two weeks, and an assumption of a 2- to 4-person work crew (Andrews 2017). To be conservative, the air quality modeling assumes 10 passenger vehicle trips per day for 2 weeks, in addition to 2 trips per day by a concrete/mixing truck and operation of a truck-mounted workover rig, both of which have diesel engines. The daily passenger trips include the Oil Field Operator representative and DOGGR personnel, who would not be present every day of the well abandonment process; however, this number provides an average number of trips that may occur on any given day.

Alternative 5 includes the requirement (per MM AQ-3) that well-site construction activities, such as drilling and well abandonment activities, be scheduled and managed in such a manner as to comply with the listed performance standards. MM AQ-3 includes a performance standard that allows the Oil Field Operator reasonable and substantial flexibility to accomplish the target reductions. Therefore, consistent with MM AQ-3, this analysis assumes that abandonment activities are not part of the “peak day” activities in the Maximum Buildout Scenario because the decommissioning of wells would not be scheduled simultaneously with other activities in order to facilitate achievement of the performance standards. Therefore, Alternative 5 would not change the air quality emissions results related to the construction/addition of 30 new or redrilled wells for the Maximum Buildout Scenario presented in Section 4.2, Air Quality, of this Draft EIR. However, the daily mass emissions associated with abandonment of a single well (including the one-time construction activity required to plug the well and the long-term credit for operational emissions reductions obtained through decommission of the well) have been modeled based on the assumptions described above. Table 5-13, Daily Emissions from Well Abandonment, summarizes the air quality emissions from the one-time construction event of abandoning one well.

**TABLE 5-13
DAILY EMISSIONS FROM WELL ABANDONMENT**

Project Activity	VOC (lb/day)	CO (lb/day)	NO_x (lb/day)	PM₁₀ (lb/day)	PM_{2.5} (lb/day)
REGIONAL EMISSIONS					
Well Abandonment (Construction Activity)	<1	26	45	<1	<1
Regional CEQA Thresholds	75	550	100	150	55
Significant Impact?	No	No	No	No	No
LOCALIZED SIGNIFICANCE EMISSIONS					
Well Abandonment (Construction Activity)	N/A	25	45	<1	<1
Localized CEQA Thresholds	N/A	1482.5	128.7	33.6	10.2
Significant Impact?	N/A	No	No	No	No
N/A: Not Applicable Source: Psomas 2017					

As shown in Table 5-13, construction-related activity associated with abandoning a single well would result in emissions that are below the regional and localized significance emissions thresholds. As such, no significant air quality impact (to regional or local air quality) would occur from construction activity during well closure.

Alternative 5 operational emissions at Maximum Buildout would be reduced by the equivalent of 30 fewer wells. The emissions associated with operation of a single well are summarized in Table 5-14, along with the total emissions from operation of 30 wells.

**TABLE 5-14
POTENTIAL REDUCTIONS IN DAILY OPERATIONAL EMISSIONS**

Project Activity	VOC (lb/day)	CO (lb/day)	NO _x (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
REGIONAL EMISSIONS					
Operational Emissions (1 Well)	1.5	<1	<1	<1	<1
Operational Emissions (30 Wells)	38	2	<1	2	<1
Source: Psomas 2017					

Also, as discussed above, up to 26 wells that are located within the 400-foot setback (i.e., within closest proximity to residences and other developed areas) would be eliminated.

The Health Risk Analysis (HRA) prepared for the Project assessed emissions from the Maximum Buildout Scenario based on an exposure period of 30 years for residential receptors and 25 years for off-site worker receptors. Although Alternative 5 would result in no net increase in the total number of wells and at buildout would have 30 fewer total wells compared to the Project, the Maximum Buildout Scenario assumptions (which focus on emissions generated by newly installed wells) would be the same. With incorporation of MM AQ-1 and MM AQ-3, impacts related to health risk impacts at the nearest residential receptor would be less than significant with the Project and Alternative 5.

