Initial Study

Hudson Ranch New Well 13-4 Project

Initial Study #22-034

Conditional Use Permit # 22-0020

Imperial County, CA

April 2023

Reviewed by:

County of Imperial

Planning & Development Services Department

801 Main Street

El Centro, CA 92243

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Introduction

A. Purpose

This document is a ☐ policy-level; ☒ project-level Initial Study for evaluation of potential environmental impacts resulting with the proposed Hudson Ranch New Well 13-4 Project.

B. CEQA Requirements and the Imperial County's Rules and Regulations for Implementing CEQA

As defined by Section 15063 of the State California Environmental Quality Act (CEQA) Guidelines and Section 7 of the County's Rules and Regulations for Implementing CEQA, an **Initial Study** is prepared primarily to provide the Lead Agency with information to use as the basis for determining whether an Environmental Impact Report (EIR), Negative Declaration, or Mitigated Negative Declaration would be appropriate for providing the necessary environmental documentation and clearance for any proposed project.

☐ According to Section 15065, an **EIR** is deemed appropriate for a particular proposal if the following conditions occur:

- The proposal has the potential to substantially degrade quality of the environment.
- The proposal has the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals.
- The proposal has possible environmental effects that are individually limited but cumulatively considerable.
- The proposal could cause direct or indirect adverse effects on human beings.

☐ According to Section 15070(a), a **Negative Declaration** is deemed appropriate if the proposal would not result in any significant effect on the environment.

☐ According to Section 15070(b), a **Mitigated Negative Declaration** is deemed appropriate if it is determined that though a proposal could result in a significant effect, mitigation measures are available to reduce these significant effects to insignificant levels.

This Initial Study has determined that the proposed Hudson Ranch New Well 13-4 Project will result in potentially significant environmental impacts; however, mitigation measures are available to reduce the potentially significant impacts and therefore, a Mitigated Negative Declaration is deemed as the appropriate document to provide necessary environmental evaluations and clearance for the proposed approvals under review in this Initial Study.

This Initial Study is prepared in conformance with the California Environmental Quality Act of 1970, as amended (Public Resources Code, Section 21000 et. seq.); the State CEQA Guidelines & County of Imperial's CEQA Regulations, Guidelines for the Implementation of CEQA; applicable requirements of the County of Imperial; and the regulations, requirements, and procedures of any other responsible public agency or an agency with jurisdiction by law.

Pursuant to the County of Imperial's CEQA Regulations, Guidelines for the Implementation of CEQA, depending on the project scope, the County of Imperial Board of Supervisors, Planning

Commission and/or Planning Director is designated the Lead Agency, in accordance with Section 15050 of the CEQA Guidelines. The Lead Agency is the public agency which has the principal responsibility for approving the necessary environmental clearances and analyses for any project in the County.

C. Intended Uses of Initial Study

This Initial Study is an informational document which is intended to inform County of Imperial decision makers, other responsible or interested agencies, and the general public of potential environmental effects of the proposed applications. The environmental review process has been established to enable public agencies to evaluate environmental consequences and to examine and implement methods of eliminating or reducing any potentially adverse impacts. While CEQA requires that consideration be given to avoiding environmental damage, the Lead Agency and other responsible public agencies must balance adverse environmental effects against other public objectives, including economic and social goals.

The Initial Study prepared for the project will be circulated for a period of no less than 35 days for public and agency review and comments.

D. Contents of Initial Study

This Initial Study is organized to facilitate a basic understanding of the existing setting and environmental implications of the proposed applications.

SECTION 1

I. INTRODUCTION presents an introduction to the entire report. This section discusses the environmental process, scope of environmental review, and incorporation by reference documents.

SECTION 2

II. ENVIRONMENTAL CHECKLIST FORM contains the County's Environmental Checklist Form. The checklist form presents results of the environmental evaluation for the proposed Hudson Ranch New Well 13-4 Project and those issue areas that would have either a significant impact, potentially significant impact, or no impact.

PROJECT SUMMARY, LOCATION AND ENVIRONMENTAL SETTINGS describes the proposed project, necessary entitlements and required applications. A description of discretionary approvals and permits required for project implementation is also included. It also identifies the location of the project and a general description of the surrounding environmental settings.

ENVIRONMENTAL ANALYSIS evaluates each response provided in the environmental checklist form. Each response checked in the checklist form is discussed and supported with sufficient data and analysis as necessary. As appropriate, each response discussion describes and identifies specific impacts anticipated with project implementation.

SECTION 3

III. MANDATORY FINDINGS presents Mandatory Findings of Significance in accordance with Section 15065 of the CEQA Guidelines.

E. Scope of Environmental Analysis

For evaluation of environmental impacts, each question from the Environmental Checklist Form is summarized and responses are provided according to the analysis undertaken as part of the Initial Study. Impacts and effects will be evaluated and quantified, when appropriate. To each question, there are four possible responses, including:

1. No Impact: A “No Impact” response is adequately supported if the impact simply does not apply to the proposed project.
2. Less Than Significant Impact: The proposed project will have the potential to impact the environment. These impacts, however, will be less than significant; no additional analysis is required.
3. Less Than Significant With Mitigation Incorporated: This applies where incorporation of mitigation measures has reduced an effect from “Potentially Significant Impact” to a “Less Than Significant Impact."
4. Potentially Significant Impact: The proposed project could have impacts that are considered significant. Additional analyses and possibly an EIR could be required to identify mitigation measures that could reduce these impacts to less than significant levels.

F. Policy-Level or Project-Level Environmental Analysis

This Initial Study will be conducted under a ☐ policy-level, ☒project-level analysis.

Regarding mitigation measures, it is not the intent of this document to “overlap” or restate conditions of approval that are commonly established for future known projects or the proposed project and associated entitlement applications. Additionally, those other standard requirements and regulations that any development must comply with, that are outside the County’s jurisdiction, are also not considered mitigation measures, and therefore, will not be identified in this document.

G. Tiered Documents and Incorporation by Reference

Information, findings, and conclusions contained in this document are based on incorporation by reference of tiered documentation, which are discussed in the following section.

1. Tiered Documents

As permitted in Section 15152(a) of the CEQA Guidelines, information and discussions from other documents can be included into this document. Tiering is defined as follows:

“Tiering refers to using the analysis of general matters contained in a broader EIR (such as the one prepared for a general plan or policy statement) with later EIRs and negative declarations on narrower projects; incorporating by reference the general discussions from the broader EIR; and concentrating the later EIR or negative declaration solely on the issues specific to the later project.”

Tiering also allows this document to comply with Section 15152(b) of the CEQA Guidelines, which discourages redundant analyses, as follows:

“Agencies are encouraged to tier the environmental analyses which they prepare for separate but related projects including the general plans, zoning changes, and development

projects. This approach can eliminate repetitive discussion of the same issues and focus the later EIR or negative declaration on the actual issues ripe for decision at each level of environmental review. Tiering is appropriate when the sequence of analysis is from an EIR prepared for a general plan, policy or program to an EIR or negative declaration for another plan, policy, or program of lesser scope, or to a site-specific EIR or negative declaration."

Further, Section 15152(d) of the CEQA Guidelines states:

"Where an EIR has been prepared and certified for a program, plan, policy, or ordinance consistent with the requirements of this section, any lead agency for a later project pursuant to or consistent with the program, plan, policy, or ordinance should limit the EIR or negative declaration on the later project to effects which:

(1) Were not examined as significant effects on the environment in the prior EIR; or

(2) Are susceptible to substantial reduction or avoidance by the choice of specific revisions in the project, by the imposition of conditions, or other means."

2. **Incorporation by Reference**

Incorporation by reference is a procedure for reducing the size of EIRs/MND and is most appropriate for including long, descriptive, or technical materials that provide general background information, but do not contribute directly to the specific analysis of the project itself. This procedure is particularly useful when an EIR or Negative Declaration relies on a broadly-drafted EIR for its evaluation of cumulative impacts of related projects (*Las Virgenes Homeowners Federation v. County of Los Angeles* [1986, 177 Ca.3d 300]). If an EIR or Negative Declaration relies on information from a supporting study that is available to the public, the EIR or Negative Declaration cannot be deemed unsupported by evidence or analysis (*San Francisco Ecology Center v. City and County of San Francisco* [1975, 48 Ca.3d 584, 595]).

When an EIR or Negative Declaration incorporates a document by reference, the incorporation must comply with Section 15150 of the CEQA Guidelines as follows:

- The incorporated document must be available to the public or be a matter of public record (CEQA Guidelines Section 15150[a]). The General Plan EIR is available, along with this document, at the County of Imperial Planning & Development Services Department, 801 Main Street, El Centro, CA 92243 Ph. (442) 265-1736.
- This document must be available for inspection by the public at an office of the lead agency (CEQA Guidelines Section 15150[b]). These documents are available at the County of Imperial Planning & Development Services Department, 801 Main Street, El Centro, CA 92243, Ph. (442) 265-1736.
- These documents must summarize the portion of the document being incorporated by reference or briefly describe information that cannot be summarized. Furthermore, these documents must describe the relationship between the incorporated information and the analysis in the tiered documents (CEQA Guidelines Section 15150[c]). As discussed above, the tiered EIRs address the entire project site and provide background and inventory information and data which apply to the project site. Incorporated information and/or data will be cited in the appropriate sections.

- These documents must include the State identification number of the incorporated documents (CEQA Guidelines Section 15150[d]). The State Clearinghouse Number for the County of Imperial General Plan EIR is SCH #93011023.

The material to be incorporated in this document will include general background information (CEQA Guidelines Section 15150[f]).

Environmental Checklist Form

1. **Project Title:** Hudson Ranch New Well 13-4 Project
2. **Lead Agency Name and Address:** Imperial County Planning & Development Services Department, 801 Main Street, El Centro, CA 92243
3. **Contact Person and Phone Number:** Dave Black, Planner IV, 442-265-1749
4. **Project Location:** The project site is located on the eastern portion of one privately-owned parcel (Assessor Parcel No. (APN) 020-010-035). APN No. 020-010-035 encompasses approximately 467 acres in the northwest portion of Imperial County, California; however, the project is limited to only a portion of the larger 467-acre parcel. The project site is situated near the eastern edge of the Salton Sea and is located approximately 4 miles southwest of the town of Niland. State Route 111, located approximately 3 miles east of the project, provides regional access to the project site. Adjacent roadways providing local vehicular access to the project site include Hazard Road to the north, McDonald Road to the south, and Davis Road to the west. The John L. Featherstone Geothermal Power Plant (formerly Hudson Ranch 1) is located south of the project site at 409 McDonald Road, Calipatria, CA 92233.
5. **Project Sponsor's Name and Address:** Hudson Ranch Power 1, LLC, 15 W South Temple, Suite 1900, Salt Lake City, UT 84101
6. **General Plan Designation:** Agriculture
7. **Zoning:** M-2-G-PE (Medium Industrial-Geothermal Overlay-Pre-Existing Allowed/Restricted)
8. **Description of Project:** The proposed project consists of four primary components: 1) well pad; 2) geothermal well; 3) pipeline that would connect the geothermal well to the existing John L. Featherstone Geothermal Power Plant; and 4) an access road to the well pad as well as an access road generally along the pipeline extent. The well pad, geothermal well, pipeline, and access roads are collectively referred to as the “proposed project” or “project.” A detailed project description is provided in the Project Summary section below.
9. **Surrounding Land Uses and Setting: Briefly describe the project's surroundings:**

   The project site is located entirely within the County’s Renewable Energy/Geothermal Overlay Zone, which is an area determined to be the most suitable for the development of renewable energy facilities. The project site and immediate vicinity are located on geothermal leasing areas where geothermal resources are currently being extracted and generated into electricity. Geothermal extraction infrastructure in the surrounding area includes well drilling pads, drilling rigs, pipelines, and the existing John L. Featherstone Geothermal Power Plant to the south. The majority of the project parcel is vacant and undeveloped. However, geothermal extraction is currently occurring in the southwestern and southcentral portion of the project parcel. Geothermal extraction infrastructure on the project parcel includes production wells, drill rigs, and pipeline connecting to the existing John L. Featherstone Geothermal Power Plant. Imperial Irrigation District’s “P” Drain is located to the north and the “O” Lateral is located to the south of the project site.
10. **Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.):**

- California Department of Conservation, Division of Oil, Gas and Geothermal Resources (CDOGGR)
- California Regional Water Quality Control Board, Colorado River Basin Region
- Imperial County Air Pollution Control District
- Imperial County Public Works Department

11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

Yes, the Torrez Martinez Desert Cahuilla Indians, Campo Band of Mission Indians, and Quechan Indian Tribe. These tribes were sent an AB 52 consultation request letter on January 26, 2023 for a 30-day review ending on February 28, 2023 to request a consultation meeting. At this time, no requests for consultation have been received.

Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐	Aesthetics	☐	Agriculture and Forestry Resources	☐	Air Quality
☒	Biological Resources	☒	Cultural Resources	☐	Energy
☒	Geology/Soils	☐	Greenhouse Gas Emissions	☐	Hazards & Hazardous Materials
☐	Hydrology / Water Quality	☐	Land Use/Planning	☐	Mineral Resources
☐	Noise	☐	Population/Housing	☐	Public Services
☐	Recreation	☐	Transportation	☐	Tribal Cultural Resources
☐	Utilities/Service Systems	☐	Wildfire	☐	Mandatory Findings of Significance

Environmental Evaluation Committee Determination

After Review of the Initial Study, the Environmental Evaluation Committee (EEC) has:

☐ Found that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ Found that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ Found that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ Found that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ Found that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

CALIFORNIA DEPARTMENT OF FISH AND GAME DE MINIMIS IMPACT FINDING:

☒Yes ☐No

EEC VOTES	YES	NO	ABSENT
PUBLIC WORKS	☒	☐	☐
ENVIRONMENTAL HEALTH	☒	☐	☐
OFFICE EMERGENCY SERVICES	☒	☐	☐
APCD	☒	☐	☐
AG	☐	☐	☒
SHERIFF DEPARTMENT	☒	☐	☐
ICPDS	☒	☐	☐

for

Jim Minnick, Director of Planning/EEC Chairman

4-13-2023

Date:

EEC ORIGINAL PKG

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Project Summary

Project Location

The project site is situated near the eastern edge of the Salton Sea and is located approximately 4 miles southwest of the town of Niland. State Route 111, located approximately 3 miles east of the project, provides regional access to the project site (Figure 1). APN No. 020-010-035 encompasses approximately 467 acres in the northwest portion of Imperial County, California; however, the project is limited to only a portion of the larger 467-acre parcel (Figure 2). Adjacent roadways providing local vehicular access to the project site include Hazard Road to the north, McDonald Road to the south, and Davis Road to the west. The John L. Featherstone Geothermal Power Plant (formerly Hudson Ranch 1) is located south of the project site at 409 McDonald Road, Calipatria, CA 92233.

Project Components

Hudson Ranch Power I, LLC (HRP) proposes to drill a new well (13-4) in the Hudson Ranch Unit of the Salton Sea Known Geothermal Resource Area (KGRA) to continue resource development and maximize plant output. The proposed project seeks to construct and operate a facility capable of extracting and producing viable lithium, zinc, manganese and other commercially viable substances from geothermal brine.

The proposed project consists of four primary components: 1) well pad; 2) geothermal well; 3) pipeline that would connect the geothermal well to the existing John L. Featherstone Geothermal Power Plant; and 4) an access road to the well pad as well as an access road generally along the pipeline extent. The well pad, geothermal well, pipeline, and access roads are collectively referred to as the “proposed project” or “project.” These project components are described in detail below and depicted on Figure 2.

Well Pad

The proposed project involves the construction of one new well pad. The new pad would be located on HRP’s geothermal lease within the Hudson Ranch Unit of the Salton Sea KGRA in Imperial County. The proposed well pad is located in an area specifically in order to test and develop specific geophysical or geologic targets. The well pad would be approximately 300 feet by 270 feet with 8’ Class 2 aggregate base over 12” pit run sand or crusher fines. The well pad would be designed to create a level pad for a drill rig and a graded surface for the support equipment. The well pad would accommodate the drill rig, staging of materials, a sump, other ancillary equipment and worker parking.

Runoff from undisturbed areas around the well pad will be directed into ditches and energy dissipaters (if needed) around the site, consistent with Imperial County, IID and California Regional Water Quality Control Board, Colorado River Basin Region (CRWQCB) best management practices for storm water. The well pad would be surrounded by a berm and graded to direct runoff into the cellar, which would be pumped as necessary into an on-site containment basin. A typical well pad similar to the proposed project is shown on Figure 3. The containment basin will be constructed on the well pad for the containment and temporary storage of waste drilling mud, drill cuttings and storm water runoff from the constructed well pad.

Geothermal Well

The proposed well will be tested to determine if it will be placed into production or plugged and abandoned. If the geothermal well is determined to have economic production potential, the well would be completed, and production equipment installed.

Drilling and testing of the proposed well will be conducted pursuant to Conditions of Approval of a Conditional Use Permit (CUP) that has been applied for with Imperial County Planning and Development Services. Existing CUP #07-0019, granted to Hudson Ranch by Imperial County in October 2007 and amended September 12, 2012, states in part that "For full field development as replacement wells need to be drilled over the project's expected 30-year life span, the well locations and the pipeline network for steam collection and injection as well as replacement wells are to be located as needed.... Any additional production and injection wells can be drilled in any new well pad areas that are to be reviewed and approved by the Planning & Development Services Department as shown on a building permit application and site plan with supporting documentation."

The geothermal well would be drilled with a rotary drill rig. During drilling, the top of the drill rig derrick will be approximately 170 feet above the ground surface, and the rig floor approximately 30 feet above the ground surface. The typical drill rig and associated support equipment (rig floor and stands; draw works; derrick; drill pipe; trailers; mud, fuel and water tanks; diesel generators; air compressors; etc.) would be brought to the prepared well pad on approximately 70 or more large tractor-trailer trucks over the construction phase of the project. After the drill rig is operational, as many as 10 tractor trailer truck trips could be expected on the busiest days but the average daily trips would be three large trucks which would deliver drilling supplies and equipment. In addition, the drilling project would generate an average of 16 small trucks/service vehicles/worker vehicles.

The drilling process would be completed in two months. Drilling would be conducted 24-hours per day, 7-days per week and approximately 9 to 18 workers will be on location at any given time.

The drill rigs would be powered by three portable 1,482 horsepower (HP) Diesel Generators which will be registered under the Portable Equipment Registration Program (PERP). Drilling of the well would require two generators running continuously and the third generator would be used as a backup generator if needed.

The geothermal well would be drilled to the design depth (approximately 9,000 feet) or the depth selected by the project geologist under a geothermal well drilling and completion program approved by the California Geologic Energy Management Division (CalGEM).

After drilling operations are completed, the liquids from the mud sump/containment basin will either be moved to another well for use in the drilling of that well, evaporated, pumped back down the well, or disposed of in an off-site facility authorized to receive these wastes in accordance with the requirements of the CRWQCB. The solid contents remaining in each containment basin typically consist of non-hazardous, non-toxic waste drilling mud and rock cuttings. The solids will be tested as required by the CRWQCB. The solids will subsequently be removed and disposed of in a waste disposal facility authorized by the CRWQCB or other applicable authority to receive and dispose of these materials. After the materials stored in each mud sump/containment basin have been removed, the containment basin would either be relined and recertified for use in the drilling of another well or reclaimed.

Operations of the well require a continuous source of electricity. The well would be connected to power provided by IID. Based on usage of typical wells by Hudson Ranch, the well would utilize 158 kWh per day, or approximately 57,670 kWh per year.

Pipeline

The proposed project includes a pipeline that would connect the geothermal well to the existing John L. Featherstone Geothermal Power Plant. As shown on Figure 2, the pipeline route would begin at the proposed geothermal well, run straight south, and then connect into the existing geothermal header pipeline that currently runs to the John L. Featherstone Geothermal Power Plant. The proposed alignment would be approximately 2,100 feet of 24-inch pipeline. The pipeline would be supported by 8-foot-deep drilled piers at about 30 feet on center and a steel post/cross-beam (about 3 feet above grade).

Access Roads

As shown on Figure 2, two access roads with access point along Davis Road would be constructed to access the proposed well pad and pipeline. The proposed access roads would be 25-foot wide with 12 inches of Class 2 aggregate base. Encroachment permits will be obtained from the Imperial County Public Works Department for the new access/driveways from Davis Road. No new road crossings of any IID lateral canals or drains are proposed.

Construction

The proposed project involves site construction, drilling, testing, and ancillary construction to connect new production equipment to existing production piping and facilities. Preparation activities include clearing, earthwork, drainage and other improvements necessary for efficient and safe operation. Site construction would include the preparation of one new well pad, construction of access roads, electrical lines, utility poles, and various above-ground piping to connect the proposed well to the existing geothermal plant.

The project construction dates were provided by the project applicant and are based on a proposed start date in June 2023 and should be completed in 40 days. After the drilling rig is assembled, the drilling process would commence and would be completed in 60 days. The total time necessary to drill the well is expected to be 100 days. The proposed construction schedule and expected construction equipment are provided in Table 1.

Table 1. Construction Schedule and Expected Construction Equipment

Project Component	Equipment	Proposed Start	Proposed Complete	Quantity
Access Roads		6/1/2023	6/10/2023	
	Rubber Tired Dozers			2
	Tractors/Loaders/Backhoes			2
Well Pad Grading		6/1/2023	6/10/2023	
	Excavators			1
	Graders			1
	Rubber Tired Dozers			1
	Tractors/Loaders/Backhoes			3
Trenching Pipeline		6/1/2023	6/5/2023	
	Excavator			1
Well Pad Surface Finish (Concrete)		6/11/2023	6/30/2023	
	Boom Truck - Crane			2
	Other Material Handling Equipment			3
	Plate Compactors			1
	Pumps			1
Assemble Drill Rig		7/1/2023	7/10/2023	
	Cranes			1
	Forklifts			2

In addition to the equipment listed in Table 1, the project would utilize two 1,482 HP portable diesel-powered engine generators at any given time over the 60-day drilling period. These portable engines would operate continually over the entire drilling period.

Drilling will require the use of an average of 50,000 gallons of water each day and water required for road grading, construction and dust control will average 10,000 gallons per day or less. Water will be obtained from IID canals in conformance with IID construction water acquisition requirements. Water will be picked up from the source and delivered to the well pad by a water truck which will be capable of carrying approximately 4,000 gallons per load. Alternatively, a water pump and temporary pipeline from the designated irrigation lateral canal could be used to deliver water to a construction location or well pad. Any temporary water pipeline will be laid on the surface immediately adjacent to one of the access roads to the site.

Electric power is located approximately 930 feet north of the project site. A new power line and power poles would be installed from the existing power lines to the corner of the project site.

Operations

The geothermal well is designed to drill into and flow test the geothermal reservoir to confirm the characteristics of the geothermal reservoir and determine the level of commercial production. Once

the well is operational, very few vehicular trips would be expected. It is assumed that up to 6 trips per day would be utilized during operations.

Operations of the well require a continuous source of electricity which would be powered from IID. Based on usage of typical wells by Hudson Ranch, the well would utilize 158 kWh per day, or approximately 57,670 kWh per year. Water used during the drilling process will be supplied from the adjacent IID canals.

Environmental Setting

As shown on Figure 1, the project site is located entirely within the County's Renewable Energy/Geothermal Overlay Zone, which is an area determined to be the most suitable for the development of renewable energy facilities. The project site and immediate vicinity are located on geothermal leasing areas where geothermal resources are currently being extracted and generated into electricity. Geothermal extraction infrastructure in the surrounding area includes well drilling pads, drilling rigs, pipelines, and the existing John L. Featherstone Geothermal Power Plant to the south. The majority of the project parcel is vacant and undeveloped. However, geothermal extraction is currently occurring in the southwestern and southcentral portion of the project parcel. Geothermal extraction infrastructure on the project parcel includes production wells, drill rigs, and pipeline connecting to the existing John L. Featherstone Geothermal Power Plant. IID's "P" Drain is located to the north and the "O" Lateral is located to the south of the project site.

Figure 1. Regional Location

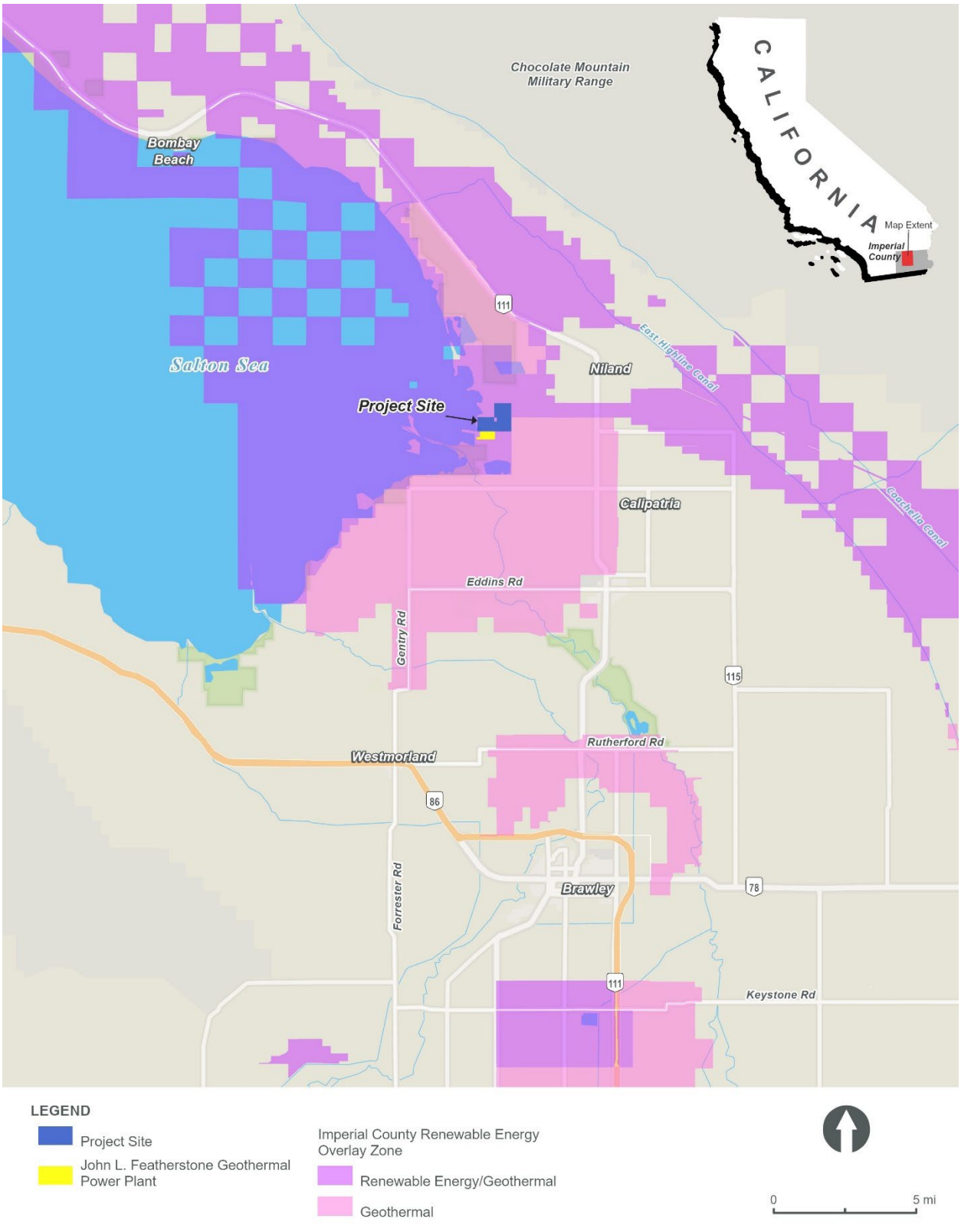


Figure 2. Project Components

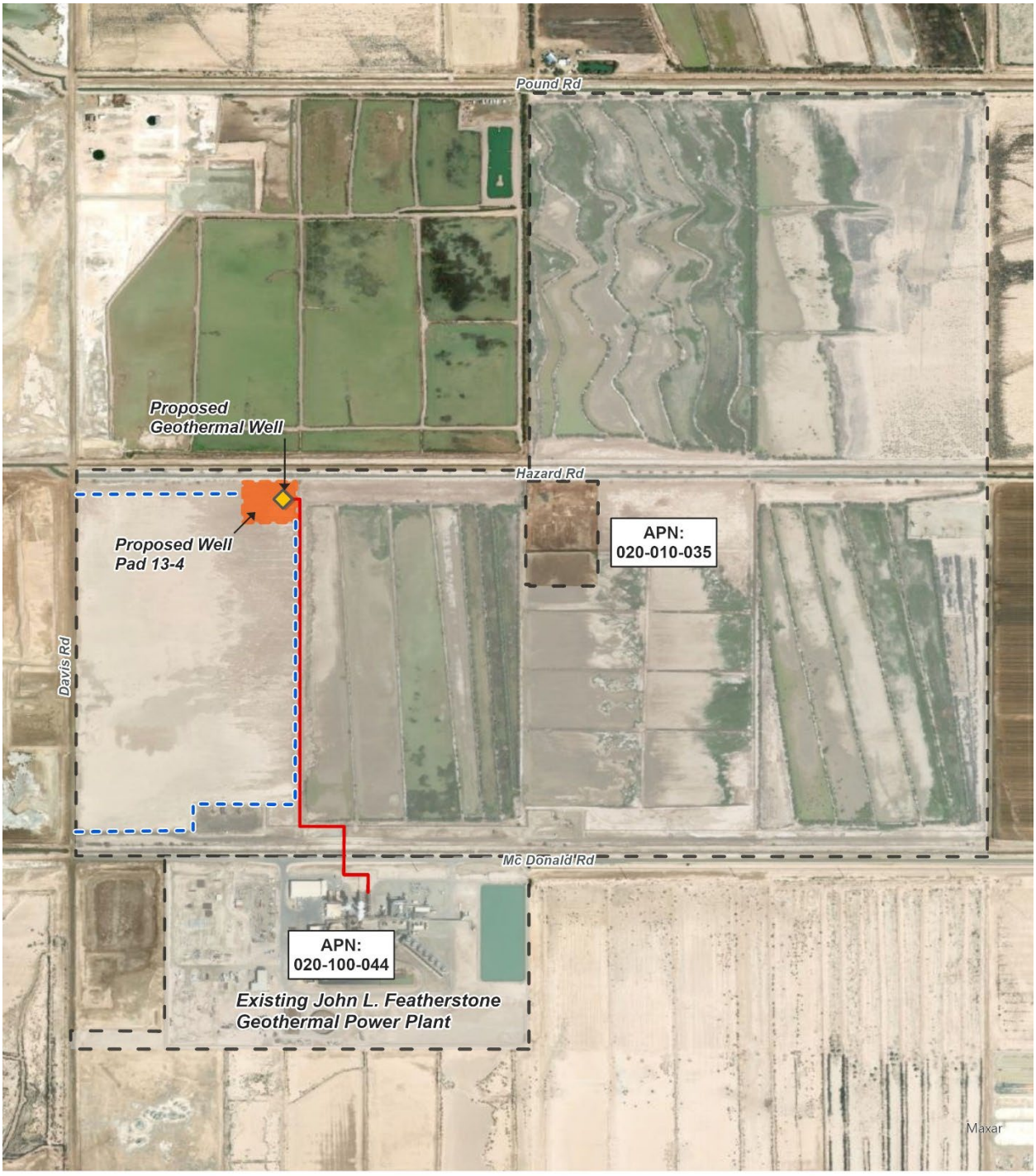
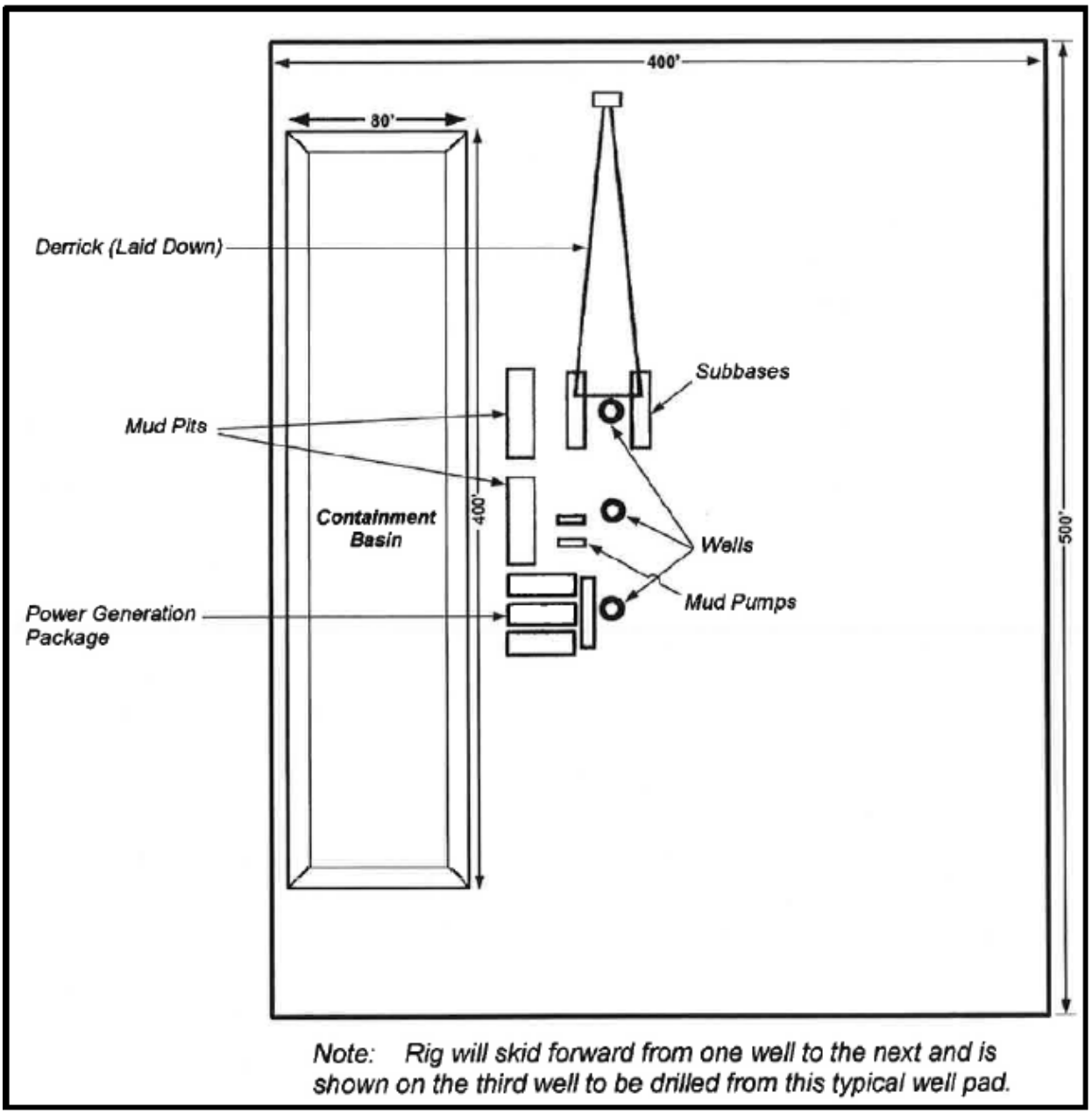


Figure 3. Typical Well Pad Concept



Evaluation of Environmental Impacts

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors, as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).
5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
    a. Earlier Analysis Used. Identify and state where they are available for review.
    b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
    c. Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources: A source list should be attached, and other sources used, or individuals contacted should be cited in the discussion.
8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
9. The explanation of each issue should identify:
    a. The significance criteria or threshold, if any, used to evaluate each question; and
    b. The mitigation measure identified, if any, to reduce the impact to less than significance.