In summary, Alternative 5 would not eliminate the need for MMs AQ-1, AQ-2, and AQ-3. Impacts for regional criteria pollutants would be similar because peak daily mass and local emissions from the Maximum Buildout Scenario (i.e., as associated with well drilling or well stimulation activity) would remain the same as the proposed Project. Therefore, Alternative 5 would not eliminate the direct significant and unavoidable impact for localized NO_x and PM10 emissions. However, Alternative 5 would result in reduced total (i.e., not peak daily) mass and local emissions due to the operation of 30 fewer wells, of which potentially up to 26 could be within the buffer area (i.e., nearest to residences and other developed areas). As shown in Table 5-14, well operation results in minimal air quality emissions. This alternative would also result in reduced maintenance and operation activities, including daily vehicle trips, and potentially fewer well stimulation events, as there would be 30 fewer total wells in operation. Therefore, Alternative 5 would result in **reduced impacts** to air quality compared to the proposed Project. However, Alternative 5 would still result in significant and unavoidable impacts for localized NO_x and PM10 emissions because well drilling and well stimulation activities can still occur under this alternative.

Greenhouse Gas Emissions

With implementation of MMs GHG-1 through GHG-4, the Maximum Buildout Scenario would not conflict with AB 32 or SB 32, and contributions of GHG emissions would not be cumulatively considerable. As discussed above for the air quality analysis, because Alternative 5 would

mandate elimination of older wells and result in 30 fewer wells overall, its effects on the environment are assessed to accurately quantify the net change in effect under this alternative. Alternative 5 would result in increased GHG emissions from construction-related abandonment activities and reduced GHG emissions from operational activity due to the decommissioning of up to 30 wells. Additionally, the elimination of older wells (that may utilize aged or obsolete equipment) would reduce the fugitive emissions (i.e., methane gas) from well operations due to the requirement for new wells to comply with current and more stringent development standards. As demonstrated through the California Air Resources Board (CARB) recent approval of more stringent methane regulations for oil and gas production (CARB 2017), the regulations placed on the oil and gas industry generally become more stringent; therefore, newer technologies are anticipated to have more safeguards for methane emissions. Table 5-15 summarizes the emissions from construction activities during well abandonment.

**TABLE 5-15
CONSTRUCTION EMISSIONS FROM WELL ABANDONMENT**

Project Activity	GHG Emissions (MTCO₂e)
Well Abandonment Construction Activities (1 Well)	26
Well Abandonment Construction Activities (30 Wells)	776
<i>Amortized Annual Total^a</i>	26 MTCO ₂ e/yr
^a The amortized annual total is based on the emissions associated with abandonment of 30 wells and divided over an assumed 30 year useful life of a project consistent with SCAQMD guidance on amortization of construction activities. This provides construction emissions distributed over the useful life of a project when added to emissions that would occur in the operations phase. Source: Psomas 2017	

As shown in Table 5-15, well abandonment activities for 1 well generates approximately 26 metric tons of carbon dioxide equivalent (MTCO₂e). Construction-related activity for the abandonment of 30 wells would generate approximately 776 MTCO₂e in total, but only 26 MTCO₂e per year when amortized over a useful project life of 30 years in accordance with SCAQMD guidance.

Table 5-16 details the GHG emissions that would occur from the closure of 30 wells, including the elimination of ongoing operations related to those wells. As indicated in Table 4.6-4 (of Section 4.6, Greenhouse Gas Emissions) of this Draft EIR, a total of 5,581 metric tons per year (as amortized) of GHGs are produced from the operation of the 30 wells. The net result when compared to the proposed Project is that the collective operational emissions from 30 decommissioned wells would provide a credit of 5,581 metric tons per year (as amortized) of GHGs. As shown in Table 5-16, the increase in GHGs from abandonment-related construction emissions is fully offset by the decrease in operational emissions for 30 eliminated wells, resulting in a net decrease of 5,555 MTCO₂e/yr from GHG emissions in comparison to the proposed Project.

**TABLE 5-16
CHANGE IN COMBINED GHG EMISSIONS FROM ABANDONMENT
OF 30 WELLS**

Project Activity	Proposed Project 30 New Wells (with No Abandonments) (MTCO ₂ e /yr)	Alternative 5 30 New Wells and 30 Well Abandonments (MTCO ₂ e /yr)	Net Difference for Alternative 5 (MTCO ₂ e /yr)
Well Abandonment Construction Activities ^a	0	26 (Table 5-15)	26
Operational Activities Attributed to Abandoned Wells	0	-5,581 (Table 4.6-4)	-5,581
Total	0	-5,555	-5,555
^a The amortized annual total is based on the emissions associated with the abandonment of 30 wells and divided over an assumed 30 year useful life of a project consistent with SCAQMD guidance on amortization of construction activities. This provides construction emissions distributed over the useful life of a project and added to emissions that would occur in the operations phase. Source: Psomas 2017			

Other incidental operational emissions (i.e., fugitive emissions, such as methane leakage from equipment/connectors) also may be reduced under Alternative 5 due to the elimination of aged and obsolete equipment associated with the eliminated wells. For a conservative analysis, the fugitive emissions factor used for the Table 5-16 results are based on more efficient newer equipment; whereas leakage factors observed with older equipment is likely greater. Hence, other incidental operational emissions are likely reduced, although these reductions are not quantified here.

Under Alternative 5, there would be a net change (increase) of 26 MTCO₂e/yr from GHG emissions produced from abandonment activities for 30 wells. As shown in Table 5-16, Alternative 5 also would result in a substantial reduction (i.e., -5,581 MTCO₂e/yr) from reduced operations due to the elimination of 30 wells. Combined, Alternative 5 would result in a net reduction of approximately 5,555 MTCO₂e/yr (i.e., -5,555 MTCO₂e/yr) as compared to the Project due to the abandonment and elimination of 30 wells.

While less than significant impacts from GHG emissions would occur under the proposed Project, Alternative 5 would substantially reduce GHG emissions below anticipated Project levels. Therefore, while Alternative 5 would result in similar GHG emissions impacts related to the construction and future operation of 30 new or redrilled wells, this alternative also would result in substantial **reduced impacts** to greenhouse gas emissions when compared to the Maximum Buildout Scenario due to the elimination of 30 wells. Neither the Project nor Alternative 5 would result in significant and unavoidable impacts related to greenhouse gas emissions.

Hazards, Hazardous Materials, and Risk of Upset

The construction phase of an abandoned well (i.e., the abandonment process) does not involve use of hazardous materials. The production zone of the well is plugged with concrete, and the remainder of the borehole up to five to ten feet bgs is filled with concrete or mud. The last segment of the borehole is filled with soil. The upper five to ten feet of well casing and all surface well site infrastructure is removed, and disposed of in accordance with applicable regulations. Therefore, there would be no change in the potential for hazardous materials release or risk of upset during the construction phase for Alternative 5. Alternative 5 would incrementally reduce risks associated with potential upset or accident conditions involving the release of hazardous materials

commensurate with the reduction of up to 30 total operating wells. Therefore, while Alternative 5 would result in similar hazardous impact related to the temporary construction phase for new or redrilled wells, this alternative also would result in **reduced impacts** to hazards, hazardous materials, and risk of upset when compared to the Maximum Buildout Scenario due to 30 fewer wells, including the elimination of locations in the 400-foot buffer. However, Alternative 5 would not eliminate the significant and unavoidable impacts related to accident conditions associated with induced seismicity.