I. Aesthetics

Environmental Issue Area:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic building within a state scenic highway?	☐	☐	☐	☒
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage points). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Impact Analysis

a) **No Impact.** The project site is located in a rural portion of Imperial County and is not located within an area containing a scenic vista designated by the County's General Plan (County of Imperial 2016). Therefore, the proposed project would not have a substantial adverse effect on a scenic vista and no impact is identified.

b) **No Impact.** According to the Conservation and Open Space Element, no State scenic highways have been designated in Imperial County (County of Imperial 2016). The project site is not located within a state scenic highway corridor, nor are there any state scenic highways located in proximity to the project site. The nearest road segment considered eligible for a State scenic highway designation is the portion of State Route 111 from Bombay Beach to the County line (California Department of Transportation 2018). The project site is located approximately 13.5 miles southeast of Bombay Beach; therefore, the project site would not be visible from Bombay Beach. No impacts to scenic resources within any state scenic highways would occur.

c) **Less than Significant Impact.** The proposed project involves the construction of a well pad, well, underground pipeline and access roads. Construction of the project would result in a minor change in the existing visual character of portions of the project site. However, the project is located within an existing geothermal leasing area and wells similar to the proposed well are currently active within the southern portion of the project parcel and immediate vicinity. In addition, there are no existing scenic resources on the project site. Therefore, the

proposed project would result in a less than significant impact to the existing visual character or quality of the site and its surroundings.

d) **Less than Significant Impact.** The proposed project does not include the addition of substantial lighting or glare producing components. During drilling, the top of the drill rig derrick would be 170 feet above the ground surface; non-LED aircraft safety lighting would be located atop the drill rig derrick. Ambient lighting and glare in the nearby areas would not significantly increase above existing conditions. Additionally, temporary construction lighting would be used for illuminating the proposed well site during construction. Following construction, any construction lighting would be disassembled and removed from the site. This impact is less than significant.

II. Agriculture and Forestry Resources

Environmental Issue Area:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Impact Analysis

a) **No Impact.** According to the California Department of Conservation's (DOC) California Important Farmland Finder, the project site is not located on land designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (California DOC 2022). The project site is designated as Other Land and Urban and Built-Up Land by the DOC. Therefore, the proposed project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use and no impact is identified.

b) **No Impact.** The project site is currently zoned M-2-G-PE (Medium Industrial-Geothermal Overlay-Pre-Existing Allowed/Restricted) and is not zoned for agricultural use. Therefore, the proposed project would not conflict with existing zoning for agricultural use and no impact is identified.

As of December 31, 2018, all Williamson Act contracts in Imperial County have been terminated. The project site is not located on Williamson Act contracted land. Therefore, the proposed project would not conflict with a Williamson Act contract and no impact is identified.

c) **No Impact.** The project site is not located on forest land as defined in PRC Section 1220 (g). There are no existing forest lands, timberlands, or timberland zoned Timberland Production either onsite or in the immediate vicinity; therefore, the project would not conflict with existing zoning of forest land or cause rezoning of any forest land. Additionally, the site is not zoned as forest, timberland or for Timberland Production. Therefore, no impact is identified for this issue area.

d) **No Impact.** There are no existing forest lands either on site or in the immediate vicinity of the project site. The proposed project would not result in the loss of forest land or conversion of forest land to non-forest use. Therefore, no impact is identified for this issue area.

e) **No Impact.** As discussed in Response II. a) above, the project site is not located on land designated as Important Farmland and would not convert farmland to non-agriculture use. As discussed in Response II. d) above, there are no existing forest lands either on site or in the immediate vicinity of the project site. Therefore, the proposed project would not result in the conversion of forest land to non-forest use. Thus, no impact is identified for this issue area.

III. Air Quality

Environmental Issue Area:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors adversely affecting a substantial number of people?	☐	☐	☒	☐

Impact Analysis

The following information is summarized from the *Hudson Ranch Geothermal Well Air Quality Assessment* prepared by Ldn Consulting, Inc. dated February 16, 2023. This report is provided as Appendix A of this Initial Study.

a) **Less than Significant Impact.** The proposed project is located within the jurisdiction of the Imperial County Air Pollution Control District (ICAPCD) in the Salton Sea Air Basin. The project region is designated as a nonattainment area for the federal ozone (O_3), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) and particulate matter less than 10 microns in diameter (PM_{10}) standards and is also a nonattainment area for the state standards for O_3 and PM_{10}.

The U.S. Environmental Protection Agency, under the provisions of the Clean Air Act, requires each state with regions that have not attained the federal air quality standards to prepare a State Implementation Plan (SIP), detailing how these standards are to be met in each local area.

The region's SIP is constituted of the ICAPCD air quality plans: 2018 PM_{10} SIP, the 2018 Annual $PM_{2.5}$ SIP, the 2017 8-Hour Ozone SIP, 2013 24-Hour $PM_{2.5}$ SIP, the 2009 1997 8-hour Ozone RACT SIP, the 2009 PM_{10} SIP and the 2008 Ozone Early Progress Plans. Conformance with the Air Quality Management Plan (AQMP) for development projects is determined by demonstrating compliance with local land use plans and/or population projections, meeting the land use designation set forth in the local General Plan, and comparing assumed emissions in the AQMP to proposed emissions. The project must demonstrate compliance with all ICAPCD applicable rules and regulations, as well as local land use plans and population projections. As the project does not contain a residential component, the project would not result in an increase in the regional population. While the project would contribute to energy supply, which is one factor of population growth, the

proposed project would not significantly increase employment or growth within the region. Moreover, development of the proposed project would increase the amount of renewable energy and help California meet its Renewable Portfolio Standard (RPS). The proposed project would be required to comply with all applicable ICAPCD rules and requirements during construction and operation to reduce air emissions. Overall, the proposed project would improve air quality by reducing the amount of emissions that would be generated in association with electricity production from a fossil fuel burning facility. Furthermore, the thresholds of significance, adopted by the air district (ICAPCD), determine compliance with the goals of the attainment plans in the region. As such, emissions below the ICAPCD regional mass daily emissions thresholds presented would not conflict with or obstruct implementation of the applicable air quality plans.

The following analysis is broken out by a discussion of potential impacts during construction of the project followed by a discussion of potential impacts during operation of the project.

Construction

Air Quality impacts related to construction were calculated using the latest CalEEMod 2020.4.0 air quality model, which was developed by BREEZE Software for South Coast Air Quality Management District (SCAQMD) in 2021. The construction module in CalEEMod is used to calculate the emissions associated with the construction of the project. The project's construction assumptions used in the CalEEMod, including construction schedule and equipment mix, are described in the project's air quality assessment (Appendix A of this Initial Study) and in the Project Summary section of this Initial Study.

It should be noted that default settings for CalEEMod include an assumption for roads within Imperial County to be only 50% paved. The County has been improving many of these roads to paved sections. As identified below, the proposed project would require all construction workers, vendors and hauling to only use paved or improved roads to minimize dust. Based on this the default setting was revised to 85% paved.

Design Features. The proposed project includes the following design features during construction:

- Diesel equipment required shall be rated Tier 4 per EPA requirements. All modeling assumes the use of this equipment and is therefore a condition to the project.
- Access to the site will be via State Route 111, McDonald Road, and Davis Road. All equipment workers, vendors, and haul trucks will be required to utilize these roadways. On-Road trips will not operate on unpaved dirt roads.
- During construction of the project, the project will be required to maintain daily dust suppression along unpaved sections of McDonald Road and Davis Road using a water truck operating continuously while vehicles are using it.
- The project will provide wheel shakers at the exit of the construction site to minimize dust being tracked off the project site and onto the roadways.
- The project will utilize two of three total 1,482 HP portable diesel-powered engine generators. The portable engines will be registered under CARB's PERP program. These engines meet current BACT standards to minimize the emissions of these air pollutants.

  The well-drilling equipment would be powered by portable engines permitted and regulated by the State of California's PERP using Airborne Toxic Control Measure (ATCM) requirements (CARB 2018). This PERP program combined with ATCM requirements both registers and regulates the use of portable engines and engine-associated equipment in the State of California by setting emissions limitations. The ICAPCD, as part of its permitting process, makes the State's PERP with ATCM emissions limitation requirements for portable engines a condition of compliance.

The portable diesel-powered engines utilized by this project will be registered under PERP and would be operated in accordance with the PERP permit requirements for these portable engines. Based on this, emissions from the portable engines powering the drill rig would generate less than significant air quality emissions within the County of Imperial.

Predicted maximum daily emissions associated with project construction are summarized in Table 2. The project construction model includes the project design features identified above. As shown in Table 2, the proposed project would not exceed ICAPCD's construction-related criteria pollutant thresholds. Therefore, this is considered a less than significant impact.

Table 2. Estimated Construction Emissions – Pounds per Day

Year	ROG	NOx	CO	PM_{10} (Dust)	PM_{10} (Exhaust)	PM_{10} Total)	$PM_{2.5}$ (Dust)	$PM_{2.5}$ (Exhaust)	$PM_{2.5}$ Total)
2023	1.03	11.02	37.13	99.19	0.12	99.30	13.75	0.11	13.86
Significance Threshold (lb/day)	75	100	550	--	--	150	--	--	N/A
Significant Impact?	No	No	No	--	--	No	--	--	No

Source: Appendix A of this EIR

Operation

Project Buildout is expected in 2023 and the first full year of operations are expected in 2024. The project traffic generation onsite would be minimal; it was assumed that as many as 6 trips per day could be expected. Area and Energy air quality emissions would essentially be zero. The daily pollutants calculated for summer and winter are shown in Table 3 and Table 4, respectively. As shown in Table 3 and Table 4, the proposed project would not exceed ICAPCD thresholds during operations. As such, operations-related emissions would be less than significant for the proposed project.

Table 3. Estimated Daily Pollutant Generation – Operations (Summer Scenario)

Source	ROG	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
Area (lb/day)	0.00	0.00	0.00	0.00	0.00	0.00
Energy (lb/day)	0.00	0.00	0.00	0.00	0.00	0.00
Operational Vehicle Emissions (lb/day)	0.02	0.02	0.20	0.00	6.00	0.60
Total (lb/day)	**0.02**	**0.02**	**0.20**	**0.00**	**6.00**	**0.60**
ICAPCD Thresholds	55	55	550	150	150	150
Significant?	No	No	No	No	No	No

Source: Appendix A of this EIR

Table 4. Estimated Daily Pollutant Generation – Operations (Winter Scenario)

Source	ROG	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
Area (lb/day)	0.00	0.00	0.00	0.00	0.00	0.00
Energy (lb/day)	0.00	0.00	0.00	0.00	0.00	0.00
Operational Vehicle Emissions (lb/day)	0.02	0.02	0.16	0.00	6.00	0.60
Total (lb/day)	**0.02**	**0.02**	**0.16**	**0.00**	**6.00**	**0.60**
ICAPCD Thresholds	55	55	550	150	150	150
Significant?	No	No	No	No	No	No

Source: Appendix A of this EIR

Conclusion

As described above, conformance with the AQMP for development projects is determined by demonstrating compliance with local land use plans and/or population projections and comparing assumed emissions in the AQMP to proposed emissions. Because the proposed project complies with local land use plans and population projections and would not exceed ICAPCD's thresholds during construction and operations, the proposed project would not conflict with or obstruct implementation of the applicable air quality plan. This is considered a less than significant impact.

b) **Less than Significant Impact.** By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size, by itself, to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's individual emissions exceed its identified significance thresholds, the project would be cumulatively considerable. Projects that do not exceed significance thresholds would not be considered cumulative considerable.

The ICAPCD's application of thresholds of significance for criteria air pollutants is relevant to the determination of whether a project's individual emissions would have a cumulatively significant impact on air quality. As discussed above in Response III. a), emissions generated during project construction and operations would not exceed the ICAPCD's thresholds of significance (Table 2). Therefore, the project's potential to result in a cumulatively considerable net increase of any criteria pollutant is considered less than significant.

c) **Less than Significant Impact.** The nearest sensitive receptor to the project site is a single-family home located on Pound Road located approximately 0.60 miles northeast of the project site. As discussed above in Response III. a), the criteria pollutant emissions have been calculated for construction activities, which were found to be within the ICAPCD's allowable construction thresholds. Due to the limited amount of criteria pollutants created from construction activities and the distance to the nearest sensitive receptor, construction emissions would not expose sensitive receptors to substantial concentrations of criteria pollutants.

In addition, to the criteria pollutant emissions, construction activities have the potential to expose nearby sensitive receptors to toxic air contaminants (TACs), which would be created from the operation of diesel-powered equipment in the form of diesel particulate matter (DPM). According to SCAQMD methodology, health effects from TACs are usually described in terms of "individual cancer risk." "Individual Cancer Risk" is the likelihood that a person exposed to concentrations of toxic air contaminants over a 70-year lifetime will contract cancer, based on the use of standard risk-assessment methodology. Given the relatively limited number of heavy-duty construction equipment, the varying distances that construction equipment would operate to the nearby sensitive receptor, and the short-term

construction schedule, the proposed Project would not result in a long-term (i.e., 70 years) substantial source of toxic air contaminant emissions and corresponding individual cancer risk. In addition, California Code of Regulations Title 13, Article 4.8, Chapter 9, Section 2449 regulates emissions from off-road diesel equipment in California. This regulation limits idling of equipment to no more than five minutes, requires equipment operators to label each piece of equipment and provide annual reports to CARB of their fleet's usage and emissions. This regulation also requires systematic upgrading of the emission Tier level of each fleet, and currently no commercial operator is allowed to purchase Tier 0 or Tier 1 equipment and by January 2023, no commercial operator is allowed to purchase Tier 2 equipment. In addition to the purchase restrictions, equipment operators need to meet fleet average emissions targets that become more stringent each year between years 2014 and 2023.

The project will utilize two of three total 1,482 HP portable diesel-powered engine generators. The portable engines will be registered under CARB's PERP program. These engines meet current BACT standards to minimize the emissions of these air pollutants. The well-drilling equipment would be powered by portable engines permitted and regulated by the State of California's PERP using Airborne Toxic Control Measure (ATCM) requirements (CARB 2018). This PERP program combined with ATCM requirements both registers and regulates the use of portable engines and engine-associated equipment in the State of California by setting emissions limitations. The ICAPCD, as part of its permitting process, makes the State's PERP with ATCM emissions limitation requirements for portable engines a condition of compliance. The portable diesel-powered engines utilized by this project will be registered under PERP and would be operated in accordance with the PERP permit requirements for these portable engines. Based on this, emissions from the portable engines powering the drill rig would generate less than significant air quality emissions within the County of Imperial.

As discussed above in Response III. a), the criteria pollutant emissions have been calculated for operational activities, which were found to be within the ICAPCD's allowable operational thresholds. Due to the limited amount of criteria pollutants created from operational activities and the distance to the nearest sensitive receptor to the project site, operational emissions would not expose sensitive receptors to substantial concentrations of criteria pollutants that are anticipated to create nominal levels of emissions and would not result in a substantial increase in traffic volumes, which have the potential to create CO hotspots. As such, operation of the proposed project would result in a less than significant exposure of sensitive receptors to substantial pollutant concentrations.

Therefore, implementation of the proposed project would not expose sensitive receptors to substantial pollutant concentrations, and impacts would be less than significant.

d) **Less than Significant Impact.** During construction, the proposed project presents the potential for generation of objectionable odors in the form of diesel exhaust in the immediate vicinity of the site. However, these emissions are short-term in nature and will rapidly dissipate and be diluted by the atmosphere downwind of the emission sources. Additionally, odors would be localized and generally confined to the project area. Therefore, odors generated during construction would not adversely affect a substantial number of people to odor emissions.

At the time the well is flow-tested (once drilling is complete), the well would emit hydrogen sulfide at a rate of about 10.5 lbs/hr. This would generate objectionable odors though the odors would be short-term or until testing is complete. In addition, the nearest sensitive receptor is located 0.60 miles from the well site. This distance would sufficiently dilute any potential odors generated from the project. Based on this, a less than significant impact would be expected.

IV. Biological Resources

Environmental Issue Area:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of wildlife nursery sites?	☐	☐	☐	☒
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Impact Analysis

a) **Less than Significant with Mitigation Incorporated.** HDR conducted a survey of the project area on March 2, 2023. The majority of the project parcel is vacant and undeveloped. However, geothermal extraction is currently occurring in the southwestern and southcentral portion of the project parcel. The project site is generally disturbed and almost entirely devoid of vegetation. Adjacent vegetation includes salt cedar, iodine bush, Alkali heliotrope, and

arrow weed. The project footprint (area to be impacted by the project) does not contain any vegetation supporting special-status species. Furthermore, there were no special-status species observed on the project site.

However, two artificial burrowing owl boxes were observed along the eastern fence line of the project site. Activity or signs of use of the artificial burrowing owl boxes were not detected during the site visit. Burrowing owl is a U.S. Fish and Wildlife Service Bird of Conservation Concern, a California Department of Fish and Wildlife Species of Special Concern, a BLM sensitive species, and Imperial County Species of Conservation Focus. It is typically found in dry open areas with few trees and short grasses; it is also found in vacant lots near human habitation. Burrowing owls were not present on the project site during the field survey; however suitable nesting and foraging habitat is present and they may be present at the start of project construction. If burrowing owls are present, project construction could result in take or other direct impacts. Indirect impacts to burrowing owls could also result if they are present in the lands surrounding the project site and project construction produces dust, noise, or other disturbances to this species. Mitigation Measure BIO-1 would avoid take and reduce potential impacts to this species to below a level of significance by requiring pre-construction surveys and establishing avoidance buffers. The loss of burrowing owl foraging habitat would be less than significant given the abundance of suitable foraging habitat in the lands surrounding the project site and throughout the region.

Mitigation Measure:

BIO-1 Take Avoidance (pre-construction) surveys for burrowing owl shall be completed prior to project construction. Surveys shall be conducted as detailed within Appendix E of the Staff Report on Burrowing Owl Mitigation (California Department of Fish and Game [CDFG] 2012). If burrowing owl is not detected, construction may proceed.

- If burrowing owl is identified during the non-breeding season (September 1 through January 31), then a 50-meter buffer will be established by the biological monitor. Construction within the buffer will be avoided until a qualified biologist determines that burrowing owl is no longer present or until a CDFW-approved exclusion plan has been implemented. The buffer distance may be reduced if noise attenuation buffers such as hay bales are placed between the occupied burrow and construction activities.
- If burrowing owl is identified during the breeding season (February 1 through August 31), then an appropriate buffer will be established by the biological monitor in accordance with the Staff Report on Burrowing Owl Mitigation (CDFG 2012). Construction within the buffer will be avoided until a qualified biologist determines that burrowing owl is no longer present or until young have fledged. The buffer distance may be reduced in consultation with CDFW if noise attenuation buffers such as hay bales are placed between the occupied burrow and construction activities.

b) **No Impact.** The project footprint (area to be impacted by the project) does not contain riparian habitat or designated sensitive natural communities. Therefore, the proposed project would have no impact to riparian habitat or sensitive natural communities.

c) **No Impact.** The project site does not contain wetlands. Therefore, implementation of the proposed project would not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act. No impact is identified for this issue area.

d) **No Impact.** The project site is generally disturbed and almost entirely devoid of vegetation. Adjacent vegetation includes salt cedar, iodine bush, Alkali heliotrope, and arrow weed. The project footprint (area to be impacted by the project) does not contain suitable vegetation and/or cover to support wildlife movement. No impact would occur.

e) **Less than Significant Impact.** The proposed project would not conflict with any local policies or ordinances protecting biological resources. As discussed above, Mitigation Measure BIO-1 would reduce potential impacts to burrowing owl to a less than significant level. Therefore, this impact is considered less than significant.

f) **No Impact.** The project site is not located in a Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Implementation of the proposed project would result in no impact associated with the potential to conflict with local conservation plans.

V. Cultural Resources

Environmental Issue Area:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

Impact Analysis

The following information is summarized from the *Cultural Resource Study for the Hudson Ranch New Well 13-4 Project* prepared by HDR dated March 7, 2023. This study is provided as Appendix B of this Initial Study.

a) No Impact. On February 21, 2023, HDR submitted a request to the South Coastal Information Center (SCIC) in San Diego for a search of all previous cultural resource investigations and all previously recorded cultural resources within 0.25 miles of the project area. The record search identified 13 previous investigations within 0.25 miles of the project area. Previous surveys were conducted primarily in support of geothermal developments in the area. Nine of the previous investigations overlap the project area, although most of these were desktop reviews that did not involve fieldwork. The entirety of the current project area was previously surveyed by ASM Affiliates in 2007, with negative findings.

There are no previously recorded cultural resources in the proposed project area. Only two historic-period cultural resources were identified in the 0.25-mile record search area. P-13-018705 (CA-IMP-13448), located 80 meters south of the southwestern extent of the proposed access road, consists of a machine-made water retention basin and small glass scatter dated to the 1950s-1960s. P-13-018706 (CA-IMP-13449), located 300 meters south of the southern extent of the proposed pipeline route, consists of a historic trash scatter (dated 1910-1940) and duck pond feature (built between the 1950s and 1970s).

HDR conducted a survey of the project area on March 2, 2023. The project area was surveyed using close-interval transects with 15 meter spacing. During the survey, no artifacts, ecofacts, features, historic structures, midden soils, or other evidence of cultural resources were identified on the project site. Based on the distance from known resources, disturbance from past agricultural activities, and the negative results of the survey, the proposed project would have no impact on historical resources.

b) Less than Significant Impact with Mitigation Incorporated. As described above, no evidence of cultural resources were identified on the project site during the survey. The property has undergone agricultural modification, tilling, and grading in past decades. These agricultural activities have likely heavily disturbed the surface and subsurface of the project area, destroying any intact potential prehistoric or historic-era cultural resources. The potential of finding a buried archaeological site during construction is considered low. However, like all construction projects in the state, the possibility exists. This potential impact

is considered significant. Implementation of Mitigation Measure CR-1 would reduce the potential impact associated with the inadvertent discovery of archaeological resources to a level less than significant.

Mitigation Measure:

CR-1 In the event of the discovery of previously unidentified archaeological materials, the contractor shall immediately cease all work activities within approximately 100 feet of the discovery. After cessation of excavation, the contractor shall immediately contact the Imperial County Department of Planning and Development Services Department. Except in the case of cultural items that fall within the scope of the Native American Grave Protection and Repatriation Act, the discovery of any cultural resource within the project area shall not be grounds for a "stop work" notice or otherwise interfere with the project's continuation except as set forth in this paragraph.

In the event of an unanticipated discovery of archaeological materials during construction, the applicant shall retain the services of a qualified professional archaeologist, meeting the Secretary of the Interior's Standards for a Qualified Archaeologist, to evaluate the significance of the materials prior to resuming any construction-related activities in the vicinity of the find. If the qualified archaeologist determines that the discovery constitutes a significant resource under CEQA and it cannot be avoided, the applicant shall implement an archaeological data recovery program.

c) **Less than Significant Impact with Mitigation Incorporated.** During the construction of the proposed project, grading, excavation and trenching will be required. Although the potential for encountering subsurface human remains within the project site is low, there remains a possibility that human remains are present beneath the ground surface, and that such remains could be exposed during construction. The potential to encounter human remains is considered a significant impact. Mitigation Measure CR-2 would ensure that the potential impact on previously unknown human remains does not rise to the level of significance pursuant to CEQA.

Mitigation Measure:

CR-2 If subsurface deposits believed to be human in origin are discovered during construction, all work must halt within a 100-foot radius of the discovery. A qualified professional archaeologist who meets the Secretary of the Interior's Standards for prehistoric and historic archaeology and is familiar with the resources of the region, shall be retained to evaluate the significance of the find, and shall have the authority to modify the no work radius as appropriate, using professional judgment. The following notifications shall apply, depending on the nature of the find:

If the find includes human remains, or remains that are potentially human, the professional archaeologist shall ensure reasonable protection measures are taken to protect the discovery from disturbance (AB 2641). The archaeologist shall notify the Imperial County Coroner (per § 7050.5 of the Health and Safety Code). The provisions of § 7050.5 of the California Health and Safety Code, § 5097.98 of the California PRC, and AB 2641 will be implemented.

If the Coroner determines the remains are Native American and not the result of a crime scene, the Coroner will notify the NAHC, which then will designate a Native American Most Likely Descendant (MLD) for the project (§ 5097.98 of the PRC). The designated MLD will have 48 hours from the time access to the property is granted to make recommendations concerning treatment of the remains. If the landowner does not agree with the recommendations of the MLD, the NAHC may mediate (§ 5097.94 of the PRC). If no agreement is reached, the landowner must rebury the remains where they will not be further

disturbed (§ 5097.98 of the PRC). This will also include either recording the site with the NAHC or the appropriate Information Center; using an open space or conservation zoning designation or easement; or recording a reinternment document with the county in which the property is located (AB 2641). Work may not resume within the no-work radius until the Imperial County Planning and Development Services Department, through consultation as appropriate, determine that the treatment measures have been completed to their satisfaction.

VI. Energy

Environmental Issue Area:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

Impact Analysis

a) **Less than Significant Impact.** The use of energy associated with the proposed project includes both construction and operational activities. Construction activities consume energy through the use of heavy construction equipment and truck and worker traffic. The proposed project will use energy-conserving construction equipment, including standard mitigation measures for construction combustion equipment recommended in the ICAPCD CEQA Air Quality Handbook. The use of better engine technology, in conjunction with the ICAPCD's standard mitigation measures will reduce the amount of energy used for the project. Implementation and operation of the project would promote the use of renewable energy and contribute incrementally to the reduction in demand for fossil fuel use for electricity-generating purposes and help California meet its RPS.

Based on these considerations, the proposed project would not result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation. This is considered a less than significant impact.

b) **Less than Significant Impact.** As described above, implementation and operation of the project would promote the use of renewable energy and contribute incrementally to the reduction in demand for fossil fuel use for electricity-generating purposes and help California meet its RPS. The proposed project would not conflict with or obstruct a state or local plan for renewable energy of energy efficiency. This is considered a less than significant impact.

VII. Geology and Soils

Environmental Issue Area:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	☐	☐	☐	☒
ii. Strong seismic ground shaking?	☐	☐	☒	☐
iii. Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv. Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1B of the Uniform Building Code (1994), creating substantial direct or indirect risk to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

Impact Analysis

ai) **No Impact.** According to the DOC's California Earthquake Hazards Zone Application (EQ Zapp), the project site is not located within or adjacent to any earthquake fault zone as delineated on the most recent Alquist-Priolo Earthquake Zoning Map (California DOC n.d.). Furthermore, the proposed project would not result in the construction of any structure intended for human occupancy. Therefore, the proposed project result in no impact associated with the rupture of a known earthquake fault.

aii) **Less than Significant Impact.** Southern California is a seismically active region, therefore it is highly likely that regional earthquakes would occur that could affect the proposed project. However, as previously mentioned above, no active faults are underlaying or adjacent to the project site. All structures and onsite facilities would be designed in accordance with the California Building Code (CBC) for the peak site ground acceleration. Since the design and construction of the project would be required to conform to the specific mandated structural design requirements to protect against strong seismic shaking, the potential impacts due to strong seismic ground shaking are a less than significant impact.

aiii) **Less than Significant Impact.** Four conditions are generally required for liquefaction to occur, including: 1) saturated soil, 2) loosely packed soil, 3) relatively cohesionless soil, and 4) groundshaking of sufficient intensity must occur to trigger the mechanism. All four conditions may exist to some degree at the project site. Additional geotechnical investigation would be required in order to assess the risk of liquefaction in the project area.

As required by the County and in accordance with local and state building code requirements, any proposed development would be required to complete a geotechnical evaluation of any onsite hazards. As a standard condition of project approval, the proposed project would be constructed in accordance with the most current California Building Code (CBC) and Imperial County Building Code to minimize or avoid the potential hazard of liquefaction. A less than significant impact is identified for this issue area.

aiv) **Less than Significant Impact.** The project site is located in a relatively flat portion of Imperial County and is not identified as an area at risk of landslide (County of Imperial 1997). Therefore, the impact associated with landslides is considered less than significant.

b) **Less than Significant Impact.** Soil erosion and loss of topsoil could result during construction as grading and construction can loosen surface soils and make soils susceptible to wind and water movement across the surface. Construction activities are regulated under the National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (General Construction Permit) which covers stormwater runoff requirements for projects where the total amount of ground disturbance during construction exceeds 1 acre. The proposed project would be required to comply with the General Construction Permit because ground disturbance would exceed 1 acre. Coverage under a General Construction Permit requires the preparation of a SWPPP and submittal of a Notice of Intent (NOI) to comply with the General Construction Permit. The SWPPP would identify best management practices (BMPs) that would reduce any impacts associated with soil erosion or loss of topsoil. Therefore, this impact is considered less than significant.

c) **Less than Significant Impact.**

Landslides. As described in Response VII. aiv) above, the project site is located in a relatively flat portion of Imperial County and is not identified as an area at risk of landslide. Therefore, the impact associated with landslides is considered less than significant.

Lateral Spreading. The potential for lateral spreading to occur on the project site has not yet been determined. Additional geotechnical investigation would be required in order to assess the risk of lateral spreading to occur on the project site. As required by the County and in accordance with local and state building code requirements, any proposed development would be required to complete a geotechnical evaluation of any onsite hazards. As a

standard condition of project approval, the proposed project would be constructed in accordance with the most current California Building Code (CBC) and Imperial County Building Code to minimize or avoid the potential hazard of lateral spreading. A less than significant impact is identified for this issue area.

Subsidence. The potential for subsidence to occur on the project site has not yet been determined. Additional geotechnical investigation would be required in order to assess the risk of subsidence to occur on the project site. As required by the County and in accordance with local and state building code requirements, any proposed development would be required to complete a geotechnical evaluation of any onsite hazards. As a standard condition of project approval, the proposed project would be constructed in accordance with the most current California Building Code (CBC) and Imperial County Building Code to minimize or avoid the potential hazard of subsidence. A less than significant impact is identified for this issue area.

Liquefaction. As described in Response VII. aiii) above, additional geotechnical investigation would be required in order to assess the risk of liquefaction in the project area. As required by the County and in accordance with local and state building code requirements, any proposed development would be required to complete a geotechnical evaluation of any onsite hazards. As a standard condition of project approval, the proposed project would be constructed in accordance with the most current California Building Code (CBC) and Imperial County Building Code to minimize or avoid the potential hazard of liquefaction. A less than significant impact is identified for this issue area.

Collapse. The potential for collapse to occur on the project site has not yet been determined. Additional geotechnical investigation would be required in order to assess the risk of collapse to occur on the project site. As required by the County and in accordance with local and state building code requirements, any proposed development would be required to complete a geotechnical evaluation of any onsite hazards. As a standard condition of project approval, the proposed project would be constructed in accordance with the most current California Building Code (CBC) and Imperial County Building Code to minimize or avoid the potential hazard of collapse. A less than significant impact is identified for this issue area.

d) **Less than Significant Impact.** According to the United States Department of Agriculture's Web Soil Survey, soils mapped on the project site include: 114-Imperial Silty Clay,wet and 115-Imperial Glenbar silty clay loams, wet, 0 to 2 percent slopes (USDA n.d.). In general, much of the near surface soils within the project site consist of silty clay and clays having a moderate to high expansion potential. Unless properly mitigated, shrink-swell soils could exert additional pressure on buried structures producing shrinkage cracks that could allow water infiltration and compromise the integrity of backfill material. These conditions could be worsened if structural facilities are constructed directly on expansive soil materials.

   As required by the County and in accordance with local and state building code requirements, any proposed development would be required to complete a geotechnical evaluation of any onsite hazards. As a standard condition of project approval, the proposed project would be constructed in accordance with the most current California Building Code (CBC) and Imperial County Building Code to minimize or avoid the potential hazard of expansive soil. A less than significant impact is identified for this issue area.

e) **No Impact.** The proposed project would not require the use of septic systems or alternative wastewater systems to accommodate wastewater needs. Therefore, no impact is identified for this issue area.

f) **Less than Significant Impact with Mitigation Incorporated.** Many paleontological fossil sites are recorded in Imperial County and have been discovered during construction activities. Paleontological resources are typically impacted when earthwork activities, such as mass excavation cut into geological deposits (formations) with buried fossils. One area in which paleontological resources appear to be concentrated in this region is the shoreline of ancient Lake Cahuilla, which would have encompassed the present-day Salton Sea. The

lake covered much of the Imperial Valley and created an extensive lacustrine environment. Lake Cahuilla experienced several fill recession episodes before it finally dried up about 300 years ago. In 1905, the Colorado River overflowed into the Salton Basin creating the present-day Salton Sea.

According to the Geologic Map of California – Salton Sea Sheet, the project site is underlained by Quaternary lake deposits (Ql) (Jennings, C.W. 1967). The project site is located in the Imperial Valley which is directly underlain by geologic units comprised of quaternary lake deposits of the ancient Lake Cahuilla. Lakebed deposits of ancient Lake Cahuilla have yielded fossil remains from numerous localities in Imperial Valley. These include extensive freshwater shell beds, fish, seeds, pollen, diatoms, foraminifera, sponges, and wood. Lake Cahuilla deposits have also yielded vertebrate fossils, including teeth and bones of birds, horses, bighorn sheep, and reptiles. Therefore, the paleontological sensitivity of these lakebed deposits within the project site are considered to be high.

Impacts on any surface or near-surface level paleontological resources may occur because of grading and disturbance of the area. Even relatively shallow excavations in the Lake Cahuilla beds exposed in the project site may encounter significant vertebrate fossil remains. Therefore, this potential impact is considered a significant impact. Mitigation Measure GEO-1 would ensure that the potential projects impacts on paleontological resources do not rise to the level of significance pursuant to CEQA. Implementation of Mitigation Measure GEO-1 would reduce the impact on paleontological resources to a level less than significant.

Mitigation Measure

GEO-1 In the event that unanticipated paleontological resources or unique geologic resources are encountered during ground-disturbing activities, work must cease within 50 feet of the discovery and a paleontologist shall be hired to assess the scientific significance of the find. The consulting paleontologist shall have knowledge of local paleontology and the minimum levels of experience and expertise as defined by the Society of Vertebrate Paleontology's Standard Procedures (2010) for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. If any paleontological resources or unique geologic features are found within the project site, the consulting paleontologist shall prepare a paleontological Treatment and Monitoring Plan to include the methods that will be used to protect paleontological resources that may exist within the project site, as well as procedures for monitoring, fossil preparation and identification, curation of specimens into an accredited repository, and preparation of a report at the conclusion of the monitoring program.

VIII. Greenhouse Gas Emissions

Environmental Issue Area:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Impact Analysis

The following information is summarized from the *Hudson Ranch Greenhouse Gas Screening Letter* prepared by Ldn Consulting, Inc. dated February 16, 2023. This report is provided as Appendix C of this Initial Study.

a) **Less than Significant Impact.** Prominent greenhouse gases (GHGs) contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), and nitrogen oxide (N_2O). Human-caused emissions of these GHGs in excess of natural ambient concentrations are believed to be responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's climate, known as global climate change or global warming.

To date the ICAPCD has not adopted GHG significance thresholds applicable to potential development. Section 15064.7(c) of the CEQA Guidelines specifies that "[w]hen adopting or using thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence" (14 CCR 15064.7(c)). The California Air Pollution Control Officers Association (CAPCOA) published a white paper which suggested a significance threshold of 900 metric tons of CO_2e per year. Thus, in the absence of any GHG emissions significance thresholds, the projected emissions are compared to CAPCOA's threshold of 900 metric tons of CO_2e per year.

The following analysis is broken out by a discussion of potential impacts during construction and operation of the project. The CalEEMod 2020.4.0 air quality model was used to calculate the GHG emissions associated with construction and operation of the proposed project. The CalEEMod worksheets are included in Appendix C of this Initial Study.

Construction

Construction-related activities that would generate GHG emissions include worker commute trips, haul trucks carrying supplies and materials to and from the project site, and off-road construction equipment (e.g., water trucks, cranes, tractors).

Table 5 summarizes the specific construction-generated GHG emissions that would result from construction of the project. Consistent with South Coast Air Quality Management (SCAQMD) recommendations, project construction GHG emissions have been amortized over the expected life of the project, which is considered to be 30 years. As shown in Table 5, the project would generate approximately 62.40 metric tons of CO_2e annualized over the lifetime of the project.

Operation

Once the geothermal well is operational, very few vehicular trips would be expected. However, for purposes of this analysis, it was assumed that up to 6 trips per day would be utilized during operations. Operations of the well require a continuous source of electricity which would be powered from IID. Based on usage of typical wells by Hudson Ranch, the well would utilize 158 kWh per day, or 57,670 kWh per year. CalEEMod was manually updated to include these inputs. Water used during the drilling process will be supplied from the adjacent IID canals.

As shown in Table 6, the project buildout operations including amortized construction emissions would generate approximately 68.89 metric tons of CO_2e per year, which is below CAPCOA's threshold of 900 metric tons of CO_2e per year. Therefore, the project's GHG impact would be less than significant.

Table 5. Estimated Project Construction GHG Emissions (MT/Year)

Year	Bio – CO_2	Nbio – CO_2	Total CO_2	CH_4	N_2O	CO_2e
2023	0	1,869	1,869	0	0	1,872
					Total	**1,872**
Yearly Average Construction Emissions (Metric Tons/year over 30 years)						**62.40**

Source: Appendix C of this EIR

Table 6. Estimated Project Operational GHG Emissions (MT/Year)

Source	Bio – CO_2	Nbio – CO_2	Total CO_2	CH_4	N_2O	CO_2e
Area	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	6.40	6.40	0.00	0.00	6.49
Waste	0.00	0.00	0.00	0.00	0.00	0.00
Water	0.00	0.00	0.00	0.00	0.00	0.00
					Construction Emissions	62.40
					Project Total GHG Emissions	**68.89**
Exceeds CAPCOA's Significance Threshold of 900 MT of CO_2e / Year?						**No**

Source: Appendix C of this EIR

b) **Less than Significant Impact.** The proposed project would not conflict with any adopted plans, policies, or regulations adopted for the purpose of reducing GHG emissions. As discussed above in Response VIII. a), the project-generated GHG emissions would not exceed CAPCOA's GHG significance thresholds. In addition, it should be noted that the proposed project has the potential to assist the State in meeting its GHG reduction goals provided in Senate Bill 32, as the project has the potential of creating carbon-free electricity in the future, if the geothermal well is found to be commercially viable. Therefore, the proposed project would not conflict with any applicable plan, policy, or regulation adopted for reducing the emissions of GHGs and a less than significant impact would occur.

IX. Hazards and Hazardous Materials

Environmental Issue Area:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☐	☒

Impact Analysis

a) **Less than Significant Impact.** Vehicles and equipment used for well construction would contain or require the temporary, short-term use of potentially hazardous substances, such as fuels, lubricating oils, and hydraulic fluid. Hazardous substances would be stored in transportable containment trailers at locations within the construction staging area to minimize potential for accidental releases and/or spills. No other hazardous or potentially hazardous materials will be brought to the well site. Further, the proposed project would be required to comply with all applicable rules and regulations involving hazardous materials,

including the State of California CCR Title 23 Health and Safety Regulations, the California Division of Occupational Safety and Health (Cal/OSHA) requirements, the Hazardous Waste Control Act, the California Accidental Release Prevention (CalARP) Program, and the California Health and Safety Code. Compliance with these measures would reduce any potential risk or impact associated with the transport, use, or disposal of hazardous materials. This impact is considered less than significant.

b) **Less than Significant Impact.** As described in Response IX. a) above, the proposed well would require the storage of hazardous materials; however, hazardous substances would be stored in transportable containment trailers at locations within the construction staging area to minimize potential for accidental releases and/or spills. No other hazardous or potentially hazardous materials will be brought to the well site. Further, the proposed project would be required to comply with all applicable rules and regulations involving hazardous materials, including the State of California CCR Title 23 Health and Safety Regulations, the California Division of Occupational Safety and Health (Cal/OSHA) requirements, the Hazardous Waste Control Act, the California Accidental Release Prevention (CalARP) Program, and the California Health and Safety Code. Compliance with these measures would reduce any potential risk or impact associated with the release of hazardous materials into the environment. This impact is considered less than significant.

c) **No Impact.** The project site is not located within 0.25 mile of any existing or proposed schools. Therefore, the proposed project would not pose a risk to nearby schools and no impact would occur.

d) **No Impact.** Database searches were conducted on January 27, 2023 for potential hazardous sites located on, or within one-quarter mile of, the project site using the California Department of Toxic Substances Control's EnviroStor Database and State Water Resources Control Board's Geotracker database. These databases are an online search and Geographic Information System (GIS) tool for identifying sites that have known contamination or sites for which there may be reasons to further investigate. No reported cases were found on the project site and no active sites were located within one-quarter mile of the project site (California Department of Toxic Substances Control n.d., State Water Resources Control Board n.d.). Therefore, implementation of the proposed project would result in no impact related to the project site being located on a listed hazardous materials site pursuant to Government Code Section 65962.5.

e) **No Impact.** The project site is not located within 2 miles of a public airport. The nearest airport is the Cliff Hatfield Memorial Airport located approximately 6 miles southeast of the project site. Therefore, implementation of the proposed project would not result in a safety hazard or excessive noise for people residing or working in the project area and no impact would occur.

f) **No Impact.** The proposed project does not include any alteration to the existing public road network and would not involve blocking or restricting any access routes. The proposed access roads would be designed in accordance with fire department standards. Therefore, the proposed project would not interfere with an adopted emergency response plan or emergency evacuation plan. No impact is identified for this issue area.

g) **No Impact.** The project site is located in the unincorporated area of Imperial County. According to the Seismic and Public Safety Element of the General Plan, the potential for a major fire in the unincorporated areas of the County is generally low (County of Imperial 1997). Based on a review of the California Department of Forestry and Fire Protection's fire hazard severity zone map, the project site is not located within a fire hazard severity zone (California Department of Forestry and Fire Protection 2022). The proposed project would not introduce features that directly or indirectly increase the risk of wildfire on the project site. No impact is identified for this issue area.

X. Hydrology and Water Quality

Environmental Issue Area:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i. result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	☒	☐
iii. create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
iv. impede or redirect flood flows?	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☒

Impact Analysis

a) **Less than Significant Impact.** No known or reasonably expected surface water quality issues are anticipated to result from implementation of the proposed project. However, because ground disturbing activities will occur in an area greater than one acre, a SWPPP will be developed that implements BMPs that sufficiently control degradation of water quality on the project site. A BMP is a method used to prevent or control stormwater runoff and the

discharge of pollutants, including sediment, into local waterbodies. The following BMPs would be installed to prevent or control stormwater runoff and discharge of pollutants during construction:

- WM-4: Spill Prevention and Control
- WM-9: Sanitary/Septic Waste Management
- WE-1: Wind Erosion Control
- SE-1: Silt Fence
- TC-1: Stabilized Construction Entrance Exit

Perimeter protection will be either silt fence or fiber rolls along downhill side of work areas, or where runoff can concentrate when leaving the site. The proposed project would also include the construction of a new 290' x 75' x 5' deep retention basin on the project site, immediately south of the "P" drain. The retention pond would be used to collect surface runoff and improve the quality of water by natural processes such as sedimentation.

The SWPPP will be implemented such that stormwater discharges would not adversely impact human health or the environment, nor contribute to any exceedances of any applicable water quality standards contained in the Colorado River Basin Plan. This impact is considered less than significant.

b) **Less than Significant Impact.** Drilling will require the use of an average of 50,000 gallons of water each day and water required for road grading, construction and dust control will average 10,000 gallons per day or less. Water will be obtained from IID canals in conformance with IID construction water acquisition requirements. Water will be picked up from the source and delivered to the well pad by a water truck which will be capable of carrying approximately 4,000 gallons per load. Alternatively, a water pump and temporary pipeline from the designated irrigation lateral canal could be used to deliver water to a construction location or well pad. The proposed project would not result in a decrease in groundwater supplies and would not interfere with groundwater recharge. This is considered a less than significant impact.

ci) **Less than Significant Impact.** As discussed in Response X. a) above, the construction of the proposed project would result in ground disturbing activities in an area greater than one acre. Therefore, SWPPP will be developed that implements BMPs that sufficiently avoid any onsite or offsite erosion and runoff from areas proposed for ground disturbance. This is considered a less than significant impact.

cii) **Less than Significant Impact.** The proposed project would not involve the construction of substantial impervious surfaces that would increase the rate of run-off. Construction activities would be localized to the well pad, pipeline and access roads, and the surrounding pervious surface would remain similar to pre-project conditions. Water will continue to percolate through the ground, as a majority of the surfaces on the project site will remain pervious. The proposed project would also include the construction of a retention basin on the project site, immediately south of the "P" drain, to collect surface runoff. In this context, the proposed project would not result in substantial increases in run-off. This is considered a less than significant impact.

ciii) **Less than Significant Impact.** Water will continue to percolate through the ground, as a majority of the surfaces on the project site will remain pervious. The proposed project would also include the construction of a retention basin on the project site, immediately south of the "P" drain, to collect surface runoff. The proposed project would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provided substantial additional sources of polluted runoff. This is considered a less than significant impact.

civ) **Less than Significant Impact.** According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (Map Number 06025C0725C), the majority of the project site is located in Zone X, which is an area determined to be outside of the 0.2 percent annual chance of a flood (FEMA 2008). However, the southwestern corner of the project site is located in a Special Flood Hazard Area, Zone A, which is an area subject to inundation by the 1% annual chance flood (100-year flood) (FEMA 2008).

A portion of the access road to the pipeline is located in a 100-year flood zone (Zone A). The proposed access road would not involve the addition of structures which could impede or redirect flood flows. In addition, the proposed access road would be constructed with an all-weather surface allowing runoff to continue to percolate into the ground. Therefore, the proposed access road would not substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows, and impacts would be less than significant.

d) **Less than Significant Impact.** The project site is located over 100 miles inland from the Pacific Ocean. Therefore, the proposed project is not located in an area at risk of tsunamis.

The project site is located on the eastern edge of the Salton Sea. According to the Seismic and Public Safety Element of the General Plan, the most likely location for a significant seiche to occur is the Salton Sea. While there have been a number of seismic events since the formation of the Salton Sea, no significant seiches have occurred to date. A seiche could occur, however, in the Salton Sea under the appropriate seismic conditions. The Salton Sea is proximal to the San Andreas and San Jacinto faults and would be subject to significant seismic ground shaking that could generate a seiche (County of Imperial 1997). The likelihood of seismic activity producing waves large enough to affect the project site is small. Although the project site is located in an area with potential for a seiche, the risk of release of pollutants attributable to inundation is considered low based on no documented history of seiche-induced flooding of the project site. No substantial damage is expected from seiches on the project site, and implementation of the project would not increase the inherent risk of seiches on the project site. Therefore, this would be a less than significant impact.

e) **No Impact.** As discussed above, the proposed project would be compliant with all local, state, and federal regulations, including compliance with the NPDES permits with the implementation of BMPs; compliance with the referenced regulations would reduce any potential impact associated with a water quality control plan to a less than significant. Additionally, as discussed above, water will be obtained from IID canals in conformance with IID construction water acquisition requirements. No impact would occur.

XI. Land Use and Planning

Environmental Issue Area:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

Impact Analysis

a) **No Impact.** The project site is located in a sparsely populated portion of Imperial County. There are no established residential communities located within or in the vicinity of the project site. Therefore, implementation of the proposed project would not divide an established community and no impact would occur.

b) **No Impact.** The project's consistency with applicable land use plans, policies, and regulations is evaluated below.

General Plan. The County adopted the Renewable Energy (RE) and Transmission Element, which includes a RE Zone (RE Overlay Map). The County Land Use Ordinance, Division 17, includes the RE Overlay Zone, which authorizes the development and operation of renewable energy projects with an approved CUP. The RE Overlay Zone is concentrated in areas determined to be the most suitable for the development of renewable energy facilities while minimizing the impact on other established uses. CUP applications proposed for specific renewable energy projects not located in the RE Overlay Zone would not be allowed without an amendment to the RE Overlay Zone.

No amendment to the General Plan for a zone change would be required because the project site is located entirely within the RE/Geothermal Overlay Zone. Therefore, no impacts due to a conflict with the General Plan would occur.

County of Imperial Land Use Ordinance. The project site is zoned Medium Industrial – Geothermal Overlay – Pre-Existing Allowed/Restricted (M-2-G-PE). Drilling and testing of the proposed well will be conducted pursuant to Conditions of Approval of a Conditional Use Permit (CUP) that has been applied for with Imperial County Planning and Development Services. Existing CUP #07-0019, granted to Hudson Ranch by Imperial County in October 2007 and amended September 12, 2012, states in part that "For full field development as replacement wells need to be drilled over the project's expected 30-year life span, the well locations and the pipeline network for steam collection and injection as well as replacement wells are to be located as needed.... Any additional production and injection wells can be drilled in any new well pad areas that are to be reviewed and approved by the Planning & Development Services Department as shown on a building permit application and site plan with supporting documentation." Therefore, with approval of the CUP, the proposed project would not conflict with the County of Imperial Land Use Ordinance and no impact would occur.

XII. Mineral Resources

Environmental Issue Area:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

Impact Analysis

a) **No Impact.** Construction of the proposed project would not result in any impacts to known mineral resources or mineral resource recovery sites. Additionally, the proposed project would not preclude future mineral resource exploration throughout the project site. No impact would occur.

b) **No Impact.** As noted in Response XII. a), implementation of the proposed project would not result in any impacts to known mineral resources or mineral resource recovery sites. Additionally, the proposed project would not preclude future mineral resource exploration throughout the project site. No impact would occur.

XIII. Noise

Environmental Issue Area:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Impact Analysis

The following information is summarized from the *Hudson Ranch Geothermal Well Project Noise Assessment* prepared by Ldn Consulting, Inc. dated February 17, 2023. This report is provided as Appendix D of this Initial Study.

a) **Less than Significant Impact.**

Construction

On-site noise-generating activities associated with the proposed project would include short-term construction noise, mechanical equipment noise related to geothermal drilling, and associated vehicles. Well-testing and construction of the proposed pipeline would involve the short-term use of heavy equipment. Estimations made based on the proposed equipment list result in composite noise from well pad grading of 83 dBA Leq(h) at 50 feet and 80 dBA Leq(h) for drill rig assembly, well drilling, and testing. It is expected that well drilling average noise would be 80 dBA at 50 feet.

Major noise sources during construction of the project would include the diesel engines on the construction equipment, operation of the drilling rig, and noise associated with the movement of pipes and casing. Construction noise is usually made up of intermittent noise peaks and continuous lower levels of noise from equipment cycling through use. Noise levels associated with individual pieces of equipment can generally range between 70 and 90 dBA (FTA 2018). Based on the proposed construction equipment list and industry-wide noise reference levels, the estimated maximum composite construction noise level for the project is 83 dBA at a distance of 50 feet from the work site. Additionally, noise from trucks, commuter vehicles, and other on-road equipment, which would mainly be along streets and access roads, would produce short-term levels of approximately 68 dBA at 50 feet from the source.

During a typical day, equipment would not be operated continuously at peak levels. While the average noise levels on-site could exceed the 75 dBA Leq construction noise standard established by County of Imperial for General Industrial Zones, noise would attenuate to levels below the threshold with increasing distance until it reaches the nearest sensitive receptors. To abate noise pollution, the project applicant would install mufflers on engine-driven equipment during both construction and development operations. Additionally, the applicant would implement an exhaust emissions control program during project construction, which would include, but not limited to, engine maintenance, and procedures to minimize emissions that would assist in reducing noise. Generally, exhaust emission control programs include the minimization of unnecessary vehicle and equipment idling time either by shutting equipment off when not in use or reducing idling time. Therefore, it is anticipated that construction noise would be reduced from the estimated peak levels.

Most of the project construction would be located within the area of the well pad approximately 0.6 miles from the nearest residential noise receptor along Pound Road. As shown in Table 7, construction noise levels would attenuate from 83 dBA at 50 feet from the source to 47 dBA at the closest residential receptor due to geometric spreading of sound energy. Therefore, all calculated noise levels would fall within the normally acceptable range of the guidance set forth in the County of Imperial General Plan Noise Element. Therefore, the project's construction noise impacts would be less than significant.

Table 7. Construction Noise Levels

Sensitive Receptor	Source Level @ 50-feet (dBA)	Approximate Distance to Project Site Property Line	Noise Reduction Due to Distance (dBA)	Resultant Noise Level at Sensitive Receptor (dBA)
Residence	83	0.6 miles northeast	-36	47
			County of Imperial Construction Noise Threshold	75
			Significant Impact?	No

Source: Appendix D of this EIR

The proposed project's well drilling would take more time than those established by the County of Imperial construction noise standards. Drilling operations would occur 24 hours a day, 7 days a week. However, the Imperial County Land Use Ordinance (Division 17) includes general drilling standards specific to geothermal projects. This ordinance allows for drilling on a 24-hour basis, provided the County-specified noise control measures (Land Use Ordinance 91702.01, Sections B, D, M, O, and S) are implemented. The project applicant will be required to implement these measures in order to comply with the local applicable standards.

The proposed construction schedule is based on a 10-hour/day, 7-days/week basis. This implies that the proposed project may exceed the County Noise Element's construction limits for construction on Saturdays, when the allowed construction time is limited to 8 hours, and on Sunday, when no construction is allowed. Therefore, the proposed project will be required to comply with all applicable noise control measures contained in the County General Plan Noise Element and Noise Abatement and Control Ordinance. In addition, the project will be required to comply with the standards of Division 17 (Geothermal) of the County's Land Use Ordinance, which include specific noise control measures associated with geothermal well drilling.

Based on the County of Imperial's Noise Element of the General Plan, construction noise from a single piece of equipment or a combination of equipment, shall not exceed 75 dB Leq, when averaged over an eight (8) hour period, and measured at the nearest sensitive receptor. This standard assumes a construction period, relative to an individual sensitive receptor of days or weeks. In cases of extended length construction times, the standard may

be tightened so as not to exceed 75 dB Leq when averaged over a one (1) hour period. Since the nearest receptor is located over a half mile from proposed construction, the 75 dBA in a one-hour period is not anticipated to be exceeded as shown in Table 7 above. Therefore, the project may request to work outside the normal construction hours. The project's construction noise impacts would be less than significant.

Operation

Primary noise sources at the proposed well pad would include testing and monitoring which would require pumps and power generators. Operational noise levels for the proposed well were obtained from the Hudson Ranch Power II and Simbol Calipatria II Noise Study (Hudson Ranch Power II and Simbol Calipatria II Final EIR 2012). The Final EIR gathered noise level measurements from the Hudson Ranch 1 geothermal power plant. Based on noise levels referenced during the operation of production wells 13-2 and 13-3 at the Hudson Ranch 1 Project, the average maximum operational noise level from production wells would be approximately 58 dBA at 50 feet.

Section 90702.00 of the Noise Ordinance sets a sound level limit of 50 dBA Leq for daytime hours of 7 a.m. to 10 p.m. and 45 dBA Leq during the noise sensitive nighttime hours of 10 p.m. to 7 a.m. for residential noise sensitive land uses. The proposed Project components are expected to operate during both daytime and nighttime hours and therefore the most restrictive and conservative approach is to apply the 45 dBA Leq nighttime standard at the property lines.

The nearest project property line is located as close as 0.6 miles from the sensitive residential receptor to the northeast. This would result in a noise level at the closest receptor of approximately 22 dBA, which would be below the County Property Line Noise Standards (45 dBA). Additionally, the proposed project will be required to comply with the County Land Use Ordinance 91702.01(B), which limits drilling noise to a sound level equivalent to CNEL 60 dBA as measured at the nearest human receptor location outside the parcel boundary. This level may be exceeded by 10% if the noise is intermittent and during daylight hours.

Table 8 provides an estimate of the projected noise levels from the proposed project operations at the nearest sensitive receptor. As presented in Table 8, operating sound levels from the project is estimated to be below the County's threshold of 45 dBA at the closest sensitive receptor. Therefore, the project's operational noise impacts would be less than significant.

Table 8. Operational Noise Levels

Sensitive Receptor	Source Level @ 50-feet (dBA)	Approximate Distance to Project Site Property Line	Noise Reduction Due to Distance (dBA)	Resultant Noise Level at Sensitive Receptor (dBA)
Residence	58	0.6 miles northeast	-36	22
			County of Imperial Construction Noise Threshold	45
			Significant Impact?	No

Source: Appendix D of this EIR

Transportation Noise

As many as 10 tractor-trailer truck trips may be generated during active drilling operations on the busiest day, although on average about two to three large tractor-trailer trucks and about 12 to 16 small trucks will be driven to the well pad each day throughout the typical 60-day drilling process.

Access to the project site will be via State Route 111 (SR-111) to the east and McDonald Road. The existing average daily traffic (ADT) volumes on SR-111 is several thousand ADT. Typically, it requires a project to double (or add 100%) the traffic volumes to have a direct impact of 3 dBA CNEL or be a major contributor to the cumulative traffic volumes. The project will add less than a 1% increase to SR-111 volumes. McDonald Road is unpaved west of SR-111 to the project site and experiences minimal traffic. The project has the potential to impact noise levels along these roadways, however, no sensitive uses exist along these roadway segments. Therefore, the project's transportation-related noise impact is considered less than significant.

b) **Less than Significant Impact.** The County has not yet adopted vibration criteria. The United States Department of Transportation Federal Transit Administration (FTA) provides criteria for acceptable levels of groundborne vibration for various types of special buildings that are sensitive to vibration. For purposes of identifying potential project-related vibration impacts, the FTA criteria is used.

The FTA has determined vibration levels that would cause annoyance to a substantial number of people and potential damage to building structures. The FTA criterion for vibration induced structural damage is 0.20 in/sec for the peak particle velocity (PPV). As shown in Table 9, project construction activities would result in PPV levels below the FTA's criteria for vibration induced structural damage. The FTA criterion for infrequent vibration induced annoyance is 80 Vibration Velocity (VdB) for residential uses. As shown in Table 9, construction activities would not generate levels of vibration that exceed the FTA criteria for nuisance for nearby residential uses.

There are no vibration-sensitive uses located adjacent to the proposed construction. The nearest residential use is located over 0.6 miles from any construction activities. Table 9 lists the average vibration levels that could be experienced at adjacent land uses from the temporary construction activities at a distance of 100-feet. Project construction activities are located a minimum of 0.6-miles away, therefore, would not result in vibration induced structural damage or vibration induced annoyance to adjacent land uses. Therefore, vibration impacts would be less than significant.

Table 9.Vibration Levels from Construction Activities

Equipment	Approximate Velocity Level at 25 Feet (Vdb)	Approximate RMS Velocity at 25 Feet (in/sec)	Approximate Velocity Level at 100 Feet (VdB)	Approximate RMS Velocity at 100 Feet (in/sec)
Small bulldozer	58	0.003	40.0	0.0004
Jackhammer	79	0.035	61.0	0.0044
Loaded trucks	86	0.076	68.0	0.0095
Large bulldozer	87	0.089	69.0	0.0111
		FTA Criteria	80	0.2
		Significant Impact?	No	No

Source: Appendix D of this EIR

c) **No Impact.** The project site is not located within 2 miles of a public airport. The nearest airport is the Cliff Hatfield Memorial Airport located approximately 6 miles southeast of the project site. Therefore, implementation of the proposed project would not expose people residing or working in the project area to excessive noise levels and no impact would occur.

XIV. Population and Housing

Environmental Issue Area:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Impact Analysis

a) **No Impact.** The proposed project would not induce unplanned population growth. The proposed project involves the construction and operation of a geothermal well and pipeline within a predominantly undeveloped, vacant area of Imperial County. No development of new roads or infrastructure is proposed that would introduce new populations to the project site. The proposed access roads would be used only to access the proposed geothermal well and pipeline. No impact would occur.

b) **No Impact.** No residential units are on the project site that would require relocation. Therefore, the proposed project would not displace substantial numbers of existing people or housing necessitating the construction of replacement housing elsewhere. No impact would occur.

XV. Public Services

Environmental Issue Area:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i. Fire Protection?	☐	☐	☐	☒
ii. Police Protection?	☐	☐	☐	☒
iii. Schools?	☐	☐	☐	☒
iv. Parks?	☐	☐	☐	☒
v. Other public facilities?	☐	☐	☐	☒

Impact Analysis

ai) **No Impact.** Fire protection and emergency medical services in the project area are provided by the Imperial County Fire Department. The project site would continue to be adequately supported by the existing fire protection services since the construction and operation of the project would not induce growth in the project area and the fire risk would not create the need for new or physically altered fire protection facilities. In addition, operation and maintenance would not affect the ability of fire personnel to respond to fires. Based on these considerations, the proposed project would not result in a need for fire facility expansion and no impact is identified.

aii) **No Impact.** Police protection services in the project area is provided by the Imperial County Sheriff's Department. The proposed project would not require police services during construction or operation and maintenance beyond routine patrols and response. Construction and operation of the proposed project would not induce growth in the project area that would result in the permanent, and increased need of police protection services. No impact would occur.

aiii) **No Impact.** The proposed project does not include the development of residential land uses that would result in an increase in population or student generation. Construction is estimated to take approximately 40 days. The number of construction workers is not expected to require a substantial number of workers. Construction of the proposed project would not result in an increase in student population within the Imperial County's School District since it is anticipated that construction workers would commute in during construction operations. Furthermore, no full-time employees are required to operate the project. It is anticipated that maintenance of the project will be minimal to perform periodic visual inspections and minor repairs. The proposed project would not result in an increase in student population within the Imperial County's School District. Therefore, the proposed project would have no impact on Imperial County schools.

aiv) **No Impact.** Construction is estimated to take approximately 40 days. The number of construction workers is not expected to require a substantial number of workers. Furthermore, no full-time employees are required to operate the project. It is anticipated that maintenance of the project will be minimal to perform periodic visual inspections and minor repairs. Substantial permanent increases in population that would adversely affect local parks is not anticipated. Therefore, the proposed project would have no impact on parks.

av) **No Impact.** Construction is estimated to take approximately 40 days. The number of construction workers is not expected to require a substantial number of workers. Furthermore, no full-time employees are required to operate the project. It is anticipated that maintenance of the project will be minimal to perform periodic visual inspections and minor repairs. Substantial permanent increases in population that would adversely affect libraries and other public facilities (such as post offices) is not anticipated. Therefore, the proposed project would have no impact on other public facilities such as post offices and libraries.

XVI. Recreation

Environmental Issue Area:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Impact Analysis

a) **No Impact.** The proposed project would not increase the use of existing neighborhood parks and regional parks or other recreational facilities. The proposed project would not induce new populations that would result in the substantial physical deterioration of recreational facilities. No impact would occur.

b) **No Impact.** The proposed project would not include recreational facilities or require the construction or expansion of recreational facilities. The proposed project would not induce new populations that would require new recreational facilities. No impact would occur.

XVII. Transportation

Environmental Issue Area:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b) Conflict with or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d) Result in inadequate emergency access?	☐	☐	☒	☐

Impact Analysis

c) **Less than Significant Impact.** State Route 111, located approximately 3 miles east of the project, provides regional access to the project site. Adjacent roadways providing local vehicular access to the project site include Hazard Road to the north, McDonald Road to the south, and Davis Road to the west. Construction of the project would be short-term and temporary, and the traffic volumes generated by construction would be minor. Once the proposed well is in production, there would be no increase in automobile trips to the area. While it is anticipated that the proposed well and pipeline would require intermittent maintenance, maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis. Therefore, the potential for the proposed project to cause an increase in traffic to the existing traffic load and capacity of the street system would be negligible and this is considered a less than significant impact.

The project site is located within a rural portion of Imperial County. There are no public transportation facilities, bicycle facilities, or pedestrian facilities in the immediate proximity of the project site. Therefore, the proposed project would result in no impact associated with a conflict with a program plan, ordinance or policy addressing transit, bicycle, and pedestrian facilities.

d) **Less than Significant Impact.** Section 15064.3(b) of the CEQA Guidelines provides guidance on determining the significance of transportation impacts and focuses on the use of vehicle miles traveled (VMT), which is defined as the amount and distance of automobile travel associated with a project. Construction of the project would be short-term and temporary, and the traffic volumes generated by construction would be minor. Given the nature of the project, after construction, there would be a nominal amount of vehicle trips generated by the project. Once the proposed well is in production, there would be no increase in automobile trips to the area. While it is anticipated that the proposed well and pipeline would require intermittent maintenance, maintenance would be minimal requiring a negligible amount of traffic trips on an annual basis. Therefore, the proposed project would result in a less than significant VMT impact.

e) **Less than Significant Impact.** The proposed project does not include any alteration to the existing public road network. The proposed access roads would be designed to accommodate trucks delivering heavy equipment. The proposed access roads would not be open to the public and would only be maintained as long as the proposed well site and pipeline are being constructed or in use. Once the proposed well and pipeline are retired or abandoned, the access roads would be returned to pre-project conditions. This impact is considered less than significant.

f) **Less than Significant Impact.** The proposed project does not include any alteration to the existing public road network and would not involve blocking or restricting any access routes. The proposed access roads would be designed in accordance with fire department standards. Therefore, the proposed project would not result in inadequate emergency access and this impact is considered less than significant.

XVIII. Tribal Cultural Resources

Environmental Issue Area:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project cause a substantial adverse change in the significance of a tribal cultural resource defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?	☐	☐	☐	☒
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	☐	☐	☐	☒

Impact Analysis

a-b) **Less than Significant Impact.** Assembly Bill 52 was passed in 2014 and took effect July 1, 2015. It established a new category of environmental resources that must be considered under CEQA called tribal cultural resources (Public Resources Code 21074) and established a process for consulting with Native American tribes and groups regarding those resources. Assembly Bill 52 requires a lead agency to begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project.

In accordance with AB 52, the County provided notification of the proposed project to the Torrez Martinez Desert Cahuilla Indians, Campo Band of Mission Indians, and Quechan Indian Tribe on January 26, 2023. The County requested for tribes to provide any information regarding any Traditional Cultural Properties, Sacred Sites, resource collecting areas, or any other areas of concern known to occur in the project area. No tribes have responded that indicate the potential for traditional cultural properties or sacred sites. Therefore, the project is not anticipated to cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of PRC Section 5024.1, and, per the criteria set forth in Section 5024.1, considering the significance of the resource to a California Native American tribe. Therefore, no impact would occur.

XIX. Utilities and Service Systems

Environmental Issue Area:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

Impact Analysis

a) Less than Significant Impact. The proposed project does not currently contain any public utilities or services. The proposed project would not require the construction of any water, wastewater, stormwater, or energy facilities to accommodate the demand of the project. The project's water use would be limited to the construction phase, and no infrastructure would be required to provide water to the project site. Drilling will require the use of an average of 50,000 gallons of water each day and water required for road grading, construction and dust control will average 10,000 gallons per day or less. Water will be obtained from IID canals in conformance with IID construction water acquisition requirements. Water will be picked up from the source and delivered to the well pad by a water truck which will be capable of carrying approximately 4,000 gallons per load. Alternatively, a water pump and temporary pipeline from the designated irrigation lateral canal could be used to deliver water to a construction location or well pad. Any temporary water pipeline will be laid on the surface immediately adjacent to one of the access roads to the site. The proposed well would not generate wastewater that would need to be treated by a wastewater treatment facility. Storm

water control would be implemented for the well pad and access roads. Due to the lack of public utilities and services available within the project site, and the lack of need to provide expanded services to accommodate the project, impacts are considered less than significant.

b) **Less than Significant Impact.** As described in Response XIX. a) above, the project's water use would be limited to road grading, construction and dust control, and drilling during the construction phase. Water for dust control and drilling would be picked up from a nearby canal and delivered to the project site by a water truck capable of carrying approximately 4,000 gallons per load. Alternatively, a water pump and temporary pipeline from the designated irrigation lateral canal could be used to deliver water to a construction location or well pad. Any temporary water pipeline will be laid on the surface immediately adjacent to one of the access roads to the site. Operation of the well and pipeline would not require significant amount of water and would be limited to general maintenance activities. Therefore, this impact is considered less than significant.

c) **No Impact.** The proposed project would not generate wastewater that would need to be treated by a wastewater treatment facility. Onsite wastewater needs will be accommodated by the use of portable toilets that would be removed from the project site once construction is complete. No impact would occur.

d) **Less than Significant Impact.** The proposed project would generate small amounts of drilling mud and rock cuttings from drilling operations. These wastes would be temporarily stored in the onsite containment basin or tanks. The solid contents remaining in each containment basin, typically consisting of non-hazardous, non-toxic drilling mud and rock cuttings, will be tested as required by the RWQCB. The solids will be removed and disposed of in a waste disposal facility authorized by the RWQCB to receive and dispose of these materials. If allowed, they may be used as daily cover at the nearby landfill. This impact is considered less than significant.

e) **Less than Significant Impact.** The proposed would comply with all applicable statutes and regulations related to solid waste. As discussed in Response XIX. d) above, solid waste generated by the proposed well is expected to be minimal. This impact is considered less than significant.

XX. Wildfire

Environmental Issue Area:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

Impact Analysis

a) – d) **No Impact.** The project site is located in the unincorporated area of Imperial County. According to the Seismic and Public Safety Element of the General Plan, the potential for a major fire in the unincorporated areas of the County is generally low (County of Imperial 1997). Based on a review of the California Department of Forestry and Fire Protection's fire hazard severity zone map, the project site is not located within a fire hazard severity zone (California Department of Forestry and Fire Protection 2022). The proposed project would not involve blocking or restricting any emergency access routes and would not interfere with emergency response plans or operations near the project area. The proposed project would not involve the development of structures that would introduce new populations to the project area that could result in impacts involving wildfires. The proposed project would not exacerbate wildfire risks and no impact is identified.

XXI. Mandatory Findings of Significance

Environmental Issue Area:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☐

Impact Analysis

a) **Less than Significant Impact with Mitigation Incorporated.**

Biological Resources

As described in Response IV. above a) above, burrowing owls were not present on the project site during the field survey; however suitable nesting and foraging habitat is present and they may be present at the start of project construction. If burrowing owls are present, project construction could result in take or other direct impacts. Indirect impacts to burrowing owls could also result if they are present in the lands surrounding the project site and project construction produces dust, noise, or other disturbances to this species. Mitigation Measure BIO-1 would avoid take and reduce potential impacts to this species to below a level of significance by requiring pre-construction surveys and establishing avoidance buffers. The loss of burrowing owl foraging habitat would be less than significant given the abundance of suitable foraging habitat in the lands surrounding the project site and throughout the region.

Cultural Resources

As described in Response V. b) above, the potential of finding a buried archaeological site during construction is considered low. However, like all construction projects in the state, the possibility exists. This potential impact is considered significant. Implementation of Mitigation Measure CR-1 would reduce the potential impact associated with the inadvertent discovery of archaeological resources to a level less than significant.

b) **Less than Significant Impact with Mitigation Incorporated.** Based on the analysis contained in this Initial Study, the proposed project would not result in significant impacts to aesthetics, air quality, agricultural and forestry resources, biological resources, energy, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation and traffic, and utilities and service systems.