Hydrology and Water Quality

In terms of surface drainage patterns and water quality, Alternative 5 would increase the extent of revegetated well sites due to the mandate to abandon up to 30 existing wells and restore those sites to near natural condition. As discussed above for hazards, well abandonment does not involve the use of hazardous materials or otherwise risk the release of hazardous materials into the environment, including surface or groundwater. Alternative 5 would incrementally reduce risks associated with accidental release of hazardous materials, which could affect surface and/or groundwater quality, because an overall reduction of up to 30 total operating wells is assumed. This alternative would also result in reduced maintenance and operation activities and potentially fewer well stimulation events, as there would be fewer total wells in operation. Alternative 5 would result in similar hydrology/water quality impacts related to the temporary construction of new or redrilled wells; however, this alternative also would result in **slightly reduced impacts** to hydrology and water quality when compared to the Maximum Buildout Scenario due to having 30 fewer wells. Neither the Project nor Alternative 5 would result in significant and unavoidable impacts related to hydrology or water quality.

Land Use and Planning

The mandate for reciprocal abandonment of existing wells for new and redrilled wells in the City IOF would further support the consistency of the Specific Plan with the goals, objectives, and policies from the 1995 General Plan due to the increase in protections for health, safety and welfare of the community and the environment associated with the slightly reduced or reduced impacts related to air quality; greenhouse gas emissions; hazards, hazardous materials, and risk of upset; hydrology and water quality; noise; and public services. Also, the majority of the existing wells that would be eliminated are those located within the 400-foot setback and within closest proximity to residences and other developed areas. Therefore, Alternative 5 would result in **reduced impacts** to land use when compared to the Maximum Buildout Scenario. Neither the Project nor Alternative 5 would result in significant and unavoidable impacts related to land use.

Noise

Alternative 5 would result in a new source of noise and vibration related to well abandonment construction activities, which would be temporary and short-term. Well abandonment activities are anticipated to require use of a workover rig for approximately 2 weeks (during allowed daily work hours, not continuously over 24 hours), and will include associated deliveries and work crews (see assumptions discussed under air quality, above). Noise generated during well abandonment activities would not be substantial due to the distance between construction activities and sensitive receptors (as near as approximately 650 feet), low magnitude of noise from the equipment, noise occurring during the day when people are less sensitive to noise and short duration of activity. Vibration impacts associated with both the construction and operations phases of this Alternative would remain the same as that disclosed for the Project due to similar types of vibration generating activities. Specifically, the distance for which well abandonment could occur under Alternative 5 may be as close as approximately 650 feet from an existing

sensitive receptor. As analyzed for the proposed Project, vibration impacts from construction activities would be barely perceptible and would not result in structural damage at 45 feet. At a distance of 650 feet from a source to receptor, vibration would not be perceptible and would likewise not result in structural damage. As such, Alternative 5 would result in less than significant vibration-related impacts for vibration induced annoyance and structural damage, same as the proposed Project. Therefore, well abandonment activities would not result in increased impacts related to noise (daytime) and vibration. However, Alternative 5 would not alter the noise exposure associated with 24-hour drilling operations required for well development, resulting in a significant and unavoidable impact.

Regarding operational noise, Alternative 5 would eliminate noise generated by 30 wells when compared to the proposed Project. Noise generated during the operation of the wells was evaluated for the Maximum Buildout Scenario and found to result in less than significant noise impacts due to compliance with the Specific Plan requirements. Because Alternative 5 would result in operations of 30 fewer wells, noise generated by operational activities under this alternative would also be a less than significant noise impact. This alternative would also result in reduced maintenance and operation activities, including daily vehicle trips, and potentially fewer well stimulation events, as there would be fewer total wells in operation to service. In summary, Alternative 5 would result in similar noise impacts related to the temporary construction of new or redrilled wells, but this alternative would result in ***slightly reduced impacts*** from long-term and ongoing operational noise when compared to the Maximum Buildout Scenario due to the elimination of 30 wells, including some proximate to sensitive receptors. However, this alternative would not eliminate the significant and unavoidable noise impact resulting from 24-hour drilling operations.