The proposed project would have potential impacts that are significant on the following resources areas: cultural resources and geology and soils. However, implementation of mitigation measures would ensure potential impacts are reduced to less than significant levels. The proposed project would incrementally contribute to cumulative impacts for projects occurring within the vicinity of the project. However, compliance with the mitigation measures would ensure that no residually significant impacts would result with implementation of the project either directly or indirectly. In the absence of residually significant impacts, the incremental accumulation of effects would not be cumulatively considerable. Therefore, a finding of less than significant is identified for this issue area.

c) **Less than Significant Impact.** Based on the analysis contained in this Initial Study, the proposed project would not cause substantial adverse effects on human beings, either directly or indirectly. Any effects related to construction of the project would be temporary and short-term and would not result in any long-term or permanent effects on human beings. This is considered a less than significant impact.

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This Initial Study was prepared for the Imperial County Planning and Development Services Department by HDR. The following professionals participated in its preparation:

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- Air Quality Assessment
- Greenhouse Gas Screening Letter
- Noise Assessment

Findings

This is to advise that the County of Imperial, acting as the lead agency, has conducted an Initial Study to determine if the project may have a significant effect on the environment and is proposing this Negative Declaration based upon the following findings:

☐ The Initial Study shows that there is no substantial evidence that the project may have a significant effect on the environment and a NEGATIVE DECLARATION will be prepared.

☒ The Initial Study identifies potentially significant effects but:

(1) Proposals made or agreed to by the applicant before this proposed Mitigated Negative Declaration was released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur.

(2) There is no substantial evidence before the agency that the project may have a significant effect on the environment.

(3) Mitigation measures are required to ensure all potentially significant impacts are reduced to levels of insignificance.

A MITIGATED NEGATIVE DECLARATION will be prepared.

If adopted, the Negative Declaration means that an Environmental Impact Report will not be required. Reasons to support this finding are included in the attached Initial Study. The project file and all related documents are available for review at the County of Imperial, Planning & Development Services Department, 801 Main Street, El Centro, CA 92243 (442) 265-1736.

NOTICE

The public is invited to comment on the proposed Negative Declaration during the review period.

4-13-2023 — for Jim Minnick
Date of Determination — Jim Minnick, Director of Planning & Development Services

The Applicant hereby acknowledges and accepts the results of the Environmental Evaluation Committee (EEC) and hereby agrees to implement all Mitigation Measures, if applicable, as outlined in the MMRP.

Applicant Signature — 13 April 2023 — Date

EEC ORIGINAL PKG

Appendix A

Air Quality Assessment

AIR QUALITY ASSESSMENT

Hudson Ranch I
Geothermal Well Project
County of Imperial, CA

Prepared for:

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February 16, 2023

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1.0 INTRODUCTION

1.1 Purpose of this Study

The purpose of this Air Quality analysis is to determine potential air quality impacts (if any) that may be created by construction, area or operational emissions (short term or long term) from the proposed Project. This Air Quality analysis is also being utilized for pertinent data and emissions necessary to obtain a Permit to Construct and Operate from the Imperial County Air Pollution Control District (ICAPCD). Should impacts from the proposed project be determined, the intent of this study would be to recommend suitable mitigation measures to bring those impacts to a level that would be considered less than significant.

1.2 Project Location

Hudson Ranch Power I LLC (Hudson Ranch), seeks to drill an additional geothermal production well to provide additional geothermal fluid in support of the John L. Featherstone (Hudson Ranch) geothermal power plant (Project) roughly 2,000 feet (2,000') to the south. The Project facilities will disturb roughly 4.53 acres south of Hazard Road and East of Davis Road on a 473.25 acre site (APN 020-010-035-000). The Project I located in the north half of Section 24 in Township 11 South, Range 13 East, San Bernardino Base and Meridian (SBB&M) as shown on the USGS Niland Quadrangle topographic map within the County of Imperial California. Primary access to the proposed well will be through a driveway and dirt road along Davis Road. A general project vicinity map is shown in Figure 1-A.

1.3 Project Description

The purpose of the proposed Project is to determine the characteristics of geothermal resources leased from private landowners as part of the geothermal field development project supporting the Hudson Ranch geothermal power plant. The Project will drill, complete, sample and test the geothermal resource fluids from the Project area. Hudson Ranch proposes to commence operations when all required permits are acquired.

The proposed well pad is located to test and develop specific geophysical or geologic targets. Project activities would include the improvement or construction, as necessary, of required private access roads; the drilling (and redrilling, as necessary) of a geothermal resource well into the geothermal zone from the well drilling pad; the flow-testing of the well into portable storage tanks and/or the Hudson Ranch geothermal fluid injection wells through temporary geothermal fluid production pipelines.

The Project would require two (2) access roads totaling 2,876 feet and one pipeline corridor 2,000' feet long are proposed. The access roads will be constructed with an approved base material and maintained as needed to safely accommodate the traffic required for the well drilling activities. Roadbeds will typically be a minimum of twenty feet wide. The well pad was selected, in part, to minimize surface disturbance, reduce the potential for adverse environmental effects, and make the best use of existing access within the limitation of the required testing of the targeted geothermal resources. Encroachment permits will be obtained from the Imperial County Public Works Department (ICPDSD) for the new access/driveways from Davis Road. No new road crossings of any Imperial Irrigation District (IID) lateral canals or drains are proposed.

The new well pad will be approximately 350' by 300' in size (about 2.42 acres). Preparation activities include clearing, earthwork, drainage and other improvements necessary for efficient and safe operation. The well pad is designed to create a level pad for the drill rig and a graded surface for the support equipment. Runoff from undisturbed areas around the well pad will be directed into ditches and energy dissipaters (if needed) around the site, consistent with Imperial County, IID and California Regional Water Quality Control Board, Colorado River Basin Region (CRWQCB) best management practices for storm water. The well pad will be surrounded by a berm and graded to direct runoff into the cellar, which will be pumped as necessary into the on-site containment basin. A typical well pad like the proposed Project is shown in Figure 1-B below though dimensions would vary.

The containment basin will be constructed on the well pad for the containment and temporary storage of waste drilling mud, drill cuttings and storm water runoff from the constructed well pad.

Drilling and testing of the proposed well will be conducted pursuant to Conditions of Approval within a new Conditional Use Permit (CUP) that has been applied for with Imperial County Planning and Development Services. Existing CUP #07-0019, granted to Hudson Ranch by Imperial County in October 2007 and amended September 12, 2012, states in part that "For full field development as replacement wells need to be drilled over the project's expected 30-year life span, the well locations and the pipeline network for steam collection and injection as well as replacement wells are to be located as needed.... Any additional production and injection wells can be drilled in any new well pad areas that are to be reviewed and approved by the Planning & Development Services Department as shown on a building permit application and site plan with supporting documentation."

The geothermal well will be drilled with a rotary drill rig. During drilling, the top of the drill rig derrick will be approximately 170 feet above the ground surface, and the rig floor approximately 30 feet above the ground surface. The typical drill rig and associated support

equipment (rig floor and stands; draw works; derrick; drill pipe; trailers; mud, fuel and water tanks; diesel generators; air compressors; etc.) will be brought to the prepared well pad on approximately 70 or more large tractor-trailer trucks. After the drill rig is operational, as many as 10 tractor-trailer truck trips could be expected on the busiest days but the average daily trips would be three large trucks which would delivering drilling supplies and equipment. In addition, the drilling project would generate an average of 16 small trucks/service vehicles/worker vehicles.

Construction of the access roads would be completed in roughly two weeks and will require as much as 2,600 Cubic Yards (CY) of materials such as stone or decomposed granite to the site. Construction of the well pads would be approximately 1 month and would include as much as 4,000 CY of material import which could include stone and concrete. The drilling the drilling process would be completed in two months. Drilling will be conducted 24-hours per day, 7-days per week and approximately 9 to 18 workers will be on location at any given time.

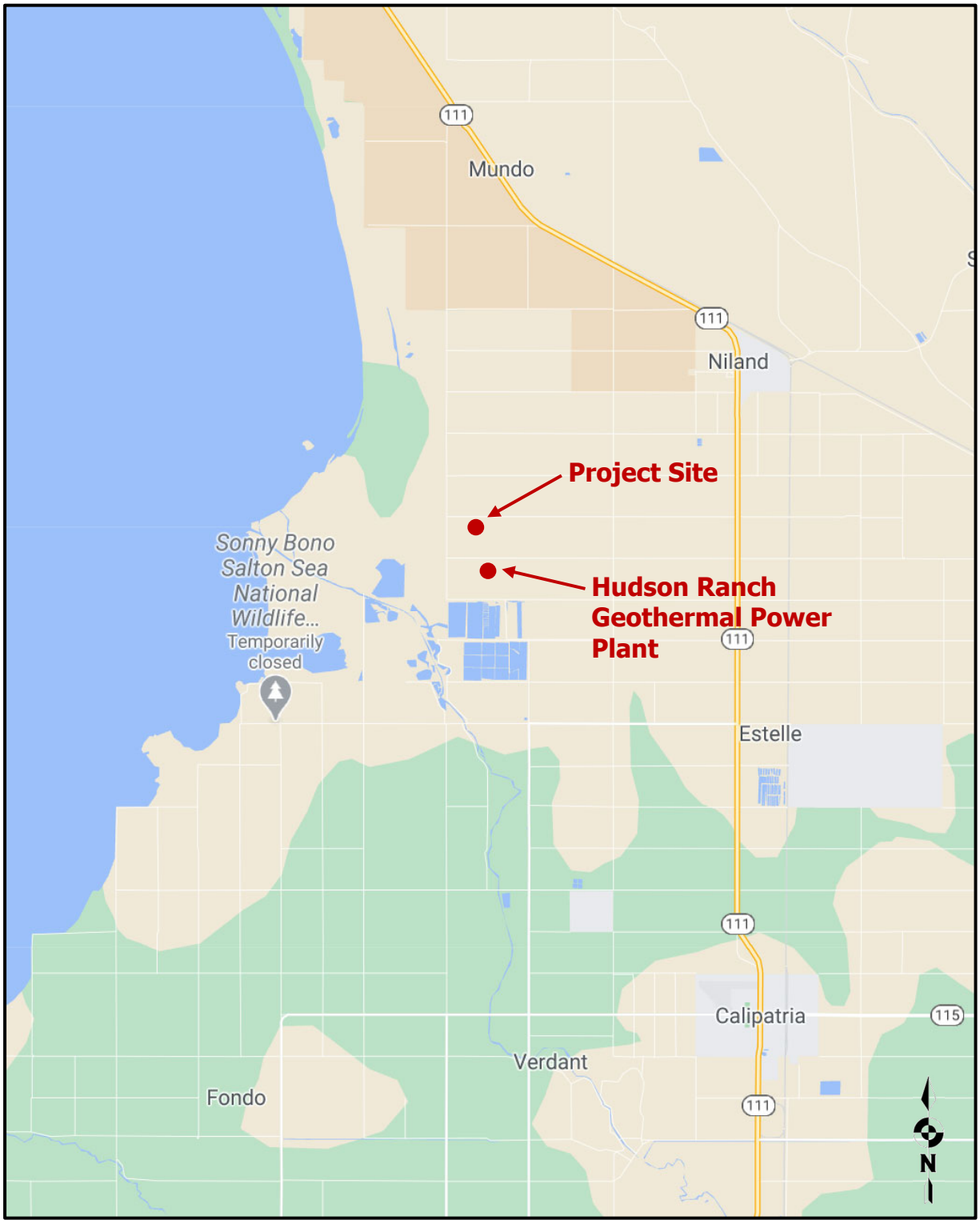
The drill rigs are powered by three (3) portable 1,482 HP Diesel Generators which will be registered under the Portable Equipment Registration Program (PERP). Drilling of the well will require only two (2) generators running continuously and the third generator will be used as a backup generator if needed.

The geothermal well will be drilled to the design depth (approximately 9,000 feet) or the depth selected by the project geologist under a geothermal well drilling and completion program approved by the California Geologic Energy Management Division (CalGEM).

After drilling operations are completed, the liquids from the mud sump/containment basin will either be moved to another well for use in the drilling of that well, evaporated, pumped back down the well, or disposed of in an off-site facility authorized to receive these wastes in accordance with the requirements of the CRWQCB. The solid contents remaining in each containment basin typically consist of non-hazardous, non-toxic waste drilling mud and rock cuttings. The solids will be tested as required by the CRWQCB. The solids will subsequently be removed and disposed of in a waste disposal facility authorized by the CRWQCB or other applicable authority to receive and dispose of these materials. After the materials stored in each mud sump/containment basin have been removed, the containment basin would either be relined and recertified for use in the drilling of another well or reclaimed. The project site plan is shown in Figure 1–C.

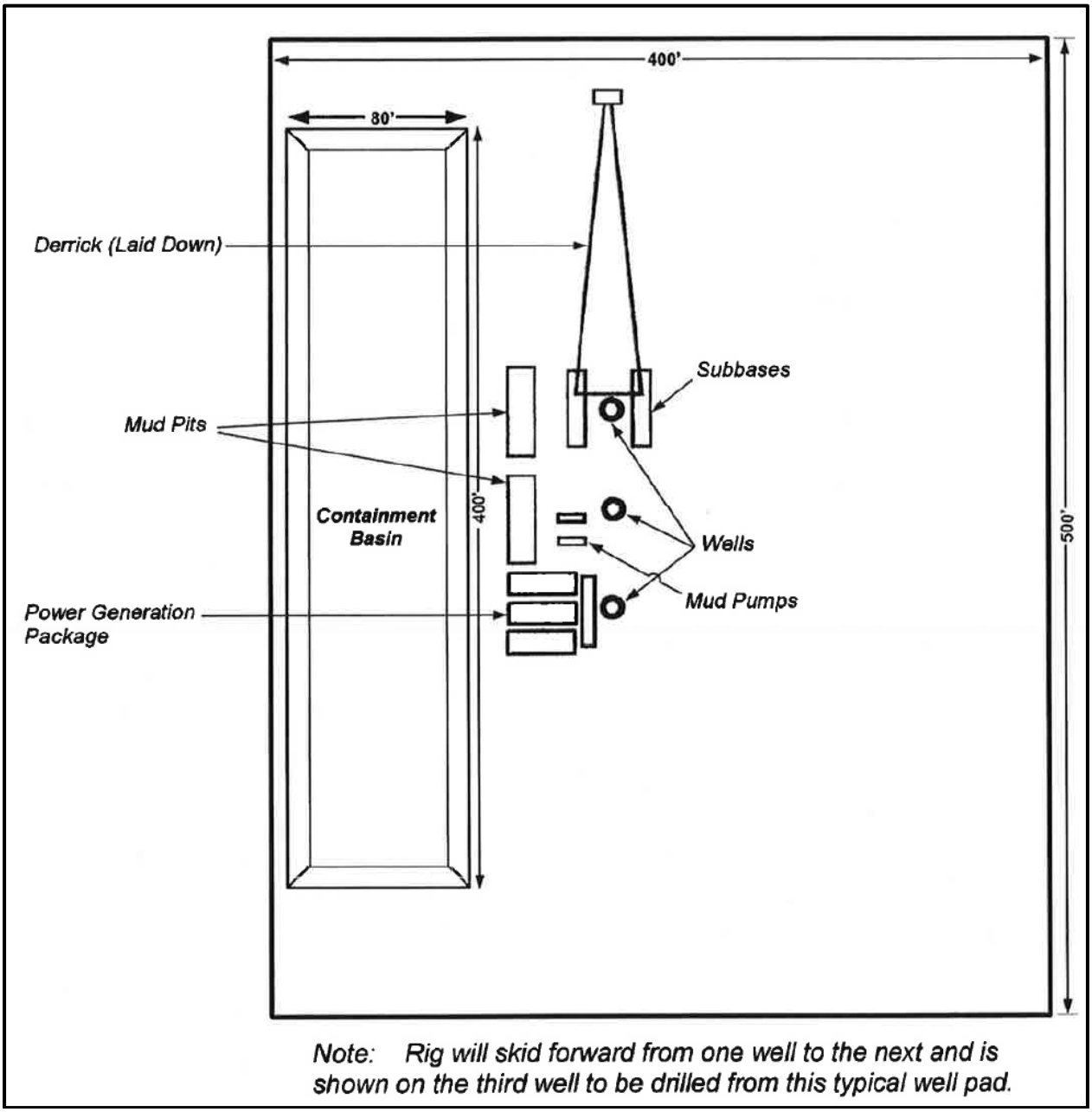
Operations of the well require a continuous source of electricity. The wells will be connected to power provided by Imperial Irrigation District. Based on usage of typical wells by Hudson Ranch, the well would utilize 158kWh per day, so 57,670 kWh per year

Figure 1-A: Project Vicinity Map



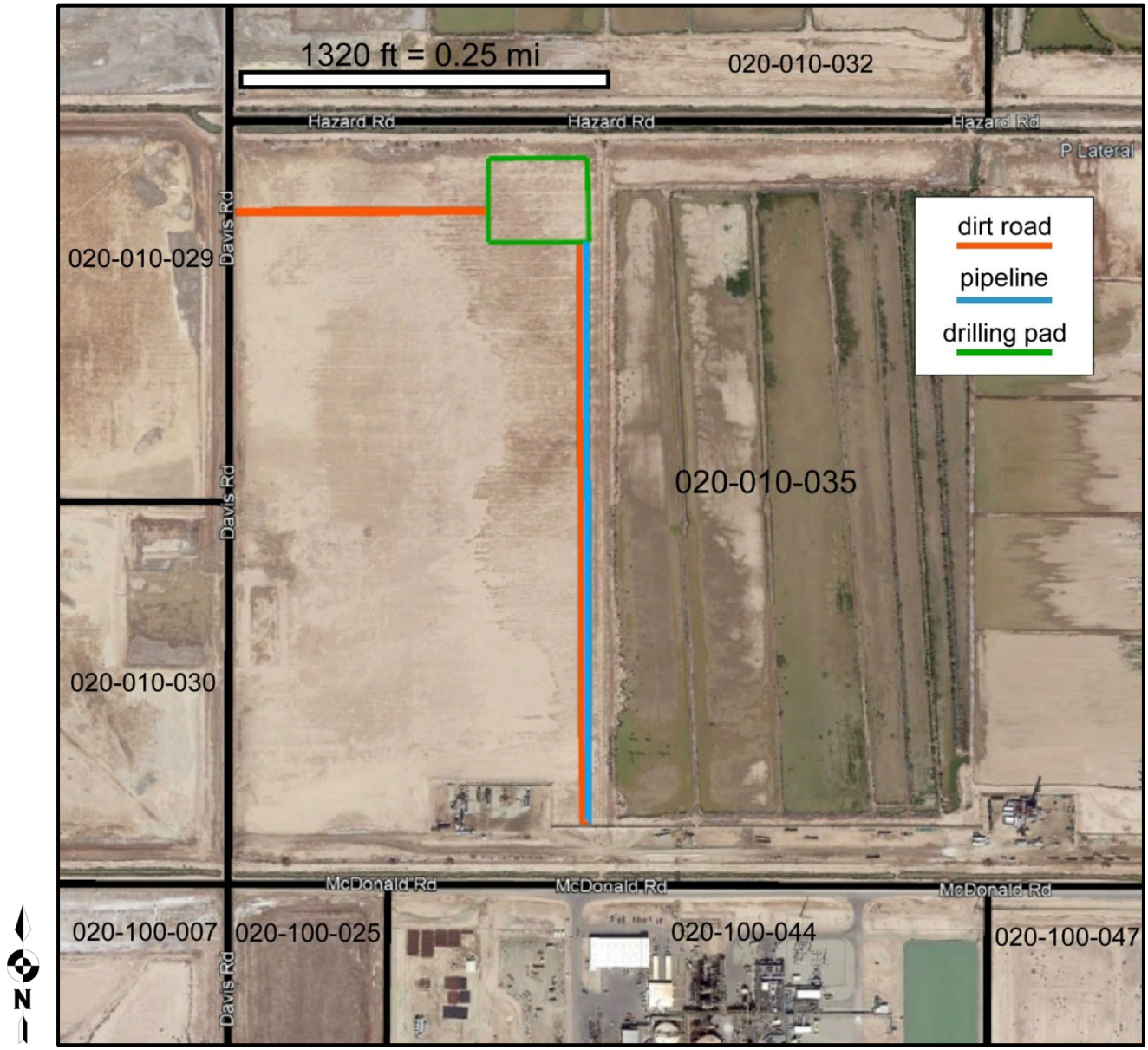
Source: (Google, 2020)

Figure 1-B: Typical Drill Well Pad Layout



Source: (Energy Source LLC, 2020)

Figure 1-C: Proposed Project Site Layout



Source: (Energy Source LLC, 2020)

The project will include a number of design features during construction as follows:

1. Diesel equipment required shall be rated Tier 4 per EPA requirements. All modeling assumes the use of this equipment and is therefore a condition to the project.
2. Access to the site will be via HWY 111, McDonald and Davis Roads. All equipment workers, vendors and haul trucks will be required to utilize these roadways. On-Road trips will not operate on unpaved dirt roads.
3. During construction of the project, the project would be required to maintain daily dust suppression along unpaved sections of McDonald and Davis Road using a water truck operating continuously while vehicles are using it.
4. The project will provide wheel shakers at both the exit of the construction site to minimize dust being tracked off the project site and onto the roadways.
5. The Project will utilize two of three total 1,482 HP portable diesel-powered engine generators. The portable engines will be registered under California Air Resources Board PERP program (CARB, 2023). This equipment is required as a condition to this project. These engines meet current Best Available Control Technology (BACT) standards to minimize the emissions of these air pollutants.

2.0 EXISTING ENVIRONMENTAL SETTING

2.1 Existing Setting

The location of the proposed additional well is identified in Figure 1-B above. The site is located within a privately owned parcel of land north of the HR1 footprint. The site is zoned manufacturing (medium industrial) (M2G-PE) and is located within the existing Salton Sea Geothermal Overlay Zone.

To the west of the site and west of Davis Rd. is generally owned by the Imperial Irrigation District (IID) consisting of vacant marsh land adjoining the Salton Sea. To the north of the site and north of Hazard Rd. is marshland and injection well locations used by HR1. The existing HR1 plant and "Atlis" Lithium extraction site is located to the south. The nearest residential unit is roughly 3,200 feet north-northeast of the proposed Project.

2.2 Climate and Meteorology

Climate within the SSAB experiences mild and dry winters with daytime temperatures ranging from 65 to 75 ºF, extremely hot summers with daytime temperatures ranging from 104 to 115 ºF, and very little rain. Imperial County usually receives approximately three inches of rain per year mostly occurring in late summer or midwinter. Summer weather patterns are dominated by intense heat induction low-pressure areas over the interior desert. The flat terrain of the Imperial Valley and the strong temperature differentials created by intense solar heating produce moderate winds and deep thermal convection.

The general wind speeds in the area are less than 10 mph, but occasionally experience winds speeds of greater than 30 mph during the months of April and May. Statistics reveal that prevailing winds blow from the northwest-northeast; a secondary trend of wind direction from the southeast is also evident.

2.3 Regulatory Standards

2.3.1 Federal Standards and Definitions

The Federal Air Quality Standards were developed per the requirements of The Federal Clean Air Act, which is a federal law that was passed in 1970 and further amended in 1990. This law provides the basis for the national air pollution control effort. An important element of the act included the development of national ambient air quality standards (NAAQS) for major air pollutants.

The Clean Air Act established two types of air quality standards otherwise known as primary and secondary standards. ***Primary Standards*** set limits for the intention of protecting public health, which includes sensitive populations such as asthmatics, children and elderly. ***Secondary Standards*** set limits to protect public welfare to include the protection against decreased visibility, damage to animals, crops, vegetation and buildings.

The EPA Office of Air Quality Planning and Standards (OAQPS) has set NAAQS for principal pollutants, which are called "criteria" pollutants. These pollutants are defined below:

1. ***Carbon Monoxide (CO):*** *is a colorless, odorless, and tasteless gas and is produced from the partial combustion of carbon-containing compounds, notably in internal-combustion engines. Carbon monoxide usually forms when there is a reduced availability of oxygen present during the combustion process. Exposure to CO near the levels of the ambient air quality standards can lead to fatigue, headaches, confusion, and dizziness. CO interferes with the blood's ability to carry oxygen.*
2. ***Lead (Pb):*** *is a potent neurotoxin that accumulates in soft tissues and bone over time. The major sources of lead emissions have historically been motor vehicles (such as cars and trucks) and industrial sources. Because lead is only slowly excreted, exposures to small amounts of lead from a variety of sources can accumulate to harmful levels. Effects from inhalation of lead near the level of the ambient air quality standard include impaired blood formation and nerve conduction. Lead can adversely affect the nervous, reproductive, digestive, immune, and blood-forming systems. Symptoms can include fatigue, anxiety, short-term memory loss, depression, weakness in the extremities, and learning disabilities in children.*
3. ***Nitrogen Dioxide (NO_2):*** *is a reactive, oxidizing gas capable of damaging cells lining the respiratory tract and is one of the nitrogen oxides emitted from high-temperature combustion, such as those occurring in trucks, cars, power plants, home heaters, and gas stoves. In the presence of other air contaminants, NO_2 is usually visible as a reddish-brown air layer over urban areas. NO_2 along with other traffic-related pollutants is associated with respiratory symptoms, respiratory illness and respiratory impairment. Studies in animals have reported biochemical, structural, and cellular changes in the lung when exposed to NO_2 above the level of the current state air quality standard. Clinical studies of human subjects suggest that NO_2 exposure to levels near the current standard may worsen the effect of allergens in allergic asthmatics, especially in children.*
4. ***Particulate Matter (PM_{10} or $PM_{2.5}$):*** *is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary in shape, size and chemical composition, and can be made up of multiple materials such as metal, soot, soil, and dust. PM_{10} particles are 10 microns (µm) or less and $PM_{2.5}$ particles are 2.5 (µm) or less. These particles can contribute significantly to regional haze and reduction of visibility in California. Exposure to PM levels exceeding current air quality standards increases the risk of allergies such as asthma and respiratory illness.*
5. ***Ozone (O_3)****: is a highly oxidative unstable gas capable of damaging the linings of the respiratory tract. This pollutant forms in the atmosphere through reactions between chemicals directly emitted from vehicles, industrial plants, and many other sources. Exposure to ozone above ambient air quality standards can lead to human health effects such as lung inflammation, tissue damage and impaired lung functioning. Ozone can also damage materials such as rubber, fabrics and plastics.*
6. ***Sulfur Dioxide (SO_2)****: is a gaseous compound of sulfur and oxygen and is formed when sulfur-containing fuel is burned by mobile sources, such as locomotives, ships, and off-road diesel equipment. SO_2 is also emitted from several industrial processes, such as petroleum*

refining and metal processing. Effects from SO_2 exposures at levels near the one-hour standard include bronchoconstriction accompanied by symptoms, which may include wheezing, shortness of breath and chest tightness, especially during exercise or physical activity. Children, the elderly, and people with asthma, cardiovascular disease or chronic lung disease (such as bronchitis or emphysema) are most susceptible to these symptoms. Continued exposure at elevated levels of SO_2 results in increased incidence of pulmonary symptoms and disease, decreased pulmonary function, and increased risk of mortality.

2.3.2 State Standards and Definitions

The State of California Air Resources Board (CARB) sets the laws and regulations for air quality on the state level. The California Ambient Air Quality Standards (CAAQS) are either the same as or more restrictive than the NAAQS with the exception of the 1-hr NO_2 standards which are stricter under the NAAQS. The CAAQS also restricts four additional contaminants. Table 2.1 identifies both the NAAQS and CAAQS.

Table 2.1: Ambient Air Quality Standards

Ambient Air Quality Standards						
Pollutant	**Average Time**	**California Standards[1]**		**Federal Standards[2]**		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (O_3)[8]	1 Hour	0.09 ppm (180 µg/m3)	Ultraviolet Photometry	-	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m3)		0.070 ppm (137 µg/m3)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 µg/m3	Gravimetric or Beta Attenuation	150 µg/m3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m3		-		
Fine Particulate Matter (PM2.5)[9]	24 Hour	No Separate State Standard		35 µg/m3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m3	Gravimetric or Beta Attenuation	12.0 µg/m3	15 µg/m3	
Carbon Monoxide (CO)	8 hour	9.0 ppm (10mg/m3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m3)	-	Non-Dispersive Infrared Photometry
	1 hour	20 ppm (23 mg/m3)		35 ppm (40 mg/m3)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m3)		-	-	-
Nitrogen Dioxide (NO_2)[10]	Annual Arithmetic Mean	0.030 ppm (57 µg/m3)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m3)[8]	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.18 ppm (339 µg/m3)		0.100 ppm[8] (188/ µg/m3)	-	
Sulfur Dioxide (SO_2)[11]	Annual Arithmetic Mean	-	Ultraviolet Fluorescence	0.030 ppm[10] (for Certain Areas)	-	Ultraviolet Flourescence; Spectrophotometry (Pararoosaniline Method)[9]
	24 Hour	0.04 ppm (105 µg/m3)		0.14 ppm[10] (for Certain Areas) (See Footnote 9)	-	
	3 Hour	-		-	0.5 ppm (1300 µg/m3)	
	1 Hour	0.25 ppm (655 µg/m3)		75 ppb (196 µg/m3)	-	
Lead[12,13]	30 Day Average	1.5 µg/m3	Atomic Absorption	-		-
	Calendar Quarter	-		1.5 µg/m3	Same as Primary Standard	High Volume Sampler and Atomic Absorption
	Rolling 3-Month Average	-		0.15 µg/m3		
Visibility Reducing Particles	8 Hour	See footnote 14				
Sulfates	24 Hour	25 µg/m3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m3)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m3)	Gas Chromatography			

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For PM2.5, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent procedure which can be shown to the satisfaction CARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.
8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 µg/m3 to 12.0 µg/m3 . The existing national 24- hour PM2.5 standards (primary and secondary) were retained at 35 µg/m3 , as was the annual secondary standard of 15 µg/m3 . The existing 24-hour PM10 standards (primary and secondary) of 150 µg/m3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
11. On June 2, 2010, a new 1-hour SO2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
12. The CARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
14. In 1989, the CARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Source: (California Air Resources Board, 5/4/2016)

The additional contaminants as regulated by the CAAQS are defined below:

1. ***Visibility Reducing Particles****: Particles in the Air that obstruct the visibility.*
2. ***Sulfates****: are salts of Sulfuric Acid. Sulfates occur as microscopic particles (aerosols) resulting from fossil fuel and biomass combustion. They increase the acidity of the atmosphere and form acid rain.*
3. ***Hydrogen Sulfide (H_2S)****: is a colorless, toxic and flammable gas with a recognizable smell of rotten eggs or flatulence. H_2S occurs naturally in crude petroleum, natural gas, volcanic gases, and hot springs. Usually, H_2S is formed from bacterial breakdown of organic matter. Exposure to low concentrations of hydrogen sulfide may cause irritation to the eyes, nose, or throat. It may also cause difficulty in breathing for some asthmatics. Brief exposures to high concentrations of hydrogen sulfide (greater than 500 Parts per Million (ppm)) can cause a loss of consciousness and possibly death.*
4. ***Vinyl Chloride****: also known as chloroethene and is a toxic, carcinogenic, colorless gas with a sweet odor. It is an industrial chemical mainly used to produce its polymer, polyvinyl chloride (PVC).*

2.3.3 Regional Standards

The State of California has 35 specific air districts, which are each responsible for ensuring that the criteria pollutants are below the NAAQS and CAAQS. Air basins that exceed either the NAAQS or the CAAQS for any criteria pollutants are designated as "non-attainment areas" for that pollutant. Currently, there are 15 non-attainment areas for the federal ozone standard and two non-attainment areas for the PM2.5 standard and many areas are in non-attainment for PM10 as well. California therefore created the California State Implementation Plan (SIP), which is designed to provide control measures needed to attain ambient air quality standards.

The Imperial County Air Pollution Control District (ICAPCD) is the government agency which regulates stationary sources of air pollution within Imperial County and the SSAB. Currently, the SSAB is in "non-attainment" status for O_3 and serious non-attainment of PM10. Therefore, the ICAPCD developed an Ambient Air Quality Plan (AAQP) to provide control measures to try to achieve attainment status. The AAQP was adopted in 1991. A new NAAQS for ozone was adopted by EPA in 1997 and required modified strategies to decrease higher ozone concentrations.

In order to guide non-attainment areas closer to NAAQS requirements an 8-hr Ozone Air Quality Management Plan (AQMP) was approved by ICAPCD in 2009 and was accepted by the EPA in 2010. Similarly, in 2009 the County revised their SIP to address the serious non-attainment status of PM_{10} and again revised the plan in 2013, 2017 and 2018 (ICAPCD, 2018). The criteria pollutant standards are generally attained when each monitor within the region that has had no exceedances during the previous three calendar years. Attainment status within the County of Imperial as of the date of this report is shown below in Table 2.2.

Table 2.2: Imperial County Air Basin Attainment Status by Pollutant

Criteria Pollutant	Federal Designation	State Designation
Ozone	Marginal Nonattainment	Nonattainment
Carbon Monoxide	Unclassified/ Attainment	Attainment
PM10	Serious Nonattainment	Nonattainment
PM2.5	Moderate Nonattainment – partial*	Attainment
Nitrogen Dioxide	Unclassified/ Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment
Lead	Unclassified/ Attainment	Attainment
Sulfates	No Federal Standard	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Visibility	No Federal Standard	Unclassified

2.4 California Environmental Quality Act (CEQA) Significance Thresholds

CEQA has provided a checklist to identify the significance of air quality impacts. These guidelines are found in Appendix G of the CEQA guidelines and are as follows:

AIR QUALITY -- Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the Project:

A: Conflict with or obstruct implementation of the applicable air quality plan?
B: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?
C: Expose sensitive receptors to substantial pollutant concentrations?
D: Result in other emissions (such as those leading to odors adversely affecting a substantial number of people?

2.5 ICAPCD Air Quality Impact Assessment Screening Thresholds (CEQA)

The ICAPCD has established significance thresholds in the 2017 ICAPCD CEQA Handbook for the preparation of Air Quality Impact Assessments (AQIA) (ICAPCD, 2017). The screening criteria within this handbook can be used to determine whether a project's total emissions would result in a significant impact as defined by CEQA. Should emissions be found to exceed these thresholds, additional modeling is required to demonstrate that the project's total air quality impacts are below the state and federal ambient air quality standards. These screening thresholds for construction and daily operations are shown in Table 2.3.

Table 2.3: Screening Threshold for Criteria Pollutants

Pollutant	Total Emissions (Pounds per Day)	
Construction Emissions		
Respirable Particulate Matter (PM_{10} and $PM_{2.5}$)	150	
Nitrogen Oxide (NO_x)	100	
Carbon Monoxide (CO)	550	
Reactive Organic Gases (ROG)	75	
Operational Emissions		
Pollutant	Tier I (Pounds per Day)	Tier II (Pounds per Day)
PM_{10} and Sulfur Oxide (SO_x)	< 150	150 or greater
NO_x and ROG	< 137	137 or greater
CO	< 550	550 or greater
Level of Significance:	Less Than Significant	Significant Impact
Level of Analysis:	Initial Study	Comprehensive Air Quality Analysis Report
Environmental Document:	Negative Declaration	Mitigated ND or EIR
Source: (ICAPCD, 2017)		

The CEQA handbook further states that any proposed project with a potential to emit less than the Tier I thresholds during operations may potentially still have adverse impacts on the local air quality and would be required to develop an Initial Study to help the Lead Agency determine whether the project would have a less than significant impact. On the other hand, if the proposed project's operational development fits within the Tier II classification, it is considered to have a significant impact on regional and local air quality. Therefore, Tier II projects are required to implement all standard mitigation measures as well as all feasible discretionary mitigation measures. Additionally, ICAPCD defined standard mitigation measures for construction equipment and fugitive PM_{10} must be implemented at all construction sites.