Public Services

Alternative 5 would reduce risks associated with potential accident conditions involving the release of hazardous materials due to the reduction in the total number of wells. This alternative would also result in potentially fewer well stimulation events, and a corresponding reduction in the associated use of hazardous materials. This could translate to a reduced demand for fire protection services, although Alternative 5 would not substantively change the demand for public services or resources allocated for emergency response. Alternative 5 would result in similar emergency response demand impacts as compared to the proposed Project due to the continuation of oil-related uses within the City IOF, but this alternative would result in ***slightly reduced impacts*** to public services when compared to the Maximum Buildout Scenario due to the elimination of 30 wells, many of which are 50+ years old. Neither the Project nor Alternative 5 would result in significant and unavoidable impacts related to public services.

Alternative 5 Environmental Impact Summary

As summarized in Table 5-17 below, Alternative 5 would result in reduced and slightly reduced impacts for many environmental issues when compared to the Maximum Buildout Scenario, including aesthetics, air quality, greenhouse gas emissions, hazards/hazardous materials/risk of upset, hydrology and water quality, land use and planning, noise and public services. However, although reduced, impacts related to air quality, hazards/hazardous materials/risk of upset and noise would still be significant and unavoidable. No notable change (compared to the proposed Project) is expected for biological resources; cultural resources; geology, soils and seismicity; mineral resources; recreation; traffic/transportation; and utilities and service systems. And impacts related to seismicity and seismic risk of upset would remain significant and unavoidable. There would be no environmental topics that would result in increased/slightly increased impacts when compared to the Maximum Buildout Scenario.

**TABLE 5-17
SUMMARY OF ALTERNATIVE 5 ENVIRONMENTAL IMPACTS**

Environmental Issue	Potential Significance of Alternative 5 Impacts	Summary of Project Impacts	Alternative 5 Comparison to the Project After Mitigation
Aesthetics	Less Than Significant After Mitigation	Less Than Significant After Mitigation	Reduced Impacts
Air Quality	Significant and Unavoidable Direct and Cumulative Impacts	Significant and Unavoidable Direct and Cumulative Impacts	Reduced Impacts
Biological Resources	Less Than Significant After Mitigation	Less Than Significant After Mitigation	Similar to Project
Cultural and Tribal Cultural Resources	Less Than Significant	Less Than Significant	Similar to Project
Geology, Soils, and Seismicity	Significant and Unavoidable Direct and Cumulative Impacts	Significant and Unavoidable Direct and Cumulative Impacts	Similar to Project
Greenhouse Gas Emissions	Less Than Significant	Less Than Significant	Reduced Impacts
Hazards, Hazardous Materials, and Risk of Upset	Significant and Unavoidable Direct and Cumulative Impacts	Significant and Unavoidable Direct and Cumulative Impacts	Reduced Impacts
Hydrology and Water Quality	Less Than Significant After Mitigation	Less Than Significant After Mitigation	Slightly Reduced Impacts
Land Use and Planning	Less Than Significant	Less Than Significant	Reduced Impacts
Mineral Resources	Less Than Significant	Less Than Significant	Similar to Project
Noise	Significant and Unavoidable Direct and Cumulative Impacts	Significant and Unavoidable Direct Impacts	Slightly Reduced Impacts
Public Services	Less Than Significant	Less Than Significant	Slightly Reduced Impacts
Recreation	Less Than Significant	Less Than Significant	Similar to Project
Transportation and Traffic	Less Than Significant	Less Than Significant	Similar to Project
Utilities and Service Systems	Less Than Significant After Mitigation	Less Than Significant After Mitigation	Similar to Project

Alternative 5 Project Objectives Consistency Summary

As presented in Table 5-18 below, Alternative 5 would meet all of the Project's objectives. This is expected because Alternative 5 would be similar to the proposed Project, with all the same regulations being applicable, with the added requirement to abandon existing wells as new wells are drilled. The added requirement to phase out older wells would advance consideration for protection of the public health, safety and welfare, and protection of the environment (i.e., Objectives 1, 4 and 8) to a further degree through a net reduction in the total number of wells (compared to the Project), by focusing on the removal of older wells that may rely on old and outdated infrastructure, and by reducing the number of wells within the 400-foot buffer.

**TABLE 5-18
ALTERNATIVE 5: EVALUATION OF PROJECT OBJECTIVES**

Objective	Consistency Analysis
1. To maximize the potential for Oil Operations to be conducted in a comprehensively coordinated manner consistent with a programmatic plan for a defined physical area and in harmony with adjacent land uses in a manner that protects the public health, safety and welfare, and the environment.	Consistent: Alternative 5 would “maximize” the potential for Oil Operations to be conducted in a coordinated manner and in harmony with adjacent land uses in a manner that protects the public health, safety and welfare, and protects the environment in a manner similar to the Project. The requirement for reciprocal abandonment of an existing well for each new or redrilled well would increase the alternate Project’s ability to meet this objective by reducing air quality and GHG emissions compared to the Project, and would reduce impacts associated with accidental release of hazardous materials commensurate with the reduced total number of wells allowed under this alternative.
2. To facilitate cooperation and coordination among affected and adjacent government agencies in implementing all reasonable measures to reduce impacts to the surrounding communities.	Consistent: Alternative 5 would not alter the Specific Plan requirements for facilitating cooperation and coordination among affected and adjacent governmental agencies.
3. To facilitate cooperation and coordination for multi-agency response to Oil Field emergency situations.	Consistent: Alternative 5 would not alter the Specific Plan requirements for facilitating cooperation and coordination for multi-agency response to Oil Field emergency situations.
4. To minimize or eliminate potential adverse environmental, public health, and safety impacts of Oil Operations by the implementation of area-specific regulations and mitigation measures.	Consistent: See discussion under Objective 1.
5. To ensure that existing Oil Field facilities are in compliance with the requirements of this Specific Plan before any new Oil Field drilling activities are permitted.	Consistent: Alternative 5 would not alter requirements related to ensuring that existing City IOF facilities are operating in compliance with the Specific Plan prior to permitting any new Oil Field drilling activities, with the exception that reciprocal abandonment of existing wells would be required prior to or in conjunction with permitting any new wells.
6. To minimize Oil Field emergencies and ensure that appropriate regulations are in place to assist affected and adjacent government agencies in identifying all reasonable measures to reduce impacts to surrounding communities in the event that an emergency occurs.	Consistent: See discussion under Objective 1. Alternative 5 would not alter the Specific Plan requirements related to minimizing Oil Field emergencies and reducing impacts to surrounding communities in the event that an emergency occurs.
7. To enhance the appearance of the Oil Field site with landscaping and other property maintenance requirements in order to preserve and improve the visual character and quality of the surrounding uses.	Consistent: Alternative 5 would not alter the Specific Plan requirements related to the appearance of the Oil Field.
8. To ensure that new applications for oil and gas Drilling Use Permits address the consolidation of Oil Field facilities to reduce odor, visual, noise, safety, health, and environmental impacts from Oil Operations to surrounding land uses and City residents.	Consistent: See discussion under Objective 1. Alternative 5 would not alter the Specific Plan requirements related to ensuring that new applications address the reduction of odor, visual, noise, safety, health, and environmental impacts from Oil Field operations to surrounding land uses. However, the net result of 30 fewer wells and consolidation may enhance visual appearance and contain the extent of some environmental effects within a smaller physical footprint.

5.12 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA requires the identification of an environmentally superior alternative. Section 15126.6(e)(2) of the State CEQA Guidelines states that, if the No Project Alternative is the environmentally superior alternative, then the EIR shall also identify an environmentally superior alternative among the other alternatives. Table 5-19 provides a summary comparison of all Alternatives to the Project.