Standard Construction Site Design Measures:

1. *Use of alternative fueled or catalyst equipped diesel construction equipment, including all off-road and portable diesel powered equipment.*
2. *Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes as a maximum.*
3. *Limit, to the extent feasible, the hours of operation of heavy duty equipment and/or the amount of equipment in use.*
4. *Replace fossil fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set).*

Should the project be sufficiently large enough that operational mitigation measures simply cannot reduce pollutant levels below thresholds of significance, pollutant levels the ICAPCD

has adopted the Operation Development Fee as was adopted under Rule 310 which provides the ICAPCD with a sound method for mitigating the emissions produced from the operation of new commercial and residential development projects. Projects unmitigable through standard procedures are assessed a one-time fee for either Ozone Precursors or PM_{10} impacts, which is based upon either the square footage of the commercial development or the number of residential units. Impacts of this sort are calculated based on the assumption that the worst-case daily emissions are allowed for an entire year and then converted to an annual emission equivalent. Emissions exceeding annual thresholds would pay a fair share sum to reduce impacts to below significance.

Similar to construction, project would be required to implement standard mitigation measures for operations. According to Table 2.3, Tier I, projects generating less than 137 lbs/day of NOx or ROG; less than 150 lbs/day of PM_{10} or SOX; or less than 550 lbs/day of CO or PM2.5, the Project is required to implement all the Standard Operational Mitigation Measures in order to help mitigate or reduce the air quality impacts to a level of insignificance. Theses mitigation measures are identified below:

Standard Operations Site Design Measures:

1. *Provide on-site bicycle lockers and/or racks.*
2. *Provide on-site eating, refrigeration and food vending facilities to reduce lunchtime trips.*
3. *Provide shower and locker facilities to encourage employees to bike and/or walk to work.*
4. *Provide for paving a minimum of 100 feet from the property line for commercial driveways that access County paved roads as per County Standard Commercial Driveway Detail 410B (formerly SW-131A).*
5. *Measures which meet mandatory, prescriptive and/or performance measures as required by Title 24.*

The proposed Project would not have daily workers or facilities where workers report. Also, minimal operational trips would visit the site once operational. Because of this, the Standard Operations Site Design Measures would not contribute to reducing daily operational air quality emissions and the Applicant may request a waiver for these measures.

Furthermore, consistent with the California Air Resource Board, ICAPCD requires PM_{10} emitted by diesel powered construction equipment (DPM) to be analyzed. DPM can potentially increase the cancer risk for nearby residential receptors if any. Generally, sites increasing the cancer risk between one and ten in one million need to implement toxics best available control technology or impose effective emission limitations, emission control devices or control techniques to reduce the cancer risk. Finally, at no time shall the project increase the cancer risk to over 10 in one million.

The nearest residential receptor is located approximately 3,200 feet away and construction operations are over a relatively short duration. As a design feature, the Project would use Tier 4 equipment which is the best available control technology for diesel construction equipment with respect to DPM. Given this, cancer risks would not be expected at the nearest sensitive receptor. It should be noted that design features identified within this report will be conditions of approval for any CUP issued for this Project.

2.6 Local Air Quality

Criteria pollutants are measured continuously throughout the County of Imperial and the data is used to track ambient air quality patterns throughout the County. As mentioned earlier, this data is also used to determine attainment status when compared to the NAAQS and CAAQS. The ICAPCD is responsible for monitoring four sites which collect meteorological and criteria pollutant data used by the district to assist with pollutant forecasting, data analysis and characterization of air pollutant transport. Also, a fifth monitoring locations is located in the City of Calexico which is monitored by CARB.

The monitoring stations surrounding the project provide various pieces of data but no single station has all the data. Table 2.4 provides the criteria pollutant levels monitored within the Basin for 2019-2022. The criteria pollutants monitored closest to the Project [Ambient data was obtained from the California Environmental Protection Agency's Air Resources Board Website (ARB, 2020). Based on review of the ambient data, Both Ozone and PM emissions exceed AAQS and therefore are in non-attainment status. The 8 hour Ozone non-Attainment is considered moderate Non-Attainment while the 24-Hour PM10 is considered "Serious" Non-Attainment. Therefore, to comply with the ICAPCDs SIP and AAQP, the project must implement Best Available Control Measure (BACM) and BACT as outlined in the standard mitigation measures that all projects must implement in Section 2.5.

Table 2.4: SSAB Three-Year Ambient Air Quality data

Pollutant	Averaging Time	CAAQS	NAAQS	2019	2020	2021
O_3 (ppm)	1 Hour	0.09 ppm	No Standard	0.106	0.119	0.122
	8 Hour	0.070 ppm	0.070 ppm	0.089	0.094	0.094
PM_{10} (µg/m3)	24 Hour	50 µg/m3	150 µg/m3	324.4	680.6	547.1
	Annual Arithmetic Mean	20 µg/m3	No Standard	44.5	54.4	52.1
$PM_{2.5}$ (µg/m3)	24 Hour	No standard	35 µg/m3	53.1	47.4	60.8
	Annual Arithmetic Mean	12 µg/m3	15 µg/m3	9.5	11.6	10.3
NO_2 (ppm)	Annual Arithmetic Mean	0.030 ppm	0.053 ppm	0.009	0.010	0.010
	1 Hour	0.18 ppm	0.100 ppm	0.096	0.076	0.096
ppm=Parts per Million N/A=Not Available for give year						

3.0 METHODOLOGY

3.1 Construction Emissions Calculations

Air Quality impacts related to construction and daily operations were calculated using the latest CalEEMod 2020.4.0 air quality model, which was developed by BREEZE Software for South Coast Air Quality Management District (SCAQMD) in 2021. The construction module in CalEEMod is used to calculate the emissions associated with the construction of the Project and uses methodologies presented in the US EPA AP-42 document with emphasis on Chapter 11.9. The CalEEMod input/output model is shown in ***Attachment A*** to this report.

It should be noted that default settings for CalEEMod include an assumption for roads within imperial county to be only 50% paved. The County has been improving many of these roads to paved sections. As noted in construction design measures 2-4 above, the project would implement design features which would require all construction workers, vendors and hauling to only used paved or improved roads to minimize dust. Based on this the default setting was revised to 85% paved. The project would also install wheel shakers leaving the project site to minimize dust from leaving the project site onto the roadways.

3.2 Construction Assumptions

The Project construction dates were provided by the Project applicant and are based on a proposed start date in June 2023 and should be completed in 40 days. After the drilling rig is assembled, the drilling process would commence and would be completed in 60 days. The total time necessary to drill the well is expected to be 100 days. Should the project start at a later date, emission estimates would be similar and slightly lower since construction equipment produces less emissions as equipment emission control technologies are improved over time. CalEEMod 2020.4.0 was utilized for all construction calculations. Table 3.1 shows the expected timeframes for the construction processes for all the project infrastructure, and structures at the site, as well as the expected number of pieces of equipment. Additionally, the project would implement a number of design features which are identified on the following page.

The project will include a number of design features during construction as follows:

1. Diesel equipment required shall be rated Tier 4 per EPA requirements. All modeling assumes the use of this equipment and is therefore a condition to the project.
2. Access to the site will be via HWY 111, McDonald and Davis Roads. All equipment workers, vendors and haul trucks will be required to utilize these roadways. On-Road trips will not operate on unpaved dirt roads.

3. During construction of the project, the project would be required to maintain daily dust suppression along unpaved sections of McDonald and Davis Road using a water truck operating continuously while vehicles are using it.
4. The project will provide wheel shakers at both the exit of the construction site to minimize dust being tracked off the project site and onto the roadways.
5. The Project will utilize two of three total 1,482 HP portable diesel-powered engine generators. The portable engines will be registered under California Air Resources Board PERP program (CARB, 2023). These engines meet current BACT standards to minimize the emissions of these air pollutants.

Table 3.1: Expected Construction Equipment

Equipment Identification	Proposed Start	Proposed Complete	Quantity
Access Roads	6/1/2023	6/10/2023	
Rubber Tired Dozers			2
Tractors/Loaders/Backhoes			2
Well Pad Grading	6/1/2023	6/10/2023	
Excavators			1
Graders			1
Rubber Tired Dozers			1
Tractors/Loaders/Backhoes			3
Trenching Pipeline	6/1/2023	6/5/2023	
Excavator			1
Well Pad Surface Finish (Concrete)	6/11/2023	6/30/2023	
Boom Truck - Crane			2
Other Material Handling Equipment			3
Plate Compactors			1
Pumps			1
Assemble Drill Rig	7/1/2023	7/10/2023	
Cranes			1
Forklifts			2

The well-drilling equipment is powered by portable engines permitted and regulated by the State of California's PERP using Airborne Toxic Control Measure (ATCM) requirements (CARB, 2018). This PERP program combined with ATCM requirements both registers and regulates the use of portable engines and engine-associated equipment in the State of California by setting emissions limitations[1]. The ICAPCD, as part of its permitting process, makes the State's PERP with ATCM emissions limitation requirements for portable engines a condition of

[1] Health & Safety Code, secs., 41750 - 41755

compliance. The portable diesel-powered engines utilized by this project will be registered under PERP and would be operated in accordance with the PERP permit requirements for these portable engines. Based on this, emissions from the portable engines powering the drill rig would generate less than significant air quality emissions within the County of Imperial.

3.3 Operational Emissions

The geothermal well is designed to drill into and flow test the geothermal reservoir to confirm the characteristics of the geothermal reservoir and determine the level of commercial production. Once the well is operational, very few vehicular trips would be expected. However, for purposes of this analysis, it was assumed that up to 6 trips per day would be utilized during operations.

As was noted earlier within the construction methodology section, CalEEMod include an assumption for roads within imperial county to be only 50% paved. Once construction is complete onsite, the project would provide asphalt over the engineered section identified earlier in this report. The roadways to and from the site would then be 100% paved. It should be noted however, the analysis assumes an 85% paved control efficiency as a worst-case assumption.

Operations of the well require a continuous source of electricity. The wells will be connected to power provided by Imperial Irrigation District. Based on usage of typical wells by Hudson Ranch, the well would utilize 158 kWh per day, so 57,670 kWh per year

Based on discussions with the applicant, some hydrogen sulfide would be emitted to the atmosphere when the well is flow-tested once drilling is complete. The amount of hydrogen sulfide emitted to the air would be small as any well flow test would be of short duration. Conservatively assuming that the geothermal fluid contains 14 ppm of hydrogen sulfide and that all of the hydrogen sulfide in the geothermal fluid is released to the atmosphere upon flashing, a well flow test conducted at rate of 750,000 lbs/hr would emit hydrogen sulfide at a rate of about 10.5 lbs/hr.

3.4 Odor Impacts (Onsite)

Projects that involve offensive odors may be a nuisance to neighboring uses, including businesses, residences, sensitive receptors, and public areas. Odor impacts are most often the result of industrial type projects, livestock or farming operations, or can even be from restaurant or commercial baking operations and are long term in nature. If a project has a potential to expose a substantial number of sensitive receptors to objectionable odors the project could be deemed to have a significant odor impact.

When the well is flow-tested once drilling is complete, the well would emit hydrogen sulfide at a rate of about 10.5 lbs/hr. This would generate objectionable odors though the odors would be short-term or until testing is complete. In addition, the nearest sensitive residential receptor is located over 3,200 feet from the well site. This distance would sufficiently dilute any potential odors generated from the Project. Based on this, a less than significant impact would be expected.

4.0 FINDINGS

4.1 Construction Findings

Construction emissions in pounds per day from the construction operations and equipment identified in Section 3.2 above is shown in Table 4.1 below. The project construction model includes project design features identified in Section 3.2 of this report.

Based on the modeling results, the project would not exceed ICAPCD standards and would have a less than significant construction impact. As noted earlier, since PDFs have been assumed within this analysis, PDFs would not be optional and will be a condition to this project.

Table 4.1: Expected Construction Emissions Summary – Pounds per Day

Year	ROG	NO_x	CO	PM_{10} (Dust)	PM_{10} (Exhaust)	PM_{10} (Total)	$PM_{2.5}$ (Dust)	$PM_{2.5}$ (Exhaust)	$PM_{2.5}$ (Total)
2023	1.03	11.02	37.13	99.19	0.12	99.30	13.75	0.11	13.86
Significance Threshold (lb/day)	75	100	550	-	-	150	-	-	150
ICAPCD Impact?	No	No	No	-	-	No	-	-	No

Potential onsite odor generators would include short term construction odors from activities such as paving and possibly painting as well as exhaust from construction equipment. Odors created during short term construction activities would most likely be from placing asphalt which has a slight odor from the bitumen and solvents used within hot asphalt. Since the nearest sensitive receptor is located just over one mile from the site, a less than significant odor impact from construction is expected.

The portable diesel-powered engines utilized by this project will be registered under PERP and would be operated in accordance with the PERP permit and ATCM requirements for portable engines. Based on this, emissions from the portable engines powering the drill rig would generate less than significant air quality emissions within the County of Imperial. The County will verify compliance as part of the permitting process.

4.2 Operational Findings

Project Buildout is expected in 2023 and the first full year of operations are expected in 2024. The project traffic generation onsite would be minimal though for purposes of this analysis it

was assumed that as many as 6 trips per day could be expected. Area and Energy air quality emissions would essentially be zero.

The expected daily pollutant generation can be calculated utilizing the product of the average daily miles traveled and the expected emissions inventory calculated by EMFAC; CALEEMOD 2020.4.0 performs this calculation. The daily pollutants calculated for summer and winter are shown in Tables 4.2 and 4.3, respectively.

Table 4.2: Expected Daily Pollutant Generation

	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Summer Scenario						
Area Source Emission Estimates (Lb/Day)	0.00	0.00	0.00	0.00	0.00	0.00
Energy Source Emissions (Lb/Day)	0.00	0.00	0.00	0.00	0.00	0.00
Operational Vehicle Emissions (Lb/Day)	0.02	0.02	0.20	0.00	6.00	0.60
Total (Lb/Day)	**0.02**	**0.02**	**0.20**	**0.00**	**6.00**	**0.60**
ICAPCD Thresholds	55	55	550	150	150	150
Significant?	No	No	No	No	No	No
Daily pollutant generation assumes trip distances within CALLEEMOD 2020.4.0						

Table 4.3: Expected Daily Pollutant Generation

	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Summer Scenario						
Area Source Emission Estimates (Lb/Day)	0.00	0.00	0.00	0.00	0.00	0.00
Energy Source Emissions (Lb/Day)	0.00	0.00	0.00	0.00	0.00	0.00
Operational Vehicle Emissions (Lb/Day)	0.02	0.02	0.16	0.00	6.00	0.60
Total (Lb/Day)	**0.02**	**0.02**	**0.16**	**0.00**	**6.00**	**0.60**
ICAPCD Thresholds	55	55	550	150	150	150
Significant?	No	No	No	No	No	No
Daily pollutant generation assumes trip distances within CALLEEMOD 2020.4.0						

4.3 Cumulative Impact Findings

Cumulative impacts would exist when either there are direct air quality impacts or when multiple construction projects occur within the same area simultaneously. To illustrate this, if a project were to produce air quality emissions simultaneous to a nearby construction project the addition of both project emissions to the environment could exceed significance

thresholds. For this project, the construction emissions were found to be less than significant as shown in Table 4.1 above. If a nearby project was to be under construction at the same time, that project would need to produce an additive amount of emissions close to the project site such that emissions would exceed thresholds. The adjacent Atlis project would likely be under construction at the same time the additional Geothermal well is being installed. The Project design features would be similar to the Atlis construction project which would maintain a less than significant cumulative impact.

The proposed Project site is zoned Industrial and the Project has been designed to be consistent with this zoning designation. The project would generate less than significant direct and cumulative air quality impacts. Given this, since the proposed project would not have any significant direct impacts and would not have any significant cumulative impacts, the project would not conflict with either the County's AQMP or SIP.

4.4 Conclusion of Findings

During construction, the proposed Project would not be expected to produce significant air quality impacts under the California Environmental Quality Act or exceed thresholds of significance established by the ICAPCD.

The proposed Project would not generate significant operational impacts offsite either during construction or during post construction operations.

Finally, the project would be expected to generate offensive objective odors during testing of the well however, the objectionable odors would be considered short-term. In addition, the odors would be emitted roughly 3,200 feet from the nearest sensitive residential receptor. Given this, a less than significant odor impact would be expected.

Per the requirements of ICAPCD, the project would be required to implement standard mitigation measures for both construction and operations and are identified below:

Standard Construction Site Design Measures:

1. *Use of alternative fueled or catalyst equipped diesel construction equipment, including all off-road and portable diesel powered equipment.*
2. *Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes as a maximum.*
3. *Limit, to the extent feasible, the hours of operation of heavy duty equipment and/or the amount of equipment in use.*
4. *Replace fossil fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set).*

Standard Operations Site Design Measures:

1. *Provide on-site bicycle lockers and/or racks.*
2. *Provide on-site eating, refrigeration and food vending facilities to reduce lunchtime trips.*
3. *Provide shower and locker facilities to encourage employees to bike and/or walk to work.*
4. *Provide for paving a minimum of 100 feet from the property line for commercial driveways that access County paved roads as per County Standard Commercial Driveway Detail 410B (formerly SW-131A).*
5. *Measures which meet mandatory, prescriptive/performance measures as required per Title 24.*

It should be noted that the Project would not realize air quality emissions reductions through the implementation of Standard Operations Design Measures since the operational component of the site is ancillary to the Hudson Ranch Facility. The applicant should request a waiver for these mitigation measures from ICAPCD.

The project will include a number of design features during construction as follows:

1. Diesel equipment required shall be rated Tier 4 per EPA requirements. All modeling assumes the use of this equipment and is therefore a condition to the project.
2. Access to the site will be via HWY 111, McDonald and Davis Roads. All equipment workers, vendors and haul trucks will be required to utilize these roadways. On-Road trips will not operate on unpaved dirt roads.
3. During construction of the project, the project would be required to maintain daily dust suppression along unpaved sections of McDonald and Davis Road using a water truck operating continuously while vehicles are using it.
4. The project will provide wheel shakers at both the exit of the construction site to minimize dust being tracked off the project site and onto the roadways.
5. The Project will utilize two of three total 1,482 HP portable diesel-powered engine generators. The portable engines will be registered under California Air Resources Board PERP program (CARB, 2023). These engines meet current BACT standards to minimize the emissions of these air pollutants.

The proposed Project is consistent with the existing land use zoning designation which is designated as industrial. Also, since no direct or cumulative impacts are expected and the proposed project would be consistent with the AQMP and SIP. Given this, less than significant cumulative operational impacts would be expected.

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6.0 CERTIFICATIONS

The contents of this report represent an accurate depiction of the air quality environment and impacts within and surrounding the proposed development. This report was prepared utilizing the latest emission rates and reduction methodologies. This report was prepared by Jeremy Louden; a County approved CEQA Consultant for Air Quality.

DRAFT

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Date February 16, 2023

ATTACHMENT A

CalEEMod

Hudson Ranch I Additional Well - Imperial County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Hudson Ranch I Additional Well

Imperial County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	4.53	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.4	**Precipitation Freq (Days)**	20
Climate Zone	10			**Operational Year**	2025
Utility Company	Imperial Irrigation District				
CO2 Intensity (lb/MWhr)	189.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Per Discussions with ICAPCD Rain Precipatation Frequency 20 days

Land Use - Well Pad (2.42) acres and additional infrastructure total 4.53 Acres

Construction Phase - Construction Scd. Estimated by Project Engineer

Off-road Equipment - cs

Off-road Equipment - ce

Off-road Equipment - Drill Rig is managed by three (3) 1482 HP generators though 2 are primary and one is backup 24/7 duration. Two running at any given time.

Off-road Equipment - ce

Off-road Equipment -

Off-road Equipment - ce

Trips and VMT - Hauling Trips were added to reflect material deliveries suchs as Rock and Concrete for Access Roads and Well Pads

On-road Fugitive Dust - Trips use 111 and McDonald all paved except 2 miles at McDonald. prior to const. this area will be improved with 12-18" base and would have dedicated water truck. The City wants to wait to pave McDonald till contruction is complete.

Hudson Ranch I Additional Well - Imperial County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Grading -

Vehicle Trips - Worst Case Estimate 6 Trips per day

Road Dust - Roadways are paved at time of operation

Energy Use - Based on usage of typical wells by Hudson Ranch, the well would utilize 158 kWh per day, so 57,670 kWh per year

Construction Off-road Equipment Mitigation - T4 Design Feature

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	90
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

Hudson Ranch I Additional Well - Imperial County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	5.00	10.00
tblConstructionPhase	NumDays	8.00	10.00
tblConstructionPhase	NumDays	18.00	20.00
tblConstructionPhase	NumDays	230.00	10.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblEnergyUse	NT24E	0.00	57,670.00
tblGrading	MaterialImported	0.00	4,000.00
tblGrading	MaterialImported	0.00	2,600.00
tblLandUse	LotAcreage	0.00	4.53
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOnRoadDust	HaulingPercentPave	50.00	85.00
tblOnRoadDust	HaulingPercentPave	50.00	85.00
tblOnRoadDust	HaulingPercentPave	50.00	85.00
tblOnRoadDust	HaulingPercentPave	50.00	85.00
tblOnRoadDust	HaulingPercentPave	50.00	85.00
tblOnRoadDust	VendorPercentPave	50.00	85.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOnRoadDust	VendorPercentPave	50.00	85.00
tblOnRoadDust	VendorPercentPave	50.00	85.00
tblOnRoadDust	VendorPercentPave	50.00	85.00
tblOnRoadDust	VendorPercentPave	50.00	85.00
tblOnRoadDust	WorkerPercentPave	50.00	85.00
tblOnRoadDust	WorkerPercentPave	50.00	85.00
tblOnRoadDust	WorkerPercentPave	50.00	85.00
tblOnRoadDust	WorkerPercentPave	50.00	85.00
tblOnRoadDust	WorkerPercentPave	50.00	85.00
tblProjectCharacteristics	PrecipitationFrequency	12	20
tblRoadDust	RoadPercentPave	50	85
tblTripsAndVMT	HaulingTripNumber	0.00	70.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblVehicleTrips	CNW_TTP	0.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	ST_TR	0.00	6.00
tblVehicleTrips	SU_TR	0.00	6.00
tblVehicleTrips	WD_TR	0.00	6.00

2.0 Emissions Summary

Hudson Ranch I Additional Well - Imperial County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	3.8920	44.7435	31.7946	0.1042	431.0995	1.7455	432.8450	51.4219	1.6096	53.0315	0.0000	10,501.5137	10,501.5137	1.8393	0.7471	10,770.1344
Maximum	**3.8920**	**44.7435**	**31.7946**	**0.1042**	**431.0995**	**1.7455**	**432.8450**	**51.4219**	**1.6096**	**53.0315**	**0.0000**	**10,501.5137**	**10,501.5137**	**1.8393**	**0.7471**	**10,770.1344**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	1.0321	11.0176	37.1328	0.1042	99.1894	0.1156	99.3049	13.7496	0.1112	13.8608	0.0000	10,501.5137	10,501.5137	1.8393	0.7471	10,770.1344
Maximum	**1.0321**	**11.0176**	**37.1328**	**0.1042**	**99.1894**	**0.1156**	**99.3049**	**13.7496**	**0.1112**	**13.8608**	**0.0000**	**10,501.5137**	**10,501.5137**	**1.8393**	**0.7471**	**10,770.1344**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**73.48**	**75.38**	**-16.79**	**0.00**	**76.99**	**93.38**	**77.06**	**73.26**	**93.09**	**73.86**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0235	0.0220	0.1952	4.0000e-004	5.9972	2.7000e-004	5.9975	0.6033	2.6000e-004	0.6035		41.7306	41.7306	1.8100e-003	1.7900e-003	42.3092
Total	**0.0235**	**0.0220**	**0.1953**	**4.0000e-004**	**5.9972**	**2.7000e-004**	**5.9975**	**0.6033**	**2.6000e-004**	**0.6035**		**41.7309**	**41.7309**	**1.8100e-003**	**1.7900e-003**	**42.3094**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0235	0.0220	0.1952	4.0000e-004	5.9972	2.7000e-004	5.9975	0.6033	2.6000e-004	0.6035		41.7306	41.7306	1.8100e-003	1.7900e-003	42.3092
Total	**0.0235**	**0.0220**	**0.1953**	**4.0000e-004**	**5.9972**	**2.7000e-004**	**5.9975**	**0.6033**	**2.6000e-004**	**0.6035**		**41.7309**	**41.7309**	**1.8100e-003**	**1.7900e-003**	**42.3094**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Access Roads	Site Preparation	6/1/2023	6/10/2023	7	10	
2	Well Pad Grading	Grading	6/1/2023	6/10/2023	7	10	
3	Trenching Pipline	Trenching	6/1/2023	6/5/2023	7	5	
4	Well Pad Surface Finish (Concrete)	Paving	6/11/2023	6/30/2023	7	20	
5	Assemble Drill Rig	Building Construction	7/1/2023	7/10/2023	7	10	

Acres of Grading (Site Preparation Phase): 10

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Access Roads	Rubber Tired Dozers	2	8.00	247	0.40
Access Roads	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Well Pad Grading	Excavators	1	8.00	158	0.38
Well Pad Grading	Graders	1	8.00	187	0.41
Well Pad Grading	Rubber Tired Dozers	1	8.00	247	0.40
Well Pad Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Trenching Pipline	Excavators	1	8.00	158	0.38
Well Pad Surface Finish (Concrete)	Cranes	1	8.00	231	0.29
Well Pad Surface Finish (Concrete)	Other Material Handling Equipment	1	8.00	168	0.40
Well Pad Surface Finish (Concrete)	Plate Compactors	1	8.00	8	0.43
Well Pad Surface Finish (Concrete)	Pumps	2	8.00	84	0.74
Assemble Drill Rig	Cranes	1	7.00	231	0.29
Assemble Drill Rig	Forklifts	2	8.00	89	0.20

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Access Roads	4	10.00	0.00	325.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Pad Grading	6	15.00	0.00	500.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching Pipline	1	3.00	0.00	0.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Pad Surface Finish (Concrete)	5	13.00	0.00	0.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
Assemble Drill Rig	3	10.00	0.00	70.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Access Roads - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					13.1565	0.0000	13.1565	6.7428	0.0000	6.7428			0.0000			0.0000
Off-Road	1.6721	17.3257	10.6753	0.0233		0.7935	0.7935		0.7300	0.7300		2,257.1544	2,257.1544	0.7300		2,275.4046
Total	**1.6721**	**17.3257**	**10.6753**	**0.0233**	**13.1565**	**0.7935**	**13.9499**	**6.7428**	**0.7300**	**7.4728**		**2,257.1544**	**2,257.1544**	**0.7300**		**2,275.4046**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0781	3.1052	0.9321	0.0176	143.9942	0.0396	144.0338	14.4589	0.0379	14.4968		1,860.2288	1,860.2288	5.0600e-003	0.2924	1,947.4957
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0436	0.0182	0.2660	5.2000e-004	16.1632	2.9000e-004	16.1635	1.6210	2.7000e-004	1.6213		53.3727	53.3727	1.9900e-003	1.7200e-003	53.9355
Total	**0.1217**	**3.1234**	**1.1981**	**0.0181**	**160.1574**	**0.0399**	**160.1973**	**16.0799**	**0.0382**	**16.1181**		**1,913.6014**	**1,913.6014**	**7.0500e-003**	**0.2941**	**2,001.4312**

Hudson Ranch I Additional Well - Imperial County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Access Roads - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.9204	0.0000	5.9204	3.0343	0.0000	3.0343			0.0000			0.0000
Off-Road	0.2851	1.2353	12.3513	0.0233		5.7000e-003	5.7000e-003		5.7000e-003	5.7000e-003	0.0000	2,257.1544	2,257.1544	0.7300		2,275.4046
Total	**0.2851**	**1.2353**	**12.3513**	**0.0233**	**5.9204**	**5.7000e-003**	**5.9261**	**3.0343**	**5.7000e-003**	**3.0400**	**0.0000**	**2,257.1544**	**2,257.1544**	**0.7300**		**2,275.4046**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0781	3.1052	0.9321	0.0176	31.5710	0.0396	31.6106	3.2166	0.0379	3.2545		1,860.2288	1,860.2288	5.0600e-003	0.2924	1,947.4957
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0436	0.0182	0.2660	5.2000e-004	3.5372	2.9000e-004	3.5375	0.3584	2.7000e-004	0.3587		53.3727	53.3727	1.9900e-003	1.7200e-003	53.9355
Total	**0.1217**	**3.1234**	**1.1981**	**0.0181**	**35.1082**	**0.0399**	**35.1481**	**3.5750**	**0.0382**	**3.6132**		**1,913.6014**	**1,913.6014**	**7.0500e-003**	**0.2941**	**2,001.4312**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Well Pad Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.1623	0.0000	7.1623	3.4368	0.0000	3.4368			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129		2,872.6910	2,872.6910	0.9291		2,895.9182
Total	**1.7109**	**17.9359**	**14.7507**	**0.0297**	**7.1623**	**0.7749**	**7.9372**	**3.4368**	**0.7129**	**4.1497**		**2,872.6910**	**2,872.6910**	**0.9291**		**2,895.9182**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1202	4.7772	1.4339	0.0270	221.5296	0.0609	221.5905	22.2445	0.0583	22.3028		2,861.8904	2,861.8904	7.7900e-003	0.4499	2,996.1472
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0654	0.0273	0.3990	7.8000e-004	24.2448	4.4000e-004	24.2452	2.4315	4.0000e-004	2.4319		80.0590	80.0590	2.9900e-003	2.5800e-003	80.9033
Total	**0.1856**	**4.8045**	**1.8329**	**0.0278**	**245.7744**	**0.0614**	**245.8358**	**24.6760**	**0.0587**	**24.7347**		**2,941.9494**	**2,941.9494**	**0.0108**	**0.4525**	**3,077.0505**

Hudson Ranch I Additional Well - Imperial County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Well Pad Grading - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.2230	0.0000	3.2230	1.5466	0.0000	1.5466			0.0000			0.0000
Off-Road	0.3632	1.5737	17.7527	0.0297		7.2600e-003	7.2600e-003		7.2600e-003	7.2600e-003	0.0000	2,872.6910	2,872.6910	0.9291		2,895.9182
Total	**0.3632**	**1.5737**	**17.7527**	**0.0297**	**3.2230**	**7.2600e-003**	**3.2303**	**1.5466**	**7.2600e-003**	**1.5538**	**0.0000**	**2,872.6910**	**2,872.6910**	**0.9291**		**2,895.9182**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1202	4.7772	1.4339	0.0270	48.5708	0.0609	48.6317	4.9486	0.0583	5.0069		2,861.8904	2,861.8904	7.7900e-003	0.4499	2,996.1472
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0654	0.0273	0.3990	7.8000e-004	5.3058	4.4000e-004	5.3062	0.5376	4.0000e-004	0.5380		80.0590	80.0590	2.9900e-003	2.5800e-003	80.9033
Total	**0.1856**	**4.8045**	**1.8329**	**0.0278**	**53.8766**	**0.0614**	**53.9380**	**5.4863**	**0.0587**	**5.5449**		**2,941.9494**	**2,941.9494**	**0.0108**	**0.4525**	**3,077.0505**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Trenching Pipline - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1887	1.5486	3.2578	5.1700e-003		0.0758	0.0758		0.0697	0.0697		500.1056	500.1056	0.1617		504.1492
Total	**0.1887**	**1.5486**	**3.2578**	**5.1700e-003**		**0.0758**	**0.0758**		**0.0697**	**0.0697**		**500.1056**	**500.1056**	**0.1617**		**504.1492**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0131	5.4500e-003	0.0798	1.6000e-004	4.8490	9.0000e-005	4.8491	0.4863	8.0000e-005	0.4864		16.0118	16.0118	6.0000e-004	5.2000e-004	16.1807
Total	**0.0131**	**5.4500e-003**	**0.0798**	**1.6000e-004**	**4.8490**	**9.0000e-005**	**4.8491**	**0.4863**	**8.0000e-005**	**0.4864**		**16.0118**	**16.0118**	**6.0000e-004**	**5.2000e-004**	**16.1807**

Hudson Ranch I Additional Well - Imperial County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Trenching Pipline - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0635	0.2753	3.9180	5.1700e-003		1.2700e-003	1.2700e-003		1.2700e-003	1.2700e-003	0.0000	500.1056	500.1056	0.1617		504.1492
Total	**0.0635**	**0.2753**	**3.9180**	**5.1700e-003**		**1.2700e-003**	**1.2700e-003**		**1.2700e-003**	**1.2700e-003**	**0.0000**	**500.1056**	**500.1056**	**0.1617**		**504.1492**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0131	5.4500e-003	0.0798	1.6000e-004	1.0612	9.0000e-005	1.0613	0.1075	8.0000e-005	0.1076		16.0118	16.0118	6.0000e-004	5.2000e-004	16.1807
Total	**0.0131**	**5.4500e-003**	**0.0798**	**1.6000e-004**	**1.0612**	**9.0000e-005**	**1.0613**	**0.1075**	**8.0000e-005**	**0.1076**		**16.0118**	**16.0118**	**6.0000e-004**	**5.2000e-004**	**16.1807**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Well Pad Surface Finish (Concrete) - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3042	11.6691	13.2533	0.0252		0.5525	0.5525		0.5306	0.5306		2,399.0445	2,399.0445	0.4223		2,409.6028
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3042**	**11.6691**	**13.2533**	**0.0252**		**0.5525**	**0.5525**		**0.5306**	**0.5306**		**2,399.0445**	**2,399.0445**	**0.4223**		**2,409.6028**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0567	0.0236	0.3458	6.8000e-004	21.0122	3.8000e-004	21.0125	2.1073	3.5000e-004	2.1077		69.3845	69.3845	2.5900e-003	2.2400e-003	70.1162
Total	**0.0567**	**0.0236**	**0.3458**	**6.8000e-004**	**21.0122**	**3.8000e-004**	**21.0125**	**2.1073**	**3.5000e-004**	**2.1077**		**69.3845**	**69.3845**	**2.5900e-003**	**2.2400e-003**	**70.1162**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Well Pad Surface Finish (Concrete) - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2736	1.1854	15.0973	0.0252		5.4700e-003	5.4700e-003		5.4700e-003	5.4700e-003	0.0000	2,399.0445	2,399.0445	0.4223		2,409.6028
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2736**	**1.1854**	**15.0973**	**0.0252**		**5.4700e-003**	**5.4700e-003**		**5.4700e-003**	**5.4700e-003**	**0.0000**	**2,399.0445**	**2,399.0445**	**0.4223**		**2,409.6028**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0567	0.0236	0.3458	6.8000e-004	4.5984	3.8000e-004	4.5987	0.4660	3.5000e-004	0.4663		69.3845	69.3845	2.5900e-003	2.2400e-003	70.1162
Total	**0.0567**	**0.0236**	**0.3458**	**6.8000e-004**	**4.5984**	**3.8000e-004**	**4.5987**	**0.4660**	**3.5000e-004**	**0.4663**		**69.3845**	**69.3845**	**2.5900e-003**	**2.2400e-003**	**70.1162**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Assemble Drill Rig - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5126	5.2579	3.8947	8.1100e-003		0.2580	0.2580		0.2374	0.2374		785.0285	785.0285	0.2539		791.3759
Total	**0.5126**	**5.2579**	**3.8947**	**8.1100e-003**		**0.2580**	**0.2580**		**0.2374**	**0.2374**		**785.0285**	**785.0285**	**0.2539**		**791.3759**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0168	0.6688	0.2008	3.7800e-003	31.0141	8.5300e-003	31.0227	3.1142	8.1600e-003	3.1224		400.6647	400.6647	1.0900e-003	0.0630	419.4606
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0436	0.0182	0.2660	5.2000e-004	16.1632	2.9000e-004	16.1635	1.6210	2.7000e-004	1.6213		53.3727	53.3727	1.9900e-003	1.7200e-003	53.9355
Total	**0.0604**	**0.6870**	**0.4668**	**4.3000e-003**	**47.1773**	**8.8200e-003**	**47.1862**	**4.7353**	**8.4300e-003**	**4.7437**		**454.0373**	**454.0373**	**3.0800e-003**	**0.0647**	**473.3961**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Assemble Drill Rig - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0997	0.4320	4.5975	8.1100e-003		1.9900e-003	1.9900e-003		1.9900e-003	1.9900e-003	0.0000	785.0285	785.0285	0.2539		791.3759
Total	**0.0997**	**0.4320**	**4.5975**	**8.1100e-003**		**1.9900e-003**	**1.9900e-003**		**1.9900e-003**	**1.9900e-003**	**0.0000**	**785.0285**	**785.0285**	**0.2539**		**791.3759**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0168	0.6688	0.2008	3.7800e-003	6.7999	8.5300e-003	6.8084	0.6928	8.1600e-003	0.7010		400.6647	400.6647	1.0900e-003	0.0630	419.4606
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0436	0.0182	0.2660	5.2000e-004	3.5372	2.9000e-004	3.5375	0.3584	2.7000e-004	0.3587		53.3727	53.3727	1.9900e-003	1.7200e-003	53.9355
Total	**0.0604**	**0.6870**	**0.4668**	**4.3000e-003**	**10.3371**	**8.8200e-003**	**10.3459**	**1.0512**	**8.4300e-003**	**1.0597**		**454.0373**	**454.0373**	**3.0800e-003**	**0.0647**	**473.3961**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0235	0.0220	0.1952	4.0000e-004	5.9972	2.7000e-004	5.9975	0.6033	2.6000e-004	0.6035		41.7306	41.7306	1.8100e-003	1.7900e-003	42.3092
Unmitigated	0.0235	0.0220	0.1952	4.0000e-004	5.9972	2.7000e-004	5.9975	0.6033	2.6000e-004	0.6035		41.7306	41.7306	1.8100e-003	1.7900e-003	42.3092

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	6.00	6.00	6.00	19,438	19,438
Total	6.00	6.00	6.00	19,438	19,438

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	6.70	5.00	8.90	0.00	0.00	100.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.530702	0.059328	0.179664	0.144474	0.026250	0.006790	0.008325	0.016302	0.000941	0.000118	0.022966	0.000752	0.003388

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Hudson Ranch I Additional Well - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Hudson Ranch I Additional Well

Imperial County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	4.53	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.4	**Precipitation Freq (Days)**	20
Climate Zone	10			**Operational Year**	2025
Utility Company	Imperial Irrigation District				
CO2 Intensity (lb/MWhr)	189.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Per Discussions with ICAPCD Rain Precipatation Frequency 20 days

Land Use - Well Pad (2.42) acres and additional infrastructure total 4.53 Acres

Construction Phase - Construction Scd. Estimated by Project Engineer

Off-road Equipment - cs

Off-road Equipment - ce

Off-road Equipment - Drill Rig is managed by three (3) 1482 HP generators though 2 are primary and one is backup 24/7 duration. Two running at any given time.