**TABLE 5-19
COMPARISON OF IMPACTS OF PROJECT ALTERNATIVES**

Environmental Issue	Alternative 1 (No Project) Comparison to the Project	Alternative 2 (Prohibit Deep Well Wastewater Injection) Comparison to the Project	Alternative 3 (Prohibit High- Volume Well Stimulation) Comparison to the Project	Alternative 4 (Require Electric Drill Rigs) Comparison to the Project	Alternative 5 (No Net Increase in Number of Wells) Comparison to the Project
Aesthetics	Unknown	Similar to Project	Slightly Reduced Impacts	Slightly Increased Impacts	Reduced Impacts
Air Quality	Unknown	Similar to Project	Reduced Impacts	Elimination of Significant and Unavoidable Direct Impacts	Reduced Impacts
Biological Resources	Unknown	Similar to Project	Similar to Project	Similar to Project	Similar to Project
Cultural and Tribal Cultural Resources	Unknown	Similar to Project	Similar to Project	Similar to Project	Similar to Project
Geology, Soils, and Seismicity	Unknown	Slightly Reduced Impacts	Elimination of Significant and Unavoidable Direct and Cumulative Impacts	Similar to Project	Similar to Project
Greenhouse Gas Emissions	Unknown	Similar to Project	Reduced Impacts	Reduced Impacts	Reduced Impacts
Hazards, Hazardous Materials, and Risk of Upset	Unknown	Slightly Reduced Impacts	Elimination of Significant and Unavoidable Direct and Cumulative Impacts	Reduced Impacts	Reduced Impacts
Hydrology and Water Quality	Unknown	Similar to Project	Reduced Impacts	Slightly Reduced Impacts	Slightly Reduced Impacts
Land Use and Planning	Unknown	Similar to Project	Reduced Impacts	Reduced Impacts	Reduced Impacts
Mineral Resources	Unknown	Similar to Project	Slightly Increased Impacts	Similar to Project	Similar to Project
Noise	Unknown	Similar to Project	Slightly Reduced Impacts	Elimination of Significant and Unavoidable Direct Impacts	Slightly Reduced Impacts

**TABLE 5-19
COMPARISON OF IMPACTS OF PROJECT ALTERNATIVES**

Environmental Issue	Alternative 1 (No Project) Comparison to the Project	Alternative 2 (Prohibit Deep Well Wastewater Injection) Comparison to the Project	Alternative 3 (Prohibit High- Volume Well Stimulation) Comparison to the Project	Alternative 4 (Require Electric Drill Rigs) Comparison to the Project	Alternative 5 (No Net Increase in Number of Wells) Comparison to the Project
Public Services	Unknown	Similar to Project	Slightly Reduced Impacts	Slightly Reduced Impacts	Slightly Reduced Impacts
Recreation	Unknown	Similar to Project	Similar to Project	Similar to Project	Similar to Project
Transportation and Traffic	Unknown	Similar to Project	Slightly Reduced Impacts	Increased Impacts	Similar to Project
Utilities and Service Systems	Unknown	Similar to Project	Reduced Impacts	Similar to Project	Similar to Project

As shown in Table 5-19, Alternative 3 (Prohibit High-Volume Well Stimulation) would eliminate *Significant Unavoidable Impact GEO-1*, but would result in increased impacts related to the recovery of mineral resources. Alternative 4 (Require Electric Drill Rigs) would eliminate *Significant Unavoidable Impact AQ-1* and *Significant Unavoidable Impact NOI-1*, but would result in increased impacts related to aesthetics and traffic.

Both Alternative 3 and Alternative 4 have substantial benefits to the environment when compared to the environmental impacts of the proposed Project. The determination of whether Alternative 3 or Alternative 4 is the environmentally superior alternative will depend upon the consideration of which environmental benefit is prioritized. Additionally, it is possible that Alternative 3 and Alternative 4 could be combined, resulting in a revised Project that both prohibits well stimulation treatments and also requires the use of electricity to power well drilling.

5.13 REFERENCES

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