Off-road Equipment - ce

Off-road Equipment -

Off-road Equipment - ce

Trips and VMT - Hauling Trips were added to reflect material deliveries suchs as Rock and Concrete for Access Roads and Well Pads

On-road Fugitive Dust - Trips use 111 and McDonald all paved except 2 miles at McDonald. prior to const. this area will be improved with 12-18" base and would have dedicated water truck. The City wants to wait to pave McDonald till contruction is complete.

Hudson Ranch I Additional Well - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Grading -

Vehicle Trips - Worst Case Estimate 6 Trips per day

Road Dust - Roadways are paved at time of operation

Energy Use - Based on usage of typical wells by Hudson Ranch, the well would utilize 158 kWh per day, so 57,670 kWh per year

Construction Off-road Equipment Mitigation - T4 Design Feature

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	90
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

Hudson Ranch I Additional Well - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	5.00	10.00
tblConstructionPhase	NumDays	8.00	10.00
tblConstructionPhase	NumDays	18.00	20.00
tblConstructionPhase	NumDays	230.00	10.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblEnergyUse	NT24E	0.00	57,670.00
tblGrading	MaterialImported	0.00	4,000.00
tblGrading	MaterialImported	0.00	2,600.00
tblLandUse	LotAcreage	0.00	4.53
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOnRoadDust	HaulingPercentPave	50.00	85.00
tblOnRoadDust	HaulingPercentPave	50.00	85.00
tblOnRoadDust	HaulingPercentPave	50.00	85.00
tblOnRoadDust	HaulingPercentPave	50.00	85.00
tblOnRoadDust	HaulingPercentPave	50.00	85.00
tblOnRoadDust	VendorPercentPave	50.00	85.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

tblOnRoadDust	VendorPercentPave	50.00	85.00
tblOnRoadDust	VendorPercentPave	50.00	85.00
tblOnRoadDust	VendorPercentPave	50.00	85.00
tblOnRoadDust	VendorPercentPave	50.00	85.00
tblOnRoadDust	WorkerPercentPave	50.00	85.00
tblOnRoadDust	WorkerPercentPave	50.00	85.00
tblOnRoadDust	WorkerPercentPave	50.00	85.00
tblOnRoadDust	WorkerPercentPave	50.00	85.00
tblOnRoadDust	WorkerPercentPave	50.00	85.00
tblProjectCharacteristics	PrecipitationFrequency	12	20
tblRoadDust	RoadPercentPave	50	85
tblTripsAndVMT	HaulingTripNumber	0.00	70.00
tblTripsAndVMT	WorkerTripNumber	0.00	10.00
tblVehicleTrips	CNW_TTP	0.00	100.00
tblVehicleTrips	PR_TP	0.00	100.00
tblVehicleTrips	ST_TR	0.00	6.00
tblVehicleTrips	SU_TR	0.00	6.00
tblVehicleTrips	WD_TR	0.00	6.00

2.0 Emissions Summary

Hudson Ranch I Additional Well - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	3.8390	45.5673	31.6570	0.1041	431.0995	1.7457	432.8452	51.4219	1.6098	53.0316	0.0000	10,488.4368	10,488.4368	1.8387	0.7487	10,757.5082
Maximum	**3.8390**	**45.5673**	**31.6570**	**0.1041**	**431.0995**	**1.7457**	**432.8452**	**51.4219**	**1.6098**	**53.0316**	**0.0000**	**10,488.4368**	**10,488.4368**	**1.8387**	**0.7487**	**10,757.5082**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	0.9791	11.8414	36.9952	0.1041	99.1894	0.1158	99.3051	13.7496	0.1113	13.8609	0.0000	10,488.4368	10,488.4368	1.8387	0.7487	10,757.5082
Maximum	**0.9791**	**11.8414**	**36.9952**	**0.1041**	**99.1894**	**0.1158**	**99.3051**	**13.7496**	**0.1113**	**13.8609**	**0.0000**	**10,488.4368**	**10,488.4368**	**1.8387**	**0.7487**	**10,757.5082**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**74.49**	**74.01**	**-16.86**	**0.00**	**76.99**	**93.37**	**77.06**	**73.26**	**93.08**	**73.86**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0156	0.0243	0.1559	3.5000e-004	5.9972	2.8000e-004	5.9975	0.6033	2.6000e-004	0.6035		36.7710	36.7710	1.8700e-003	1.8400e-003	37.3668
Total	**0.0156**	**0.0243**	**0.1560**	**3.5000e-004**	**5.9972**	**2.8000e-004**	**5.9975**	**0.6033**	**2.6000e-004**	**0.6035**		**36.7713**	**36.7713**	**1.8700e-003**	**1.8400e-003**	**37.3670**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0156	0.0243	0.1559	3.5000e-004	5.9972	2.8000e-004	5.9975	0.6033	2.6000e-004	0.6035		36.7710	36.7710	1.8700e-003	1.8400e-003	37.3668
Total	**0.0156**	**0.0243**	**0.1560**	**3.5000e-004**	**5.9972**	**2.8000e-004**	**5.9975**	**0.6033**	**2.6000e-004**	**0.6035**		**36.7713**	**36.7713**	**1.8700e-003**	**1.8400e-003**	**37.3670**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Access Roads	Site Preparation	6/1/2023	6/10/2023	7	10	
2	Well Pad Grading	Grading	6/1/2023	6/10/2023	7	10	
3	Trenching Pipline	Trenching	6/1/2023	6/5/2023	7	5	
4	Well Pad Surface Finish (Concrete)	Paving	6/11/2023	6/30/2023	7	20	
5	Assemble Drill Rig	Building Construction	7/1/2023	7/10/2023	7	10	

Acres of Grading (Site Preparation Phase): 10

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Access Roads	Rubber Tired Dozers	2	8.00	247	0.40
Access Roads	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Well Pad Grading	Excavators	1	8.00	158	0.38
Well Pad Grading	Graders	1	8.00	187	0.41
Well Pad Grading	Rubber Tired Dozers	1	8.00	247	0.40
Well Pad Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Trenching Pipline	Excavators	1	8.00	158	0.38
Well Pad Surface Finish (Concrete)	Cranes	1	8.00	231	0.29
Well Pad Surface Finish (Concrete)	Other Material Handling Equipment	1	8.00	168	0.40
Well Pad Surface Finish (Concrete)	Plate Compactors	1	8.00	8	0.43
Well Pad Surface Finish (Concrete)	Pumps	2	8.00	84	0.74
Assemble Drill Rig	Cranes	1	7.00	231	0.29
Assemble Drill Rig	Forklifts	2	8.00	89	0.20

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Access Roads	4	10.00	0.00	325.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Pad Grading	6	15.00	0.00	500.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching Pipline	1	3.00	0.00	0.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Pad Surface Finish (Concrete)	5	13.00	0.00	0.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
Assemble Drill Rig	3	10.00	0.00	70.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Access Roads - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					13.1565	0.0000	13.1565	6.7428	0.0000	6.7428			0.0000			0.0000
Off-Road	1.6721	17.3257	10.6753	0.0233		0.7935	0.7935		0.7300	0.7300		2,257.1544	2,257.1544	0.7300		2,275.4046
Total	**1.6721**	**17.3257**	**10.6753**	**0.0233**	**13.1565**	**0.7935**	**13.9499**	**6.7428**	**0.7300**	**7.4728**		**2,257.1544**	**2,257.1544**	**0.7300**		**2,275.4046**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0711	3.4289	0.9549	0.0176	143.9942	0.0397	144.0339	14.4589	0.0380	14.4969		1,863.8426	1,863.8426	4.7300e-003	0.2930	1,951.2736
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0311	0.0189	0.1961	4.4000e-004	16.1632	2.9000e-004	16.1635	1.6210	2.7000e-004	1.6213		45.4261	45.4261	2.0900e-003	1.7500e-003	46.0011
Total	**0.1021**	**3.4478**	**1.1511**	**0.0180**	**160.1574**	**0.0400**	**160.1974**	**16.0799**	**0.0382**	**16.1182**		**1,909.2687**	**1,909.2687**	**6.8200e-003**	**0.2948**	**1,997.2748**

Hudson Ranch I Additional Well - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Access Roads - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.9204	0.0000	5.9204	3.0343	0.0000	3.0343			0.0000			0.0000
Off-Road	0.2851	1.2353	12.3513	0.0233		5.7000e-003	5.7000e-003		5.7000e-003	5.7000e-003	0.0000	2,257.1544	2,257.1544	0.7300		2,275.4046
Total	**0.2851**	**1.2353**	**12.3513**	**0.0233**	**5.9204**	**5.7000e-003**	**5.9261**	**3.0343**	**5.7000e-003**	**3.0400**	**0.0000**	**2,257.1544**	**2,257.1544**	**0.7300**		**2,275.4046**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0711	3.4289	0.9549	0.0176	31.5710	0.0397	31.6107	3.2166	0.0380	3.2546		1,863.8426	1,863.8426	4.7300e-003	0.2930	1,951.2736
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0311	0.0189	0.1961	4.4000e-004	3.5372	2.9000e-004	3.5375	0.3584	2.7000e-004	0.3587		45.4261	45.4261	2.0900e-003	1.7500e-003	46.0011
Total	**0.1021**	**3.4478**	**1.1511**	**0.0180**	**35.1082**	**0.0400**	**35.1482**	**3.5750**	**0.0382**	**3.6132**		**1,909.2687**	**1,909.2687**	**6.8200e-003**	**0.2948**	**1,997.2748**

Hudson Ranch I Additional Well - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Well Pad Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.1623	0.0000	7.1623	3.4368	0.0000	3.4368			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129		2,872.6910	2,872.6910	0.9291		2,895.9182
Total	**1.7109**	**17.9359**	**14.7507**	**0.0297**	**7.1623**	**0.7749**	**7.9372**	**3.4368**	**0.7129**	**4.1497**		**2,872.6910**	**2,872.6910**	**0.9291**		**2,895.9182**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1093	5.2752	1.4691	0.0271	221.5296	0.0610	221.5906	22.2445	0.0584	22.3029		2,867.4501	2,867.4501	7.2800e-003	0.4508	3,001.9594
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0466	0.0284	0.2942	6.7000e-004	24.2448	4.4000e-004	24.2452	2.4315	4.0000e-004	2.4319		68.1392	68.1392	3.1300e-003	2.6300e-003	69.0017
Total	**0.1559**	**5.3036**	**1.7633**	**0.0277**	**245.7744**	**0.0615**	**245.8359**	**24.6760**	**0.0588**	**24.7348**		**2,935.5893**	**2,935.5893**	**0.0104**	**0.4534**	**3,070.9611**

Hudson Ranch I Additional Well - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Well Pad Grading - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.2230	0.0000	3.2230	1.5466	0.0000	1.5466			0.0000			0.0000
Off-Road	0.3632	1.5737	17.7527	0.0297		7.2600e-003	7.2600e-003		7.2600e-003	7.2600e-003	0.0000	2,872.6910	2,872.6910	0.9291		2,895.9182
Total	**0.3632**	**1.5737**	**17.7527**	**0.0297**	**3.2230**	**7.2600e-003**	**3.2303**	**1.5466**	**7.2600e-003**	**1.5538**	**0.0000**	**2,872.6910**	**2,872.6910**	**0.9291**		**2,895.9182**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1093	5.2752	1.4691	0.0271	48.5708	0.0610	48.6318	4.9486	0.0584	5.0070		2,867.4501	2,867.4501	7.2800e-003	0.4508	3,001.9594
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0466	0.0284	0.2942	6.7000e-004	5.3058	4.4000e-004	5.3062	0.5376	4.0000e-004	0.5380		68.1392	68.1392	3.1300e-003	2.6300e-003	69.0017
Total	**0.1559**	**5.3036**	**1.7633**	**0.0277**	**53.8766**	**0.0615**	**53.9381**	**5.4863**	**0.0588**	**5.5450**		**2,935.5893**	**2,935.5893**	**0.0104**	**0.4534**	**3,070.9611**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Trenching Pipline - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.1887	1.5486	3.2578	5.1700e-003		0.0758	0.0758		0.0697	0.0697		500.1056	500.1056	0.1617		504.1492
Total	**0.1887**	**1.5486**	**3.2578**	**5.1700e-003**		**0.0758**	**0.0758**		**0.0697**	**0.0697**		**500.1056**	**500.1056**	**0.1617**		**504.1492**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.3200e-003	5.6800e-003	0.0588	1.3000e-004	4.8490	9.0000e-005	4.8491	0.4863	8.0000e-005	0.4864		13.6278	13.6278	6.3000e-004	5.3000e-004	13.8003
Total	**9.3200e-003**	**5.6800e-003**	**0.0588**	**1.3000e-004**	**4.8490**	**9.0000e-005**	**4.8491**	**0.4863**	**8.0000e-005**	**0.4864**		**13.6278**	**13.6278**	**6.3000e-004**	**5.3000e-004**	**13.8003**

Hudson Ranch I Additional Well - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Trenching Pipline - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0635	0.2753	3.9180	5.1700e-003		1.2700e-003	1.2700e-003		1.2700e-003	1.2700e-003	0.0000	500.1056	500.1056	0.1617		504.1492
Total	**0.0635**	**0.2753**	**3.9180**	**5.1700e-003**		**1.2700e-003**	**1.2700e-003**		**1.2700e-003**	**1.2700e-003**	**0.0000**	**500.1056**	**500.1056**	**0.1617**		**504.1492**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.3200e-003	5.6800e-003	0.0588	1.3000e-004	1.0612	9.0000e-005	1.0613	0.1075	8.0000e-005	0.1076		13.6278	13.6278	6.3000e-004	5.3000e-004	13.8003
Total	**9.3200e-003**	**5.6800e-003**	**0.0588**	**1.3000e-004**	**1.0612**	**9.0000e-005**	**1.0613**	**0.1075**	**8.0000e-005**	**0.1076**		**13.6278**	**13.6278**	**6.3000e-004**	**5.3000e-004**	**13.8003**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Well Pad Surface Finish (Concrete) - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3042	11.6691	13.2533	0.0252		0.5525	0.5525		0.5306	0.5306		2,399.0445	2,399.0445	0.4223		2,409.6028
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3042**	**11.6691**	**13.2533**	**0.0252**		**0.5525**	**0.5525**		**0.5306**	**0.5306**		**2,399.0445**	**2,399.0445**	**0.4223**		**2,409.6028**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0404	0.0246	0.2550	5.8000e-004	21.0122	3.8000e-004	21.0125	2.1073	3.5000e-004	2.1077		59.0540	59.0540	2.7100e-003	2.2800e-003	59.8015
Total	**0.0404**	**0.0246**	**0.2550**	**5.8000e-004**	**21.0122**	**3.8000e-004**	**21.0125**	**2.1073**	**3.5000e-004**	**2.1077**		**59.0540**	**59.0540**	**2.7100e-003**	**2.2800e-003**	**59.8015**

Hudson Ranch I Additional Well - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Well Pad Surface Finish (Concrete) - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.2736	1.1854	15.0973	0.0252		5.4700e-003	5.4700e-003		5.4700e-003	5.4700e-003	0.0000	2,399.0445	2,399.0445	0.4223		2,409.6028
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.2736**	**1.1854**	**15.0973**	**0.0252**		**5.4700e-003**	**5.4700e-003**		**5.4700e-003**	**5.4700e-003**	**0.0000**	**2,399.0445**	**2,399.0445**	**0.4223**		**2,409.6028**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0404	0.0246	0.2550	5.8000e-004	4.5984	3.8000e-004	4.5987	0.4660	3.5000e-004	0.4663		59.0540	59.0540	2.7100e-003	2.2800e-003	59.8015
Total	**0.0404**	**0.0246**	**0.2550**	**5.8000e-004**	**4.5984**	**3.8000e-004**	**4.5987**	**0.4660**	**3.5000e-004**	**0.4663**		**59.0540**	**59.0540**	**2.7100e-003**	**2.2800e-003**	**59.8015**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Assemble Drill Rig - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5126	5.2579	3.8947	8.1100e-003		0.2580	0.2580		0.2374	0.2374		785.0285	785.0285	0.2539		791.3759
Total	**0.5126**	**5.2579**	**3.8947**	**8.1100e-003**		**0.2580**	**0.2580**		**0.2374**	**0.2374**		**785.0285**	**785.0285**	**0.2539**		**791.3759**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0153	0.7385	0.2057	3.7900e-003	31.0141	8.5400e-003	31.0227	3.1142	8.1800e-003	3.1224		401.4430	401.4430	1.0200e-003	0.0631	420.2743
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0311	0.0189	0.1961	4.4000e-004	16.1632	2.9000e-004	16.1635	1.6210	2.7000e-004	1.6213		45.4261	45.4261	2.0900e-003	1.7500e-003	46.0011
Total	**0.0464**	**0.7575**	**0.4018**	**4.2300e-003**	**47.1773**	**8.8300e-003**	**47.1862**	**4.7353**	**8.4500e-003**	**4.7437**		**446.8692**	**446.8692**	**3.1100e-003**	**0.0649**	**466.2755**

Hudson Ranch I Additional Well - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Assemble Drill Rig - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.0997	0.4320	4.5975	8.1100e-003		1.9900e-003	1.9900e-003		1.9900e-003	1.9900e-003	0.0000	785.0285	785.0285	0.2539		791.3759
Total	**0.0997**	**0.4320**	**4.5975**	**8.1100e-003**		**1.9900e-003**	**1.9900e-003**		**1.9900e-003**	**1.9900e-003**	**0.0000**	**785.0285**	**785.0285**	**0.2539**		**791.3759**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0153	0.7385	0.2057	3.7900e-003	6.7999	8.5400e-003	6.8085	0.6928	8.1800e-003	0.7010		401.4430	401.4430	1.0200e-003	0.0631	420.2743
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0311	0.0189	0.1961	4.4000e-004	3.5372	2.9000e-004	3.5375	0.3584	2.7000e-004	0.3587		45.4261	45.4261	2.0900e-003	1.7500e-003	46.0011
Total	**0.0464**	**0.7575**	**0.4018**	**4.2300e-003**	**10.3371**	**8.8300e-003**	**10.3459**	**1.0512**	**8.4500e-003**	**1.0597**		**446.8692**	**446.8692**	**3.1100e-003**	**0.0649**	**466.2755**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0156	0.0243	0.1559	3.5000e-004	5.9972	2.8000e-004	5.9975	0.6033	2.6000e-004	0.6035		36.7710	36.7710	1.8700e-003	1.8400e-003	37.3668
Unmitigated	0.0156	0.0243	0.1559	3.5000e-004	5.9972	2.8000e-004	5.9975	0.6033	2.6000e-004	0.6035		36.7710	36.7710	1.8700e-003	1.8400e-003	37.3668

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	6.00	6.00	6.00	19,438	19,438
Total	6.00	6.00	6.00	19,438	19,438

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	6.70	5.00	8.90	0.00	0.00	100.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.530702	0.059328	0.179664	0.144474	0.026250	0.006790	0.008325	0.016302	0.000941	0.000118	0.022966	0.000752	0.003388

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

Hudson Ranch I Additional Well - Imperial County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**1.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix B

Cultural Resources Memo

Technical Memorandum

To: Sharyn Del Rosario, Environmental Services Project Manager, HDR

From: Daniel Leonard, Archaeologist, HDR

Date: March 9, 2023

Subject: **Hudson Ranch New Well 13-4 – Cultural Resource Survey**

1. Introduction

HDR, under contract with Hudson Ranch Power I, LLC, conducted a cultural resource study for the proposed Hudson Ranch New Well 13-4 project located in Calipatria, Imperial County, California. The proposed project is located on an approximately 70-acre parcel 2.7 miles east of the Salton Sea, 4 miles southwest of Niland, and just north of the existing Hudson Ranch I geothermal plant (**Figure 1**). The proposed project consists of drilling a new geothermal well (13-4) in the Hudson Ranch Unit of the Salton Sea Known Geothermal Resource Area. Site construction will include the preparation of one new well pad and extension of access roads, electrical lines, utility poles, and various above-ground piping to connect the proposed well to the existing geothermal plant (**Figure 2**). The well pad will accommodate the drill rig, staging of materials, a sump, other ancillary equipment, and worker parking. In support of environmental permitting for the project, HDR carried out a cultural resource record search through the South Coastal Information Center (SCIC) of the California Historical Resources Information System and conducted a systematic pedestrian survey of the project site to identify cultural resources that may be impacted by the project.

2. Cultural Resource Record Search Results

On February 21, 2023, HDR submitted a request to the SCIC in San Diego for a search of all previous cultural resource investigations and all previously recorded cultural resources within 0.25 miles of the project area. The record search identified 13 previous investigations within 0.25 miles of the project area (**Table 1**). Previous surveys were conducted primarily in support of geothermal developments in the area. Nine of the previous investigations overlap the project area, although most of these were desktop reviews that did not involve fieldwork. The entirety of the current project area was previously surveyed by ASM Affiliates in 2007 (report IM-01096), with negative findings.

Table 1. Previous Cultural Resource Investigations Within 0.25 Miles of the Project Area

Report No.	Year	Author(s)	Report Name	Within Project Area?
IM-00225	1980	Westec Services, Inc.	Appendix A – History of Local Development	Yes
IM-00230	1981	Westec Services, Inc.	Salton Sea Anomaly Cultural Resource Review Data-	Yes

Report No.	Year	Author(s)	Report Name	Within Project Area?
			Support Package	
IM-00234	1981	Westec Services, Inc.	Salton Sea Anomaly – Master Environmental Impact Report	Yes
IM-00236	1981	Westec Services, Inc.	Volume II – Salton Sea Anomaly Master Environmental Impact Report and Magma Power Plant #3 (49 MW) Environmental Impact Report Appendices	Yes
IM-00237	1981	Westec Services, Inc.	Volume I – Salton Sea Anomaly Master Environmental Impact Report and Magma Power Plant #3 (49 MW) Environmental Impact Report Draft	Yes
IM-00254	1981	Westec Services, Inc.	Final Salton Sea Anomaly Master Environmental Impact Report and Magma Power Plant #3 (49 MW) Environmental Impact Report Comments and Responses	Yes
IM-00255	1981	Westec Services, Inc.	Final Salton Sea Anomaly Master Environmental Impact Report and Magma Power Plant #3 (49 MW) Environmental Impact Report Volume I	Yes
IM-01096	2007	ASM Affiliates	Cultural Resources Survey of the Hudson Ranch I Geothermal Project, Imperial County, California	Yes
IM-01484	2010	Imperial County Planning Department	Simbol Calipatria I Plant Project	No
IM-01505	2012	Ecology and Environment, Inc.	County of Imperial Simbol Calipatria Plant I Cup #12-0004 Draft Environmental Impact Report Volume 1	No
IM-01559	2011	Giacinto, Adam	Cultural Resource Study for the Simbol SM Calipatria Plant I, Imperial County, California	No
IM-01642	2012	-	County of Imperial - Hudson Ranch Power II Cup #G10-002/Simbol II Cup #12-0005 Final Environmental Impact Report, Volumes I and II	Yes
IM-01818	2021	Pentney, Sandra, Kellie Kandybowicz, Niranjala Kottachchi, and Eduvijes Davis-Mullens	Archaeological and Paleontological Assessment Report for the Energy Source Mineral, LLC Project, Calipatria, Imperial County, California	No

The record search identified two previously recorded historic-period cultural resource within 0.25 miles of the project area (**Table 2**). P-13-018705 (CA-IMP-13448), located 80 m south of the southwestern extent of the proposed access road, consists of a machine-made water retention basin and small glass scatter dated to the 1950s-1960s. P-13-018706 (CA-IMP-13449), located 300 m south of the southern extent of the proposed pipeline route, consists of a historic trash scatter (dated 1910-1940) and duck pond feature (built between the 1950s and 1970s).

Table 2. Previously Recorded Cultural Resources Within 0.25 Miles of the Project Area

Primary No.	Recorder and Year	Description	NRHP/CRHR Eligibility	Within Project Area?
P-13-018705	Chambers Group 2020	**Historic archaeological site**: machine-made water retention basin and small glass scatter dated to the 1950s-1960s	Unevaluated	No

Primary No.	Recorder and Year	Description	NRHP/CRHR Eligibility	Within Project Area?
P-13-018707	Chambers Group 2020	**Historic archaeological site**: historic trash scatter (dated 1910-1940) and duck pond feature (built between the 1950s and 1970s)	Unevaluated	No

3. Survey Results

On March 2, 2023, HDR archaeologist Daniel Leonard conducted the survey of the proposed project area. The area located in former agricultural land and is easily accessible via Davis Road north of its intersection with McDonald Road. Terrain is flat and almost entirely devoid of vegetation (except for some tamarisk, saltbush, arrow weed, etc. along the north edge of the parcel), resulting in excellent (95 percent) ground visibility (**Figure 3** through **Figure 6**). The project area was surveyed using close-interval transects with 15 m spacing. During the survey, no artifacts, ecofacts, features, historic structures, midden soils, or other evidence of cultural resources were identified at the proposed project location. The only thing of note were dozens of fractured chunks of obsidian found on the embankments and embedded in the surface of the built-up dirt road that runs along the P Lateral canal adjacent north of the well pad (**Figure 7**). Most pieces were blocky, some exhibited cortex, and none appeared to be tools or to show evidence of intentional human modification (**Figure 8**). Obsidian occurs naturally around the Salton Sea, and in this case, it appears several natural nodules were unearthed during canal construction and broken up by heavy machinery during grading and compaction of the canal road.

4. Conclusions and Recommendations

The results of the cultural resource survey confirm the negative findings of previous investigations. Based on the distance from known resources, disturbance from past agricultural activities, and the negative results of the previous and current survey, the proposed project would have no effect on cultural resources. No further cultural resource considerations are recommended for this project.

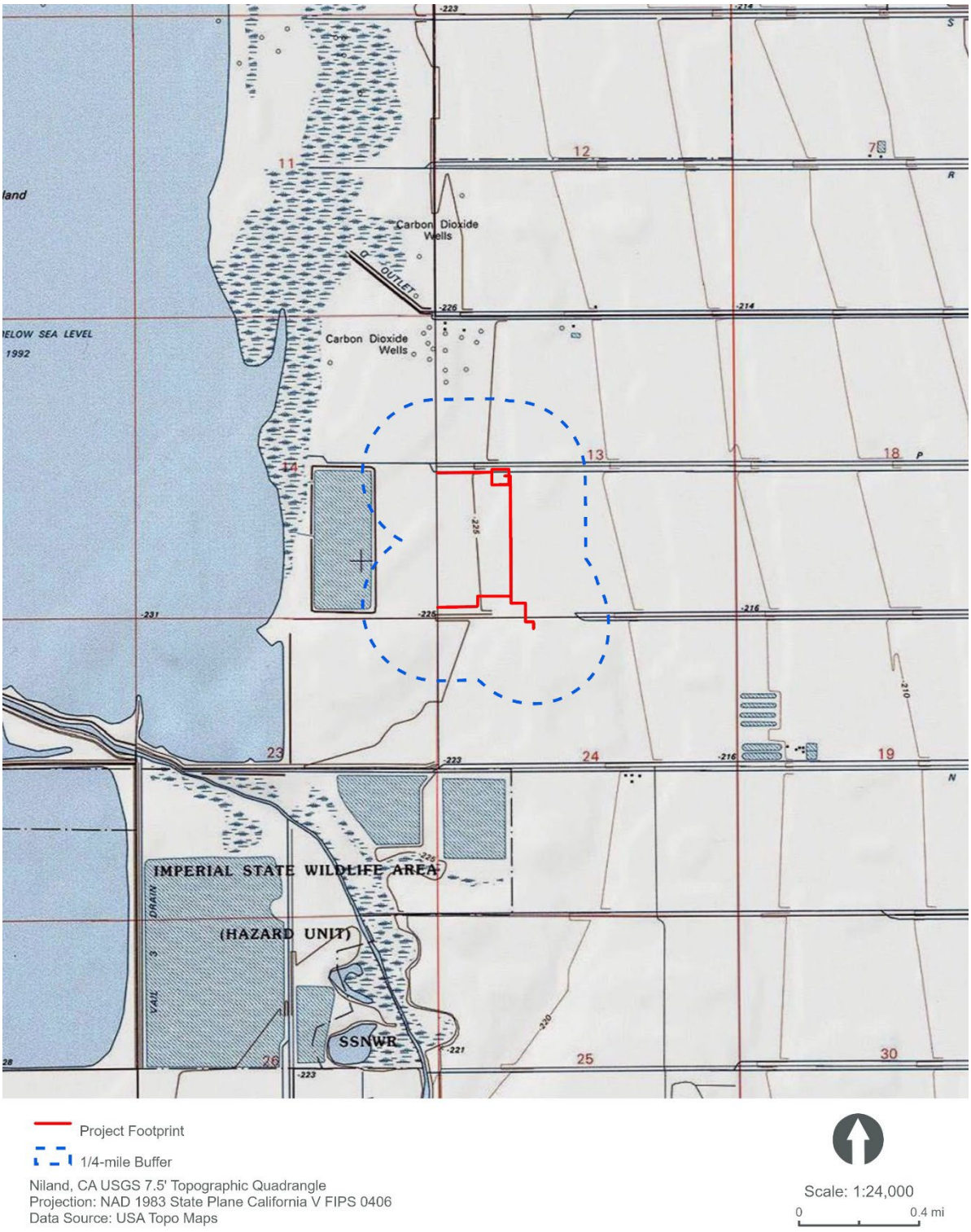

Figure 1. Project area shown on the Niland USGS 7.5' quadrangle

Figure 2. Aerial overview of the project area and project features.

Figure 3. View from the northwest corner of the project area facing southeast to the proposed north access road; existing geothermal plant is at back right.

Figure 4. Proposed well pad location, facing southwest.

Figure 5. View from the southern portion of the project area, facing south to the existing geothermal plant.

Figure 6. View from the southern portion of the project area, facing northwest.

Figure 7. Embankment of canal road adjacent north of the well pad, facing north

Figure 8. obsidian nodules and fractured pieces observed on the embankment and embedded in the road surface

Appendix C

Greenhouse Gas Screening Letter

Ldn Consulting, Inc.

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www.ldnconsulting.net fax 760-689-4943

February 16, 2023

Cyrq
15 W South Temple, Suite 1900
Salt Lake City, Utah 84101

RE: Hudson Ranch Greenhouse Gas (GHG) Screening Letter – County if Imperial

The purpose of this GHG screening letter is to identify potential GHG impacts, if any, which may be created from the construction and operation of a proposed geothermal production well. The Hudson Ranch Power I LLC (Hudson Ranch), seeks to drill an additional geothermal production well to provide additional geothermal fluid in support of the John L. Featherstone (Hudson Ranch) geothermal power plant (Project) roughly 2,000 feet to the south. The Project facilities will disturb roughly 4.53 acres south of Hazard Road and East of Davis Road on a 473.25 acre site (APN 020-010-035-000).

The location of the project is adjacent to the existing HR 1 site which was previously permitted for the Geothermal Plant located within the Salton Sea Geothermal Overlay Zone. The site is zoned manufacturing (medium industrial) (M2G-PE). The site configuration as Proposed is provided Figure 1.

The facility will process geothermal brine from HR1 to produce lithium hydroxide (LiOH), zinc (Zn), and manganese (Mn) products which will be sold commercially. The proposed Project seeks to construct and operate a facility capable of extracting and producing viable lithium (Li), Mn and Zn and other commercially viable substances from geothermal brine. The facility will include a brine supply and return pipeline system and other associated interconnection facilities, infrastructure and systems linking to the HR1 power plant as well as a shipping and receiving area. Additionally, the project would construct a primary access road from McDonald Road as well as an emergency access entrance from Davis Road. Finally, a laydown yard will be constructed with temporary offices which will be utilized during construction.

The proposed well pad is located to test and develop specific geophysical or geologic targets. Project activities would include the improvement or construction, as necessary, of required private access roads; the drilling (and redrilling, as necessary) of a geothermal resource well into the geothermal zone from the well drilling pad; the flow-testing of the well into portable storage tanks and/or the Hudson Ranch geothermal fluid injection wells through temporary geothermal fluid production pipelines.

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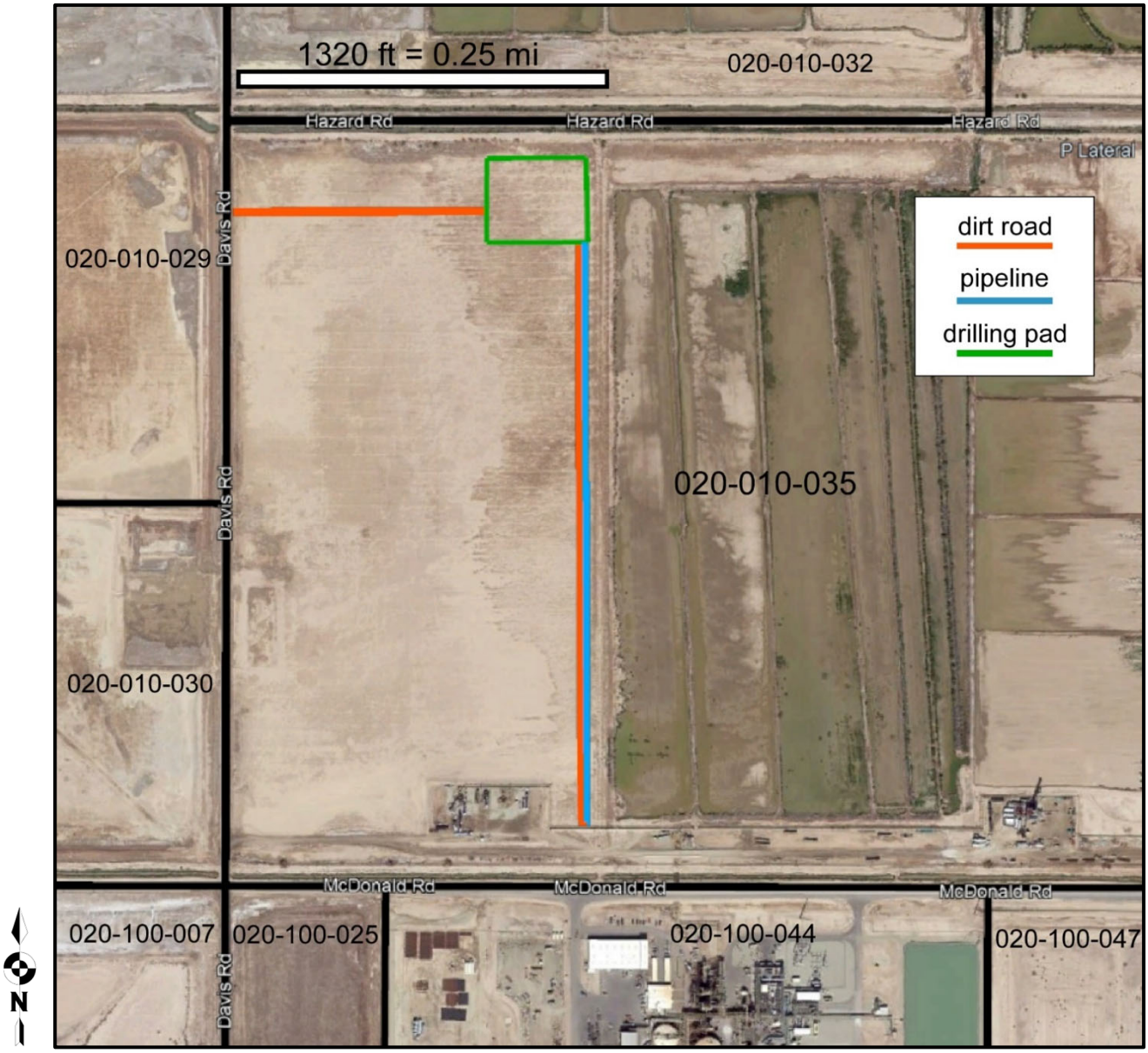
Figure 1: Project Area Overview Map



Source: (Energy Source LLC, 2023)

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The Project would require two (2) access roads totaling 2,876 feet and one pipeline corridor 2,000' feet long are proposed. The access roads will be constructed with an approved base material and maintained as needed to safely accommodate the traffic required for the well drilling activities. Roadbeds will typically be a minimum of twenty feet wide. The well pad was selected, in part, to minimize surface disturbance, reduce the potential for adverse environmental effects, and make the best use of existing access within the limitation of the required testing of the targeted geothermal resources. Encroachment permits will be obtained from the Imperial County Public Works Department (ICPDSD) for the new access/driveways from Davis Road. No new road crossings of any Imperial Irrigation District (IID) lateral canals or drains are proposed.

The new well pad will be approximately 350' by 300' in size (about 2.42 acres). Preparation activities include clearing, earthwork, drainage and other improvements necessary for efficient and safe operation. The well pad is designed to create a level pad for the drill rig and a graded surface for the support equipment. Runoff from undisturbed areas around the well pad will be directed into ditches and energy dissipaters (if needed) around the site, consistent with Imperial County, IID and California Regional Water Quality Control Board, Colorado River Basin Region (CRWQCB) best management practices for storm water. The well pad will be surrounded by a berm and graded to direct runoff into the cellar, which will be pumped as necessary into the on-site containment basin. A typical well pad similar to the proposed Project is shown in Figure 2 of the following page.

The containment basin will be constructed on the well pad for the containment and temporary storage of waste drilling mud, drill cuttings and storm water runoff from the constructed well pad.

Drilling and testing of the proposed well will be conducted pursuant to Conditions of Approval within a new Conditional Use Permit (CUP) that has been applied for with Imperial County Planning and Development Services. Existing CUP #07-0019, granted to Hudson Ranch by Imperial County in October 2007 and amended September 12, 2012, states in part that "For full field development as replacement wells need to be drilled over the project's expected 30-year life span, the well locations and the pipeline network for steam collection and injection as well as replacement wells are to be located as needed.... Any additional production and injection wells can be drilled in any new well pad areas that are to be reviewed and approved by the Planning & Development Services Department as shown on a building permit application and site plan with supporting documentation."

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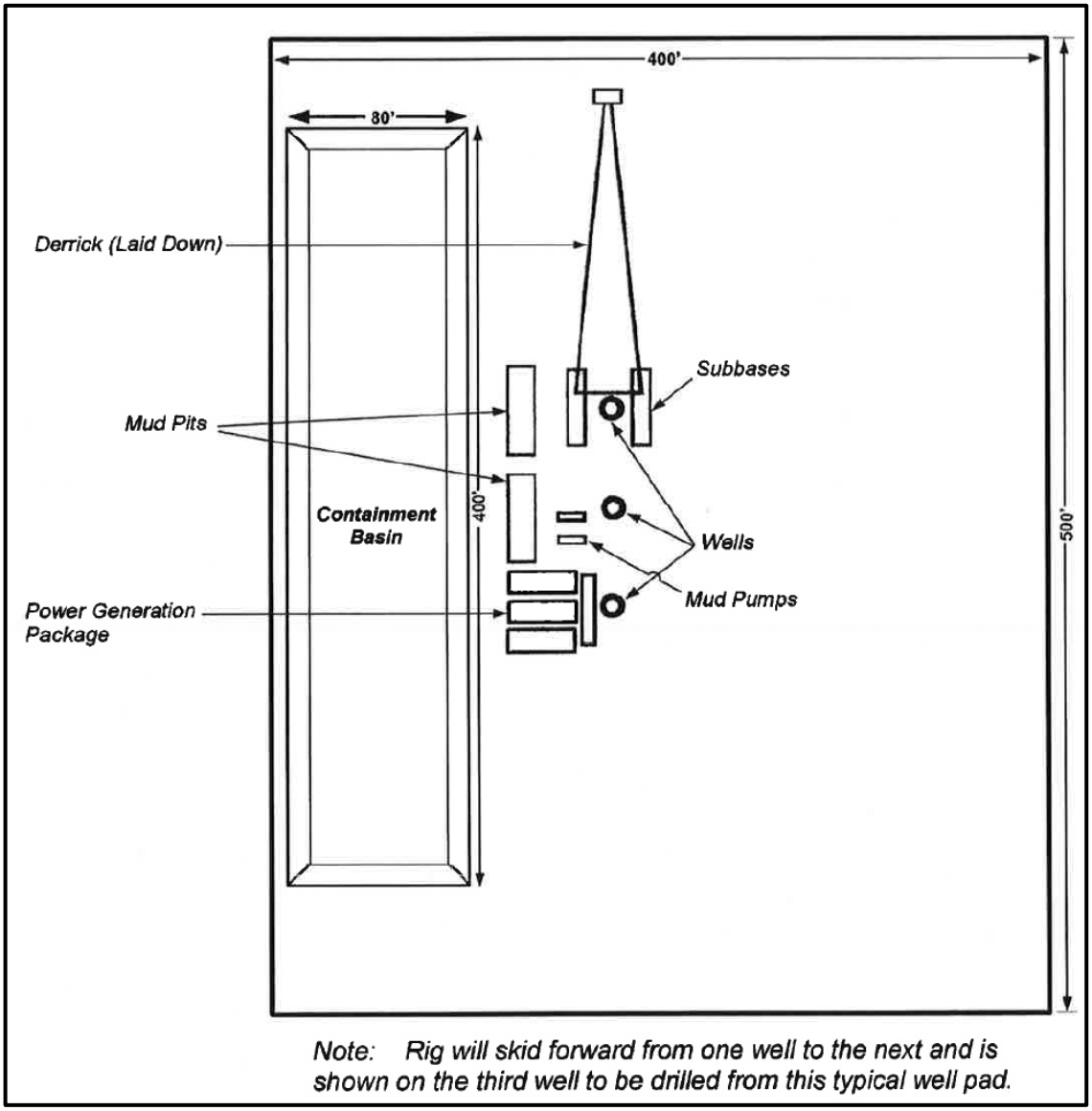
Figure 2: Proposed Project Development Concept



Source: (Energy Source LLC, 2023)

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The geothermal well will be drilled with a rotary drill rig. During drilling, the top of the drill rig derrick will be approximately 170 feet above the ground surface, and the rig floor approximately 30 feet above the ground surface. The typical drill rig and associated support equipment (rig floor and stands; draw works; derrick; drill pipe; trailers; mud, fuel and water tanks; diesel generators; air compressors; etc.) will be brought to the prepared well pad on approximately 70 or more large tractor-trailer trucks. After the drill rig is operational, as many as 10 tractor-trailer truck trips could be expected on the busiest days but the average daily trips would be three large trucks which would delivering drilling supplies and equipment. In addition, the drilling project would generate an average of 16 small trucks/service vehicles/worker vehicles.

Construction of the access roads would be completed in roughly two weeks and will require as much as 2,600 Cubic Yards (CY) of materials such as stone or decomposed granite to the site. Construction of the well pads would be approximately 1 month and would include as much as 4,000 CY of material import which could include stone and concrete. The drilling the drilling process would be completed in two months. Drilling will be conducted 24-hours per day, 7-days per week and approximately 9 to 18 workers will be on location at any given time.

The drill rigs are powered by three (3) portable 1,482 horsepower (HP) Diesel Generators which will be registered under the Portable Equipment Registration Program (PERP). Drilling of the well will require only two (2) generators running continuously and the third generator will be used as a backup generator if needed.

The geothermal well will be drilled to the design depth (approximately 9,000 feet) or the depth selected by the project geologist under a geothermal well drilling and completion program approved by the California Geologic Energy Management Division (CalGEM).

After drilling operations are completed, the liquids from the mud sump/containment basin will either be moved to another well for use in the drilling of that well, evaporated, pumped back down the well, or disposed of in an off-site facility authorized to receive these wastes in accordance with the requirements of the CRWQCB. The solid contents remaining in each containment basin typically consist of non-hazardous, non-toxic waste drilling mud and rock cuttings. The solids will be tested as required by the CRWQCB. The solids will subsequently be removed and disposed of in a waste disposal facility authorized by the CRWQCB or other applicable authority to receive and dispose of these materials. After the materials stored in each mud sump/containment basin have been removed, the containment basin would either be relined and recertified for use in the drilling of another well or reclaimed. The project site plan is shown in Figure 3.

Operations of the well require a continuous source of electricity. The wells will be connected to power provided by Imperial Irrigation District. Based on usage of typical wells by Hudson Ranch, the well would utilize 158 kWh per day, so 57,670 kWh per year

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Construction

The Project construction dates were provided by the Project applicant and are based on a proposed start date in June 2023 and should be completed in 40 days. After the drilling rig is assembled, the drilling process would commence and would be completed in 60 days. The total time necessary to drill the well is expected to be 100 days. Should the project start at a later date, emission estimates would be similar and slightly lower since construction equipment produces less emissions as equipment emission control technologies are improved over time. The worst case construction schedule is shown in Table 1. GHG impacts related to construction and daily operations were calculated using the latest CalEEMod 2020.4.0 air quality model, which was developed by BREEZE Software for South Coast Air Quality Management District (SCAQMD) in 2017. The project construction model is provided as **Attachment A** to this letter.

Table 1: Expected Construction Equipment

Equipment Identification	Proposed Start	Proposed Complete	Quantity
Access Roads	6/1/2023	6/10/2023	
Rubber Tired Dozers			2
Tractors/Loaders/Backhoes			2
Well Pad Grading	6/1/2023	6/10/2023	
Excavators			1
Graders			1
Rubber Tired Dozers			1
Tractors/Loaders/Backhoes			3
Trenching Pipeline	6/1/2023	6/5/2023	
Excavator			1
Well Pad Surface Finish (Concrete)	6/11/2023	6/30/2023	
Boom Truck - Crane			2
Other Material Handling Equipment			3
Plate Compactors			1
Pumps			1
Assemble Drill Rig	7/1/2023	7/10/2023	
Cranes			1
Forklifts			2

In addition to the equipment modeled in Table 1 above, the Project would utilize two of three total 1,482 HP portable diesel-powered engine generators at any given time over the 60 day drilling period. These portable engines would operate continually over the entire drilling period. The portable diesel engines were included within the CalEEMod GHG model.

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Operations

The geothermal well is designed to drill into and flow test the geothermal reservoir to confirm the characteristics of the geothermal reservoir and determine the level of commercial production. Once the well is operational, very few vehicular trips would be expected. However, for purposes of this analysis, it was assumed that up to 6 trips per day would be utilized during operations.

Operations of the well require a continuous source of electricity which would be powered from the Imperial Irrigation District (IID). Based on usage of typical wells by Hudson Ranch, the well would utilize 158 kWh per day, so 57,670 kWh per year. CalEEMod was manually updated to include these inputs. Water used during the drilling process will be supplied from the adjacent IID canals. The expected operations was analyzed using CalEEMod 2020.4.0 which is provided as **Attachment A** to this report.

GHG Regulations

The State of California Greenhouse Gas laws are based on the "the California Global Warming Solutions Act of 2006" (AB32), requires the California Air Resources Board (CARB) to adopt rules and regulations that would reduce GHG emissions to 1990 levels by 2020 and is outlined by the California Air Resource Board (ARB) (California Air Resource Board, 2014). As part of AB32 (Section 38562-A), the state board shall adopt greenhouse gas emission limits and emission reduction measures before January 1, 2011 and enforce these measures starting January 1, 2012. Currently, greenhouse gas emission limits for industrial projects such as the proposed project, have not been adopted by Imperial County. The California Air Pollution Control Officers Association (CAPCOA) published a white paper which suggested screening criteria of 900 metric tons (MT) of GHGs (CAPCOA, 2010). Projects creating more than 900 metric tons of GHGs generally are considered significant and would require reduction measures from business as usual with a goal of 28.3%. For purposes of this analysis in Imperial County, these screening and reduction thresholds will be utilized.

Greenhouse Gasses contributed from the proposed project are Carbon Dioxide (CO_2), Methane (CH_4), and Nitrous Oxide (N_2O). For purposes of analysis, both CH_4 and N_2O can be converted to an equivalent amount of CO_2 (CO_2e) by multiplying the calculated levels of CH_4 and N_2O by a Global Warming Potential (GWP). The U.S. Environmental Protection Agency publishes GWPs for various GHGs and reports that the GWP for CH_4 and N_2O is 21 and 310, respectively.

In addition, ICAPCD has a potential to emit rule (Rule 903) which as it pertains to GHG emissions would require additional notification requirements for stationary sources whenever a project exceeds 100 MT without considering global warming potential (ICAPCD, 2011). Should this rule be exceeded, the additional requirements will be discussed.

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Project Related Construction Emissions

Utilizing the CalEEMod inputs for the model as discussed above, grading and construction of the Project will produce approximately 1,872 MT of CO_2e. Based on ICAPCD methodology, it is recommended to average the construction emissions over the Project life, which is assumed to be 30 years (SCAQMD, 2008). Given this, the annual construction emission for the proposed Project is 62.40 MT of CO_2e per year and is shown in Table 2.

Table 2: Proposed Project Construction CO_2e Emissions Summary MT/Year

Year	Bio-CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
2023	0	1,869	1,869	0	0	1,872
					Total	**1,872**
					Yearly Average Construction Emissions (Metric Tons/year over 30 years)	**62.40**

Project Related Operational Emissions

Based on the CalEEMod analysis, the proposed Project buildout operations including amortized construction emissions would not generate more than 69 MT CO_2e annually, which is shown in Table 3 on the following page. These emissions include the design as identified within this report. The emissions generated do not Exceed the US EPAs reporting thresholds and would therefore not be required to annually report GHGs to the EPA. The project would not exceed the 900 MT GHG screening threshold and would be considered less than significant.

Table 3: Operational GHG Emissions (MT/Year)

Source	Bio-CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e (MT/Yr)
Area	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	6.40	6.40	0.00	0.00	6.49
Waste	0.00	0.00	0.00	0.00	0.00	0.00
Water	0.00	0.00	0.00	0.00	0.00	0.00
Construction Emissions						62.4
Project Total GHG Emissions						**68.89**
Data is presented in decimal format and may have rounding errors.						

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Based on these findings, the project would have a less than significant GHG impact since the Project would not exceed 900 MT CO_2e. Furthermore, the stationary sources would not exceed 100 MT of GHGs and would not require additional notification with respect to ICAPCD Rule 903. Finally, the proposed project has been developed to be consistent with the existing site zoning designation for industrial uses. If you have any questions, please do not hesitate to contact me directly at (760) 473-1253.

Sincerely,
Ldn Consulting, Inc.

Jeremy Louden

Attachment A: CalEEMod Model Results (Proposed Project)

References:

California Air Resource Board. (2014, August 5). *Assembly Bill 32 Overview*. Retrieved 2016, from http://www.arb.ca.gov/: http://www.arb.ca.gov/cc/ab32/ab32.htm

CAPCOA. (2010). *www.CAPCOA.ORG*. Retrieved 2016, from http://capcoa.org/wp-content/uploads/downloads/2010/05/CAPCOA-White-Paper.pdf

Energy Source LLC. (2023). *HR 1 Additional Well - Project Site Layout.*

ICAPCD. (2011). *Rule 903 Potential to Emit.* Retrieved from https://apcd.imperialcounty.org/wp-content/uploads/2020/05/1RULE903.pdf

SCAQMD. (2008). Interim CEQA GHG Significance Threshold for Stationary. Retrieved from http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgboardsynopsis.pdf?sfvrsn=2

Hudson Ranch I Additional Well - Imperial County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Hudson Ranch I Additional Well

Imperial County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	1.00	User Defined Unit	4.53	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	3.4	**Precipitation Freq (Days)**	20
Climate Zone	10			**Operational Year**	2025
Utility Company	Imperial Irrigation District				
CO2 Intensity (lb/MWhr)	189.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Per Discussions with ICAPCD Rain Precipatation Frequency 20 days

Land Use - Well Pad (2.42) acres and additional infrastructure total 4.53 Acres

Construction Phase - Construction Scd. Estimated by Project Engineer

Off-road Equipment - cs

Off-road Equipment - ce

Off-road Equipment - Drill Rig is managed by three (3) 1482 HP generators though 2 are primary and one is backup 24/7 duration. Two running at any given time.

Off-road Equipment - ce

Off-road Equipment -

Off-road Equipment - ce

Trips and VMT - Hauling Trips were added to reflect material deliveries suchs as Rock and Concrete for Access Roads and Well Pads

On-road Fugitive Dust - Trips use 111 and McDonald all paved except 2 miles at McDonald has one lane paved. Drivable surfaces shall be improved with 12-18" base and would have dedicated water truck.

Hudson Ranch I Additional Well - Imperial County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Grading -

Vehicle Trips - Worst Case Estimate 6 Trips per day

Road Dust - Roadways are paved at time of operation

Energy Use - Based on usage of typical wells by Hudson Ranch, the well would utilize 158 kWh per day, so 57,670 kWh per year

Construction Off-road Equipment Mitigation - T4 Design Feature

Off-road Equipment - PERP Certified Drill Rig

Table Name	Column Name	Default Value	New Value
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tblConstEquipMitigation	DPF	No Change	Level 3
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Hudson Ranch I Additional Well - Imperial County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
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tblGrading	MaterialImported	0.00	2,600.00
tblLandUse	LotAcreage	0.00	4.53
tblOffRoadEquipment	HorsePower	84.00	1,482.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	PhaseName		PERP Certified Drilling
tblOnRoadDust	HaulingPercentPave	50.00	85.00
tblOnRoadDust	HaulingPercentPave	50.00	85.00
tblOnRoadDust	HaulingPercentPave	50.00	85.00

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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2.0 Emissions Summary

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.7105	11.0167	3.8965	0.0182	2.9116	0.2173	3.1290	0.3330	0.2163	0.5493	0.0000	1,869.3003	1,869.3003	0.0667	3.7000e-003	1,872.0715
Maximum	**0.7105**	**11.0167**	**3.8965**	**0.0182**	**2.9116**	**0.2173**	**3.1290**	**0.3330**	**0.2163**	**0.5493**	**0.0000**	**1,869.3003**	**1,869.3003**	**0.0667**	**3.7000e-003**	**1,872.0715**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.6842	0.0756	3.9435	0.0182	2.8557	0.2026	3.0584	0.3050	0.2026	0.5076	0.0000	1,869.2981	1,869.2981	0.0667	3.7000e-003	1,872.0693
Maximum	**0.6842**	**0.0756**	**3.9435**	**0.0182**	**2.8557**	**0.2026**	**3.0584**	**0.3050**	**0.2026**	**0.5076**	**0.0000**	**1,869.2981**	**1,869.2981**	**0.0667**	**3.7000e-003**	**1,872.0693**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**3.71**	**99.31**	**-1.21**	**0.00**	**1.92**	**6.77**	**2.26**	**8.41**	**6.36**	**7.60**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
2	4-24-2023	7-23-2023	2.1541	0.1857
3	7-24-2023	9-30-2023	9.3003	0.5548
		Highest	9.3003	0.5548

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	3.3300e-003	4.3000e-003	0.0300	7.0000e-005	1.0914	5.0000e-005	1.0915	0.1098	5.0000e-005	0.1098	0.0000	6.3981	6.3981	3.0000e-004	3.0000e-004	6.4949
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.3300e-003**	**4.3000e-003**	**0.0300**	**7.0000e-005**	**1.0914**	**5.0000e-005**	**1.0915**	**0.1098**	**5.0000e-005**	**0.1098**	**0.0000**	**6.3981**	**6.3981**	**3.0000e-004**	**3.0000e-004**	**6.4949**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	3.3300e-003	4.3000e-003	0.0300	7.0000e-005	1.0914	5.0000e-005	1.0915	0.1098	5.0000e-005	0.1098	0.0000	6.3981	6.3981	3.0000e-004	3.0000e-004	6.4949
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.3300e-003**	**4.3000e-003**	**0.0300**	**7.0000e-005**	**1.0914**	**5.0000e-005**	**1.0915**	**0.1098**	**5.0000e-005**	**0.1098**	**0.0000**	**6.3981**	**6.3981**	**3.0000e-004**	**3.0000e-004**	**6.4949**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Access Roads	Site Preparation	6/1/2023	6/10/2023	7	10	
2	Well Pad Grading	Grading	6/1/2023	6/10/2023	7	10	
3	Trenching Pipline	Trenching	6/1/2023	6/5/2023	7	5	

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4	Well Pad Surface Finish (Concrete)	Paving	6/11/2023	6/30/2023	7	20	
5	Assemble Drill Rig	Building Construction	7/1/2023	7/10/2023	7	10	
6	PERP Certified Drilling	Building Construction	7/11/2023	10/2/2023	5	60	

Acres of Grading (Site Preparation Phase): 10

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Access Roads	Rubber Tired Dozers	2	8.00	247	0.40
Access Roads	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Well Pad Grading	Excavators	1	8.00	158	0.38
Well Pad Grading	Graders	1	8.00	187	0.41
Well Pad Grading	Rubber Tired Dozers	1	8.00	247	0.40
Well Pad Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Trenching Pipline	Excavators	1	8.00	158	0.38
Well Pad Surface Finish (Concrete)	Cranes	1	8.00	231	0.29
Well Pad Surface Finish (Concrete)	Other Material Handling Equipment	1	8.00	168	0.40
Well Pad Surface Finish (Concrete)	Plate Compactors	1	8.00	8	0.43
Well Pad Surface Finish (Concrete)	Pumps	2	8.00	84	0.74
Assemble Drill Rig	Cranes	1	7.00	231	0.29
Assemble Drill Rig	Forklifts	2	8.00	89	0.20
PERP Certified Drilling	Generator Sets	2	24.00	1482	0.74

Trips and VMT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Access Roads	4	10.00	0.00	325.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Pad Grading	6	15.00	0.00	500.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
Trenching Pipline	1	3.00	0.00	0.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
Well Pad Surface Finish (Concrete)	5	13.00	0.00	0.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
Assemble Drill Rig	3	10.00	0.00	70.00	7.30	8.90	20.00	LD_Mix	HDT_Mix	HHDT
PERP Certified Drilling	0	10.00	0.00	120.00	7.30	8.90				

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Access Roads - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0658	0.0000	0.0658	0.0337	0.0000	0.0337	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.3600e-003	0.0866	0.0534	1.2000e-004		3.9700e-003	3.9700e-003		3.6500e-003	3.6500e-003	0.0000	10.2383	10.2383	3.3100e-003	0.0000	10.3211
Total	**8.3600e-003**	**0.0866**	**0.0534**	**1.2000e-004**	**0.0658**	**3.9700e-003**	**0.0698**	**0.0337**	**3.6500e-003**	**0.0374**	**0.0000**	**10.2383**	**10.2383**	**3.3100e-003**	**0.0000**	**10.3211**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Access Roads - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.8000e-004	0.0168	4.7100e-003	9.0000e-005	0.6806	2.0000e-004	0.6808	0.0684	1.9000e-004	0.0686	0.0000	8.4447	8.4447	2.0000e-005	1.3300e-003	8.8409
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	9.0000e-005	1.0800e-003	0.0000	0.0764	0.0000	0.0764	7.6600e-003	0.0000	7.6700e-003	0.0000	0.2208	0.2208	1.0000e-005	1.0000e-005	0.2234
Total	**5.5000e-004**	**0.0169**	**5.7900e-003**	**9.0000e-005**	**0.7570**	**2.0000e-004**	**0.7572**	**0.0760**	**1.9000e-004**	**0.0762**	**0.0000**	**8.6655**	**8.6655**	**3.0000e-005**	**1.3400e-003**	**9.0643**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0296	0.0000	0.0296	0.0152	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.4300e-003	6.1800e-003	0.0618	1.2000e-004		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	10.2383	10.2383	3.3100e-003	0.0000	10.3211
Total	**1.4300e-003**	**6.1800e-003**	**0.0618**	**1.2000e-004**	**0.0296**	**3.0000e-005**	**0.0296**	**0.0152**	**3.0000e-005**	**0.0152**	**0.0000**	**10.2383**	**10.2383**	**3.3100e-003**	**0.0000**	**10.3211**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Access Roads - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.8000e-004	0.0168	4.7100e-003	9.0000e-005	0.6806	2.0000e-004	0.6808	0.0684	1.9000e-004	0.0686	0.0000	8.4447	8.4447	2.0000e-005	1.3300e-003	8.8409
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	9.0000e-005	1.0800e-003	0.0000	0.0764	0.0000	0.0764	7.6600e-003	0.0000	7.6700e-003	0.0000	0.2208	0.2208	1.0000e-005	1.0000e-005	0.2234
Total	**5.5000e-004**	**0.0169**	**5.7900e-003**	**9.0000e-005**	**0.7570**	**2.0000e-004**	**0.7572**	**0.0760**	**1.9000e-004**	**0.0762**	**0.0000**	**8.6655**	**8.6655**	**3.0000e-005**	**1.3400e-003**	**9.0643**

3.3 Well Pad Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0358	0.0000	0.0358	0.0172	0.0000	0.0172	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.5500e-003	0.0897	0.0738	1.5000e-004		3.8700e-003	3.8700e-003		3.5600e-003	3.5600e-003	0.0000	13.0303	13.0303	4.2100e-003	0.0000	13.1357
Total	**8.5500e-003**	**0.0897**	**0.0738**	**1.5000e-004**	**0.0358**	**3.8700e-003**	**0.0397**	**0.0172**	**3.5600e-003**	**0.0207**	**0.0000**	**13.0303**	**13.0303**	**4.2100e-003**	**0.0000**	**13.1357**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Well Pad Grading - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.8000e-004	0.0259	7.2400e-003	1.4000e-004	1.0471	3.0000e-004	1.0474	0.1052	2.9000e-004	0.1055	0.0000	12.9919	12.9919	3.0000e-005	2.0400e-003	13.6014
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-004	1.4000e-004	1.6200e-003	0.0000	0.1146	0.0000	0.1146	0.0115	0.0000	0.0115	0.0000	0.3312	0.3312	1.0000e-005	1.0000e-005	0.3350
Total	**8.4000e-004**	**0.0260**	**8.8600e-003**	**1.4000e-004**	**1.1617**	**3.0000e-004**	**1.1620**	**0.1167**	**2.9000e-004**	**0.1170**	**0.0000**	**13.3231**	**13.3231**	**4.0000e-005**	**2.0500e-003**	**13.9364**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0161	0.0000	0.0161	7.7300e-003	0.0000	7.7300e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8200e-003	7.8700e-003	0.0888	1.5000e-004		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	13.0303	13.0303	4.2100e-003	0.0000	13.1357
Total	**1.8200e-003**	**7.8700e-003**	**0.0888**	**1.5000e-004**	**0.0161**	**4.0000e-005**	**0.0162**	**7.7300e-003**	**4.0000e-005**	**7.7700e-003**	**0.0000**	**13.0303**	**13.0303**	**4.2100e-003**	**0.0000**	**13.1357**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Well Pad Grading - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.8000e-004	0.0259	7.2400e-003	1.4000e-004	1.0471	3.0000e-004	1.0474	0.1052	2.9000e-004	0.1055	0.0000	12.9919	12.9919	3.0000e-005	2.0400e-003	13.6014
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-004	1.4000e-004	1.6200e-003	0.0000	0.1146	0.0000	0.1146	0.0115	0.0000	0.0115	0.0000	0.3312	0.3312	1.0000e-005	1.0000e-005	0.3350
Total	**8.4000e-004**	**0.0260**	**8.8600e-003**	**1.4000e-004**	**1.1617**	**3.0000e-004**	**1.1620**	**0.1167**	**2.9000e-004**	**0.1170**	**0.0000**	**13.3231**	**13.3231**	**4.0000e-005**	**2.0500e-003**	**13.9364**

3.4 Trenching Pipline - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.7000e-004	3.8700e-003	8.1400e-003	1.0000e-005		1.9000e-004	1.9000e-004		1.7000e-004	1.7000e-004	0.0000	1.1342	1.1342	3.7000e-004	0.0000	1.1434
Total	**4.7000e-004**	**3.8700e-003**	**8.1400e-003**	**1.0000e-005**		**1.9000e-004**	**1.9000e-004**		**1.7000e-004**	**1.7000e-004**	**0.0000**	**1.1342**	**1.1342**	**3.7000e-004**	**0.0000**	**1.1434**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Trenching Pipline - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	1.0000e-005	1.6000e-004	0.0000	0.0115	0.0000	0.0115	1.1500e-003	0.0000	1.1500e-003	0.0000	0.0331	0.0331	0.0000	0.0000	0.0335
Total	**3.0000e-005**	**1.0000e-005**	**1.6000e-004**	**0.0000**	**0.0115**	**0.0000**	**0.0115**	**1.1500e-003**	**0.0000**	**1.1500e-003**	**0.0000**	**0.0331**	**0.0331**	**0.0000**	**0.0000**	**0.0335**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.6000e-004	6.9000e-004	9.8000e-003	1.0000e-005		0.0000	0.0000		0.0000	0.0000	0.0000	1.1342	1.1342	3.7000e-004	0.0000	1.1434
Total	**1.6000e-004**	**6.9000e-004**	**9.8000e-003**	**1.0000e-005**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.1342**	**1.1342**	**3.7000e-004**	**0.0000**	**1.1434**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Trenching Pipline - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	1.0000e-005	1.6000e-004	0.0000	0.0115	0.0000	0.0115	1.1500e-003	0.0000	1.1500e-003	0.0000	0.0331	0.0331	0.0000	0.0000	0.0335
Total	**3.0000e-005**	**1.0000e-005**	**1.6000e-004**	**0.0000**	**0.0115**	**0.0000**	**0.0115**	**1.1500e-003**	**0.0000**	**1.1500e-003**	**0.0000**	**0.0331**	**0.0331**	**0.0000**	**0.0000**	**0.0335**

3.5 Well Pad Surface Finish (Concrete) - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0130	0.1167	0.1325	2.5000e-004		5.5200e-003	5.5200e-003		5.3100e-003	5.3100e-003	0.0000	21.7638	21.7638	3.8300e-003	0.0000	21.8596
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0130**	**0.1167**	**0.1325**	**2.5000e-004**		**5.5200e-003**	**5.5200e-003**		**5.3100e-003**	**5.3100e-003**	**0.0000**	**21.7638**	**21.7638**	**3.8300e-003**	**0.0000**	**21.8596**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Well Pad Surface Finish (Concrete) - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.5000e-004	2.4000e-004	2.8000e-003	1.0000e-005	0.1986	0.0000	0.1986	0.0199	0.0000	0.0199	0.0000	0.5741	0.5741	2.0000e-005	2.0000e-005	0.5807
Total	**4.5000e-004**	**2.4000e-004**	**2.8000e-003**	**1.0000e-005**	**0.1986**	**0.0000**	**0.1986**	**0.0199**	**0.0000**	**0.0199**	**0.0000**	**0.5741**	**0.5741**	**2.0000e-005**	**2.0000e-005**	**0.5807**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.7400e-003	0.0119	0.1510	2.5000e-004		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	21.7637	21.7637	3.8300e-003	0.0000	21.8595
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.7400e-003**	**0.0119**	**0.1510**	**2.5000e-004**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**21.7637**	**21.7637**	**3.8300e-003**	**0.0000**	**21.8595**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Well Pad Surface Finish (Concrete) - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.5000e-004	2.4000e-004	2.8000e-003	1.0000e-005	0.1986	0.0000	0.1986	0.0199	0.0000	0.0199	0.0000	0.5741	0.5741	2.0000e-005	2.0000e-005	0.5807
Total	**4.5000e-004**	**2.4000e-004**	**2.8000e-003**	**1.0000e-005**	**0.1986**	**0.0000**	**0.1986**	**0.0199**	**0.0000**	**0.0199**	**0.0000**	**0.5741**	**0.5741**	**2.0000e-005**	**2.0000e-005**	**0.5807**

3.6 Assemble Drill Rig - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.5600e-003	0.0263	0.0195	4.0000e-005		1.2900e-003	1.2900e-003		1.1900e-003	1.1900e-003	0.0000	3.5608	3.5608	1.1500e-003	0.0000	3.5896
Total	**2.5600e-003**	**0.0263**	**0.0195**	**4.0000e-005**		**1.2900e-003**	**1.2900e-003**		**1.1900e-003**	**1.1900e-003**	**0.0000**	**3.5608**	**3.5608**	**1.1500e-003**	**0.0000**	**3.5896**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Assemble Drill Rig - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.0000e-005	3.6200e-003	1.0100e-003	2.0000e-005	0.1466	4.0000e-005	0.1466	0.0147	4.0000e-005	0.0148	0.0000	1.8189	1.8189	0.0000	2.9000e-004	1.9042
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	9.0000e-005	1.0800e-003	0.0000	0.0764	0.0000	0.0764	7.6600e-003	0.0000	7.6700e-003	0.0000	0.2208	0.2208	1.0000e-005	1.0000e-005	0.2234
Total	**2.5000e-004**	**3.7100e-003**	**2.0900e-003**	**2.0000e-005**	**0.2230**	**4.0000e-005**	**0.2230**	**0.0224**	**4.0000e-005**	**0.0224**	**0.0000**	**2.0397**	**2.0397**	**1.0000e-005**	**3.0000e-004**	**2.1276**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.0000e-004	2.1600e-003	0.0230	4.0000e-005		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5608	3.5608	1.1500e-003	0.0000	3.5896
Total	**5.0000e-004**	**2.1600e-003**	**0.0230**	**4.0000e-005**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.5608**	**3.5608**	**1.1500e-003**	**0.0000**	**3.5896**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Assemble Drill Rig - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.0000e-005	3.6200e-003	1.0100e-003	2.0000e-005	0.1466	4.0000e-005	0.1466	0.0147	4.0000e-005	0.0148	0.0000	1.8189	1.8189	0.0000	2.9000e-004	1.9042
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7000e-004	9.0000e-005	1.0800e-003	0.0000	0.0764	0.0000	0.0764	7.6600e-003	0.0000	7.6700e-003	0.0000	0.2208	0.2208	1.0000e-005	1.0000e-005	0.2234
Total	**2.5000e-004**	**3.7100e-003**	**2.0900e-003**	**2.0000e-005**	**0.2230**	**4.0000e-005**	**0.2230**	**0.0224**	**4.0000e-005**	**0.0224**	**0.0000**	**2.0397**	**2.0397**	**1.0000e-005**	**3.0000e-004**	**2.1276**

3.7 PERP Certified Drilling - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.6754	10.6467	3.5895	0.0174		0.2019	0.2019		0.2019	0.2019	0.0000	1,794.9374	1,794.9374	0.0537	0.0000	1,796.2797
Total	**0.6754**	**10.6467**	**3.5895**	**0.0174**		**0.2019**	**0.2019**		**0.2019**	**0.2019**	**0.0000**	**1,794.9374**	**1,794.9374**	**0.0537**	**0.0000**	**1,796.2797**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 PERP Certified Drilling - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.4582	0.0000	0.4582	0.0459	0.0000	0.0459	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.4582**	**0.0000**	**0.4582**	**0.0459**	**0.0000**	**0.0459**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.6754		3.5895	0.0174		0.2019	0.2019		0.2019	0.2019	0.0000	1,794.9353	1,794.9353	0.0537	0.0000	1,796.2776
Total	**0.6754**		**3.5895**	**0.0174**		**0.2019**	**0.2019**		**0.2019**	**0.2019**	**0.0000**	**1,794.9353**	**1,794.9353**	**0.0537**	**0.0000**	**1,796.2776**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 PERP Certified Drilling - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker					0.4582	0.0000	0.4582	0.0459	0.0000	0.0459	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total					**0.4582**	**0.0000**	**0.4582**	**0.0459**	**0.0000**	**0.0459**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	3.3300e-003	4.3000e-003	0.0300	7.0000e-005	1.0914	5.0000e-005	1.0915	0.1098	5.0000e-005	0.1098	0.0000	6.3981	6.3981	3.0000e-004	3.0000e-004	6.4949
Unmitigated	3.3300e-003	4.3000e-003	0.0300	7.0000e-005	1.0914	5.0000e-005	1.0915	0.1098	5.0000e-005	0.1098	0.0000	6.3981	6.3981	3.0000e-004	3.0000e-004	6.4949

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	6.00	6.00	6.00	19,438	19,438
Total	6.00	6.00	6.00	19,438	19,438

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	6.70	5.00	8.90	0.00	0.00	100.00	100	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.530702	0.059328	0.179664	0.144474	0.026250	0.006790	0.008325	0.016302	0.000941	0.000118	0.022966	0.000752	0.003388

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Total	**0.0000**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0000**	**2.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix D

Noise Assessment

NOISE ASSESSMENT

Hudson Ranch I
Geothermal Well Project
County of Imperial, CA

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February 17, 2023

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GLOSSARY OF COMMON TERMS

Sound Pressure Level (SPL): a ratio of one sound pressure to a reference pressure (L_{ref}) of 20 µPa. Because of the dynamic range of the human ear, the ratio is calculated logarithmically by 20 log (L/L_{ref}).

A-weighted Sound Pressure Level (dBA): Some frequencies of noise are more noticeable than others. To compensate for this fact, different sound frequencies are weighted more.

Minimum Sound Level (L_{min}): Minimum SPL or the lowest SPL measured over the time interval using the A-weighted network and slow time weighting.

Maximum Sound Level (L_{max}): Maximum SPL or the highest SPL measured over the time interval the A-weighted network and slow time weighting.

Equivalent sound level (L_{eq}): the true equivalent sound level measured over the run time. Leq is the A-weighted steady sound level that contains the same total acoustical energy as the actual fluctuating sound level.

Day Night Sound Level (Ldn): Representing the Day/Night sound level, this measurement is a 24 –hour average sound level where 10 dB is added to all the readings that occur between 10 pm and 7 am. This is primarily used in community noise regulations where there is a 10 dB "Penalty" for nighttime noise. Typically, Ldn's are measured using A weighting.

Community Noise Exposure Level (CNEL): The accumulated exposure to sound measured in a 24-hour sampling interval and artificially boosted during certain hours. For CNEL, samples taken between 7 pm and 10 pm are boosted by 5 dB; samples taken between 10 pm and 7 am are boosted by 10 dB.

Octave Band: An octave band is defined as a frequency band whose upper band-edge frequency is twice the lower band frequency.

Third-Octave Band: A third-octave band is defined as a frequency band whose upper band-edge frequency is 1.26 times the lower band frequency.

Response Time (F,S,I): The response time is a standardized exponential time weighting of the input signal according to fast (F), slow (S) or impulse (I) time response relationships. Time response can be described with a time constant. The time constants for fast, slow and impulse responses are 1.0 seconds, 0.125 seconds and 0.35 milliseconds, respectively.

EXECUTIVE SUMMARY

This noise study has been completed to determine the noise impacts associated with the development of the proposed Hudson Ranch I Geothermal Well Project in the County of Imperial, CA. Hudson Ranch Power I LLC (Hudson Ranch) is proposing to conduct the drilling and testing of an additional geothermal production well to provide additional geothermal fluid in support of the John L. Featherstone (Hudson Ranch) geothermal power plant. The project consists of a new well pad 350' by 300', two access roads totaling 2,876 feet, and a 2,000-foot pipeline corridor.

Construction Noise

At a distance of 0.8-miles from the nearest residence the point source noise attenuation from construction activities is a reduction of 36 dBA. This would result in an anticipated worst case eight-hour average combined noise level well below 75 dBA at the property line. Given this, the noise levels will comply with the County of Imperial's 75 dBA standard at all Project property lines and no impacts are anticipated.

There are no vibration-sensitive uses located adjacent to the proposed construction. The nearest offsite uses are residential and located approximately 0.6-miles from any construction activities. Project construction activities would not result in vibration induced structural damage or vibration induced annoyance to adjacent land uses. Therefore, vibration impacts would be less than significant.

Operational Noise

Based on the empirical data and the distances to the property lines the unshielded noise levels from the proposed equipment were found to be below the County's most restrictive nighttime property line standard of 45 dBA. No impacts are anticipated and no mitigation is required.

Off-Site Noise

The project does will not create a direct impact of more than 3 dBA CNEL on any roadway segment and no cumulative noise increase of 3 dBA CNEL or more were found. Therefore, the proposed project's direct and cumulative contributions to off-site roadway noise increases will not cause any significant impacts to any existing or future noise sensitive land uses.

1.0 PROJECT INTRODUCTION

1.1 Purpose of this Study

The purpose of this Noise study is to determine potential noise impacts (if any) created from the proposed construction and operation of the proposed project. Should impacts be determined, the intent of this study would be to recommend suitable mitigation measures to bring those impacts to a level that would be considered less than significant.

1.2 Project Location

Hudson Ranch Power I LLC (Hudson Ranch) seeks to drill an additional geothermal production well to provide additional geothermal fluid in support of the John L. Featherstone (Hudson Ranch) geothermal power plant (Project) roughly 0.5-miles to the south. The Project facilities will disturb roughly 4.53 acres south of Hazard Road and East of Davis Road on a 473.25 acre site (APN 020-010-035-000). The Project I located in the north half of Section 24 in Township 11 South, Range 13 East, San Bernardino Base and Meridian (SBB&M) as shown on the USGS Niland Quadrangle topographic map within the County of Imperial California. Primary access to the proposed well will be through a driveway and dirt road along Davis Road. A general project vicinity map is shown in Figure 1–A.

1.3 Project Description and Purpose

The purpose of the proposed Project is to determine the characteristics of geothermal resources leased from private landowners as part of the geothermal field development project supporting the Hudson Ranch geothermal power plant. The Project will drill, complete, sample and test the geothermal resource fluids from the Project area. Hudson Ranch proposes to commence operations when all required permits are acquired.

The proposed well pad is located to test and develop specific geophysical or geologic targets. Project activities would include the improvement or construction, as necessary, of required private access roads; the drilling (and redrilling, as necessary) of a geothermal resource well into the geothermal zone from the well drilling pad; the flow-testing of the well into portable storage tanks and/or the Hudson Ranch geothermal fluid injection wells through temporary geothermal fluid production pipelines.

The Project would require two (2) access roads totaling 2,876 feet and one pipeline corridor 2,000’ feet long are proposed. The access roads will be constructed with an approved base material and maintained as needed to safely accommodate the traffic required for the well drilling activities. Roadbeds will typically be a minimum of twenty feet wide. The well pad was selected, in part, to minimize surface disturbance, reduce the potential for adverse environmental effects,

and make the best use of existing access within the limitation of the required testing of the targeted geothermal resources. Encroachment permits will be obtained from the Imperial County Public Works Department (ICPDSD) for the new access/driveways from Davis Road. No new road crossings of any Imperial Irrigation District (IID) lateral canals or drains are proposed.

The new well pad will be approximately 350' by 300' in size (about 2.42 acres). Preparation activities include clearing, earthwork, drainage and other improvements necessary for efficient and safe operation. The well pad is designed to create a level pad for the drill rig and a graded surface for the support equipment. Runoff from undisturbed areas around the well pad will be directed into ditches and energy dissipaters (if needed) around the site, consistent with Imperial County, IID and California Regional Water Quality Control Board, Colorado River Basin Region (CRWQCB) best management practices for storm water. All machinery, drilling platforms, and oil and fuel storage will be in areas of the well pad tributary to the well pad cellar in order to prevent the movement of storm water from these areas off of the constructed well pads. The well pad will be surrounded by a berm and graded to direct runoff into the cellar, which will be pumped as necessary into the on-site containment basin.

The containment basin will be constructed on the well pad for the containment and temporary storage of waste drilling mud, drill cuttings and storm water runoff from the constructed well pad.

Drilling and testing of the proposed well will be conducted pursuant to Conditions of Approval within a new Conditional Use Permit (CUP) that has been applied for with Imperial County Planning and Development Services. Existing CUP #07-0019, granted to Hudson Ranch by Imperial County in October 2007 and amended September 12, 2012, states in part that "For full field development as replacement wells need to be drilled over the project's expected 30-year life span, the well locations and the pipeline network for steam collection and injection as well as replacement wells are to be located as needed.... Any additional production and injection wells can be drilled in any new well pad areas that are to be reviewed and approved by the Planning & Development Services Department as shown on a building permit application and site plan with supporting documentation."

The geothermal well will be drilled with a rotary drill rig. During drilling, the top of the drill rig derrick will be approximately 170 feet above the ground surface, and the rig floor approximately 30 feet above the ground surface. The typical drill rig and associated support equipment (rig floor and stands; draw works; derrick; drill pipe; trailers; mud, fuel and water tanks; diesel generators; air compressors; etc.) will be brought to the prepared well pad on approximately 70 or more large tractor-trailer trucks. After the drill rig is operational, as many as 10 tractor-trailer truck trips could be expected on the busiest days but the average daily trips would be three large trucks which would delivering drilling supplies and equipment. In addition the drilling project would generate an average of 16 small trucks/service vehicles/worker vehicles.

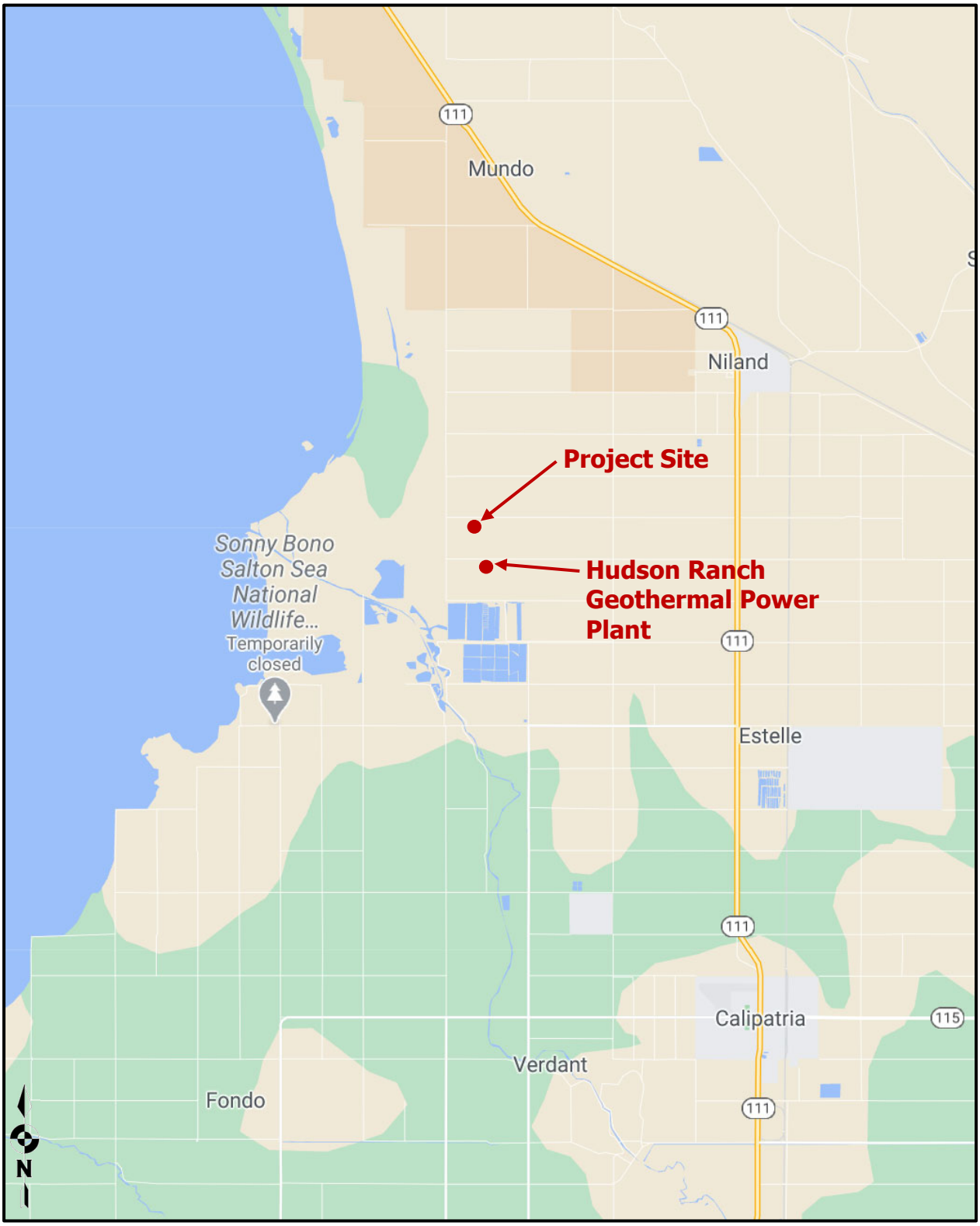
Construction of the access roads would be completed in roughly two weeks and will require as much as 2,600 Cubic Yards (CY) of materials such as stone or decomposed granite to the site. Construction of the well pads would be approximately 1 month and would include as much as 4,000 CY of material import which could include stone and concrete. The drilling the drilling process would be completed in two months. Drilling will be conducted 24-hours per day, 7-days per week and approximately 9 to 18 workers will be on location at any given time. The drill rigs are powered by three (3) portable 1,482 HP Diesel Generators with an operational scheme having two (2) generators running and a third used as a backup generator.

The geothermal well will be drilled to the design depth (approximately 9,000 feet) or the depth selected by the project geologist under a geothermal well drilling and completion program approved by the California Geologic Energy Management Division (CalGEM).

After drilling operations are completed, the liquids from the mud sump/containment basin will either be moved to another well for use in the drilling of that well, evaporated, pumped back down the well, or disposed of in an off-site facility authorized to receive these wastes in accordance with the requirements of the CRWQCB. The solid contents remaining in each containment basin typically consist of non-hazardous, non-toxic waste drilling mud and rock cuttings. The solids will be tested as required by the CRWQCB. The solids will subsequently be removed and disposed of in a waste disposal facility authorized by the CRWQCB or other applicable authority to receive and dispose of these materials. After the materials stored in each mud sump/containment basin have been removed, the containment basin would either be relined and recertified for use in the drilling of another well or reclaimed. The project site plan is shown in Figure 1–B.

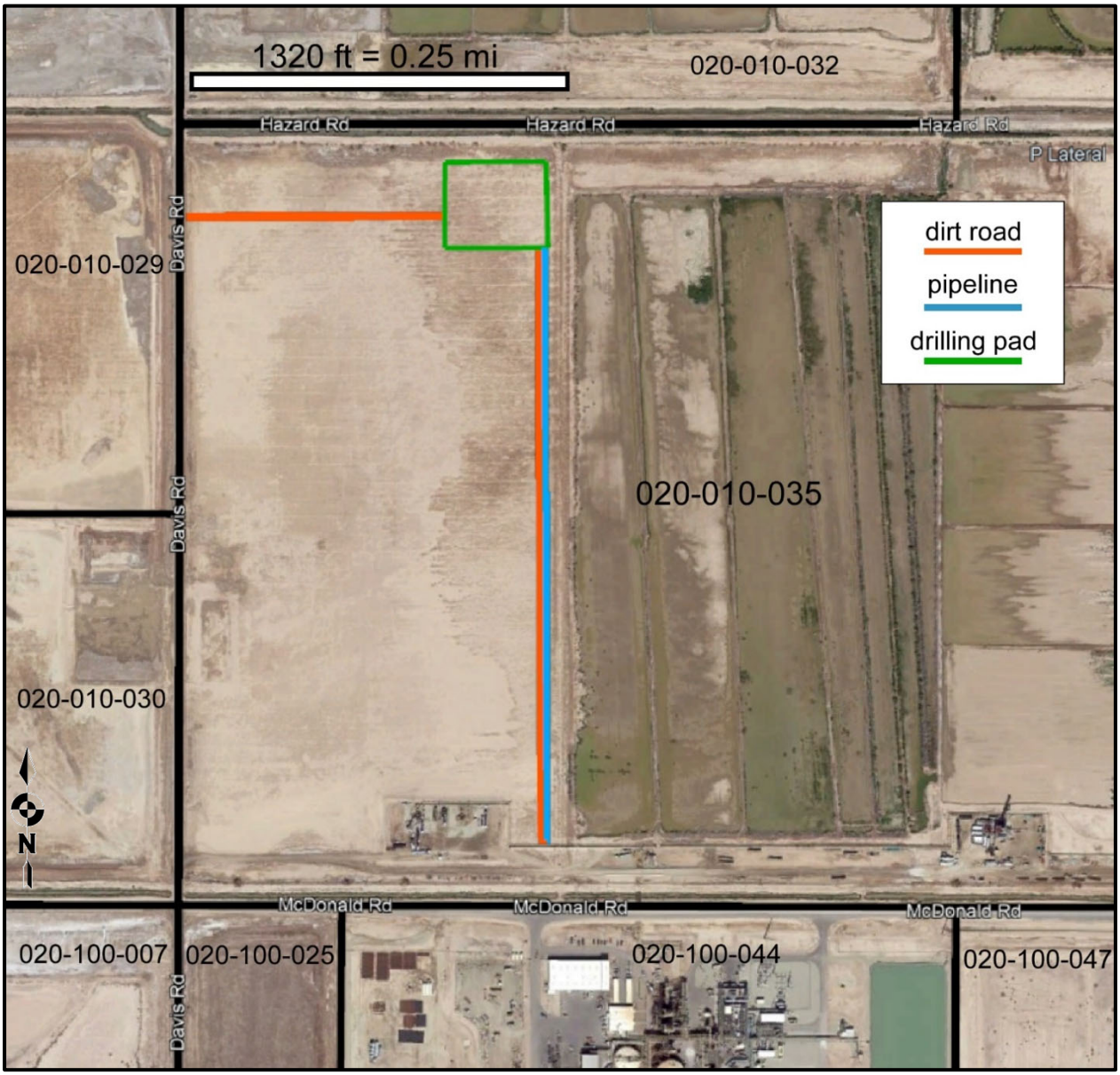
Operations of the well require a continuous source of electricity. The wells will be connected to power provided by Imperial Irrigation District. Based on usage of typical wells by Hudson Ranch, the well would utilize 158kWh per day, so 57,670 kWh per year.

Figure 1-A: Project Vicinity Map



Source: (Google, 2023)

Figure 1-B: Proposed Project Site Layout



Source: (Hudson Ranch Power I LLC, 2022)

2.0 FUNDAMENTALS

2.1 Acoustical Fundamentals

Noise is defined as unwanted or annoying sound which interferes with or disrupts normal activities. Exposure to high noise levels has been demonstrated to cause hearing loss. The individual human response to environmental noise is based on the sensitivity of that individual, the type of noise that occurs and when the noise occurs.

Sound is measured on a logarithmic scale consisting of sound pressure levels known as a decibel (dB). The sounds heard by humans typically do not consist of a single frequency but of a broadband of frequencies having different sound pressure levels. The method for evaluating all the frequencies of the sound is to apply an A-weighting to reflect how the human ear responds to the different sound levels at different frequencies. The A-weighted sound level adequately describes the instantaneous noise whereas the equivalent sound level depicted as Leq represents a steady sound level containing the same total acoustical energy as the actual fluctuating sound level over a given time interval.

The U.S. Environmental Protection Agency (U.S. EPA) has compiled data regarding the noise generating characteristics of specific types of construction equipment. Noise levels generated by heavy construction equipment can range from 60 dBA to in excess of 100 dBA when measured at 50 feet. However, these noise levels diminish rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance. For example, a noise level of 75 dBA measured at 50 feet from the noise source to the receptor would be reduced to 69 dBA at 100 feet from the source to the receptor and reduced to 63 dBA at 200 feet from the source. The most effective noise reduction methods consist of controlling the noise at the source, blocking the noise transmission with barriers or relocating the receiver. Any or all of these methods may be required to reduce noise levels to an acceptable level.

The most effective noise reduction methods consist of controlling the noise at the source, blocking the noise transmission with barriers or relocating the receiver. Any or all of these methods may be required to reduce noise levels to an acceptable level.

2.2 Vibration Fundamentals

Vibration is a trembling or oscillating motion of the ground. Like noise, vibration is transmitted in waves, but in this case through the ground or solid objects. Unlike noise, vibration is typically felt rather than heard. Vibration can be either natural as in the form of earthquakes, volcanic eruptions, or manmade as from explosions, heavy machinery, or trains. Both natural and manmade vibration may be continuous, such as from operating machinery; or infrequent, as from an explosion.

As with noise, vibration can be described by both its amplitude and frequency. Amplitude may be characterized in three ways: displacement, velocity, and acceleration. Particle displacement is a measure of the distance that a vibrated particle travels from its original position and for the purposes of soil displacement is typically measured in inches or millimeters. Particle velocity is the rate of speed at which soil particles move in inches per second or millimeters per second. Particle acceleration is the rate of change in velocity with respect to time and is measured in inches per second or millimeters per second. Typically, particle velocity (measured in inches or millimeters per second) and/or acceleration (measured in gravities) are used to describe vibration. Table 2-1 shows the human reaction to various levels of peak particle velocity.

Vibrations also vary in frequency and this affects perception. Typical construction vibrations fall in the 10 to 30 Hz range and usually occurring around 15 Hz. Traffic vibrations exhibit a similar range of frequencies; however, due to their suspension systems, it is less common, to measure traffic frequencies above 30 Hz.

Propagation of ground-borne vibrations is complicated and difficult to predict because of the endless variations in the soil through which the waves travel. There are three main types of vibration propagation: surface, compression, and shear waves. Surface waves, or Rayleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wave front, similar to ripples produced by dropping an object into water. P-waves, or compression waves, are waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal. S-waves, or shear waves, are also body waves that carry energy along an expanding spherical wave front. However, unlike P-waves, the particle motion is transverse, or side-to-side and perpendicular to the direction of propagation.

As vibration waves propagate from a source, the energy is spread over an ever-increasing area such that the energy level is reduced with the distance from the energy source. This geometric spreading loss is inversely proportional to the square of the distance. Wave energy is also reduced with distance as a result of material damping in the form of internal friction, soil layering, and special voids. The amount of attenuation provided by material damping varies with soil type and condition as well as the frequency of the wave.

Table 2-1: Human Reaction to Typical Vibration Levels

Vibration Level Peak Particle Velocity (in/sec)	Human Reaction	Effect on Buildings
0.006–0.019	Threshold of perception, possibility of intrusion	Vibrations unlikely to cause damage of any type
0.08	Vibrations readily perceptible	Recommended upper level of vibration to which ruins and ancient monuments should be subjected
0.10	Level at which continuous vibration begins to annoy people	Virtually no risk of "architectural" (i.e., not structural) damage to normal buildings
0.20	Vibrations annoying to people in buildings	Threshold at which there is a risk to "architectural" damage to normal dwelling – houses with plastered walls and ceilings
0.4–0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: Caltrans, Division of Environmental Analysis, *Transportation Related Earthborne Vibration, Caltrans Experiences*, Technical Advisory, Vibration, TAV-02-01-R9601, 2002 (Caltrans, 2002).

3.0 SIGNIFICANCE THRESHOLDS AND STANDARDS

3.1 Operational Standards

The Property Line Noise Limits listed in Table 9 of the County's General Plan Noise Element (County of Imperial General Plan, 2015) and the County's Ordinance, Title 9, Division 7 (Noise Abatement and Control) Section 90702.00 Subsection A provides acceptable Sound level limits based on the property zoning. The applicable property line sound level limits are provided in Table 3-1 below and shall apply to noise generation from one property to an adjacent property. The standards imply the existence of a sensitive receptor on the adjacent, or receiving, property. In the absence of a sensitive receptor, an exception or variance to the standards may be appropriate. These standards do not apply to construction noise.

Table 3-1: Property Line Noise Level Limits

Zone	Time	Applicable Limit One-hour Average Sound Level (Decibels)
Residential Zones	7 a.m. to 10 p.m.	50
	10 p.m. to 7 a.m.	45
Multi-residential Zones	7 a.m. to 10 p.m.	55
	10 p.m. to 7 a.m.	50
Commercial Zones	7 a.m. to 10 p.m.	60
	10 p.m. to 7 a.m.	55
Light Industrial/Industrial Park Zones	Anytime	70
General Industrial Zones	Anytime	75
When the noise-generating property and the receiving property have different uses, the more restrictive standard shall apply. When the ambient noise level is equal to or exceeds the Property Line noise standard, the increase of the existing or proposed noise shall not exceed 3 dB L_{eq}. The sound level limit between two zoning districts (different land uses) shall be measured at the property line between the properties. Fixed-location public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise level limits of subsection A of this section, measured at or beyond six feet from the boundary of the easement upon which the equipment is located. This section does not apply to noise generated by helicopters at heliports or helistops authorized by a conditional use permit. This section does not apply to noise generated by standard agricultural field operating practices such as planting and harvesting of crops. The County of Imperial has a Right to Farm Ordinance (1031) which serves as recognition to agricultural practices to new development. Agricultural/industrial operations shall comply with the noise levels prescribed under the general industrial zones.		

Source: County of Imperial Ordinance, Title 9, Division 7 (Noise Abatement and Control)

These standards are intended to be enforced through the County's code enforcement program on the basis of complaints received from persons impacted by excessive noise. It must be acknowledged that a noise nuisance may occur even though an objective measurement with a sound level meter is not available. In such cases, the County may act to restrict disturbing, excessive, or offensive noise which causes discomfort or annoyance to reasonable persons of normal sensitivity residing in an area.

3.2 Construction Noise Standards

Based on the County of Imperial's Noise Element of the General Plan, construction noise from a single piece of equipment or a combination of equipment, shall not exceed 75 dB L_{eq}, when averaged over an eight (8) hour period, and measured at the nearest sensitive receptor. This standard assumes a construction period, relative to an individual sensitive receptor of days or weeks. In cases of extended length construction times, the standard may be tightened so as not to exceed 75 dB L_{eq} when averaged over a one (1) hour period.

Construction equipment operation shall be limited to the hours of 7 a.m. to 7 p.m., Monday through Friday, and 9 a.m. to 5 p.m. Saturday. No commercial construction operations are permitted on Sunday or holidays. In cases of a person constructing or modifying a residence for himself/herself, and if the work is not being performed as a business, construction equipment operations may be performed on Sundays and holidays between the hours of 9 a.m. and 5 p.m. Such non-commercial construction activities may be further restricted where disturbing, excessive, or offensive noise causes discomfort or annoyance to reasonable persons of normal sensitivity residing in an area.

3.3 Significant Increase of Ambient Noise Levels

The increase of noise levels generally results in an adverse impact to the noise environment. The Noise/Land Use Compatibility Guidelines are not intended to allow the increase of ambient noise levels up to the maximum without consideration of feasible noise reduction measures. The following guidelines are established by the County of Imperial for the evaluation of significant noise impact.

a. If the future noise level after the Project is completed will be within the "normally acceptable" noise levels shown in the Noise/Land Use Compatibility Guidelines but will result in an increase of 5 dB CNEL or greater, the Project will have a potentially significant noise impact and mitigation measures must be considered.

b. If the future noise level after the Project is completed will be greater than the "normally acceptable" noise levels shown in the Noise/Land Use Compatibility Guidelines, a noise increase of 3 dB CNEL or greater shall be considered a potentially significant noise impact and mitigation measures must be considered.

3.4 Vibration Standards

The County has not yet adopted vibration criteria. The United States Department of Transportation Federal Transit Administration (FTA) provides criteria for acceptable levels of groundborne vibration for various types of special buildings that are sensitive to vibration. For purposes of identifying potential project-related vibration impacts, the FTA criteria will be used. The human reaction to various levels of vibration is highly subjective. The upper end of the range shown for the threshold of perception, or roughly 65 VdB, may be considered annoying by some people. Vibration below 65 VdB may also cause secondary audible effects, such as a slight rattling of doors, suspended ceilings/fixtures, windows, and dishes, any of which may result in additional annoyance. Table 3-2 on the following page shows the FTA groundborne vibration and noise impact criteria for human annoyance. In addition to the vibration annoyance standards presented above, the FTA also applies the following standards for construction vibration damage. Table 3-3 on the following page, structural damage is possible for typical residential construction when the peak particle velocity (PPV) exceeds 0.2 inch per second (in/sec). This criterion is the threshold at which there is a risk of damage to normal dwellings.

Table 3-2: Vibration and Noise Impact Criteria (Human Annoyance)

	Groundborne Vibration Impact Levels (VdB re 1 microinch/second)			Groundborne Noise Impact Levels (dB re 20 micropascals)		
	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]
Category 1: Buildings where low ambient vibration is essential for interior operations.	65 VdB[4]	65 VdB[4]	65 VdB[4]	N/A[4]	N/A[4]	N/A[4]
Category 2: Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB	35 dBA	38 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use.	75 VdB	78 VdB	83 VdB	40 dBA	43 dBA	48 dBA

Source: United States Department of Transportation Federal Transit Administration (FTA), *Transit Noise and Vibration Impact Assessment Manual,* September 2018.

[1] "Frequent Events" are defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.

[2] "Occasional Events" are defined as between 30 and 70 vibration events of the same source per day. Most commuter truck lines have this many operations.

[3] "Infrequent Events" are defined as fewer than 30 vibration events of the same kind per day. This category includes most commuter rail branch lines

[4] This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires special design of the HVAC systems and stiffened floors.

[5] Vibration-sensitive equipment is not sensitive to groundborne noise.

Table 3-3: Vibration Impact Criteria (Structural Damage)

Building Category	PPV (in/sec)	VdB
I. Reinforced-concrete, steel, or timber (no plaster)	0.5	102
II. Engineered concrete and masonry (no plaster)	0.3	98
III. Non-engineered timber and masonry buildings	0.2	94
IV. Buildings extremely susceptible to vibration damage	0.12	90
Source: (FTA, 2018) Notes: RMS velocity calculated from vibration level (VdB) using the reference of one microinch/second.		

4.0 ENVIRONMENTAL SETTINGS & EXISTING CONDITIONS

4.1 Settings & Locations

The proposed project is located within the unincorporated area of the Imperial County in southeastern California. Imperial County encompasses the southern half of the Salton Sea Air Basin (SSAB). The proposed project is situated about 3.6 miles southwest of the community of Niland, California. The project and surrounding land uses to the east and south are designated as Industrial with a Zoning Designation of M-2-G-PE. The surrounding land uses to the north and west are designated as Agricultural with a Zoning Designation of S-1-G. The nearest residence is located 0.6-miles northeast along Pound Road.

4.2 Existing Noise Conditions

The project is surrounded by existing vacant and agricultural land uses and the nearest urban area is the community of Niland located over 3-miles to the northeast. The Hudson Ranch I Power Plant is located approximately 0.5-miles to the south.

4.3 Receiver Locations

To assess the potential for long-term operational, short-term drilling, and short-term construction noise impacts, the following sensitive receiver locations, as identified below, were identified as representative locations for analysis. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas. Moderately noise-sensitive land uses typically include multi-family dwellings, hotels, motels, dormitories, out-patient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

Receiver locations are located in outdoor living areas (e.g., backyards) at 10 feet from any existing or proposed barriers or at the building façade, whichever is closer to the Project site, based on FHWA guidance, and consistent with additional guidance provided by Caltrans and the FTA, as previously described in Section 3. Sensitive receiver locations in the Project study area include residential uses as described below. Other sensitive land uses in the Project study area that are located at greater distances than those identified in this noise study will experience lower noise levels than those presented in this report due to the additional attenuation from distance and the shielding of

intervening structures. Distance is measured in a straight line from the project boundary to each receiver location.

The County of Imperial does not consider the surrounding industrial and agricultural land uses as sensitive uses. However, an existing residence is located along Pound Road on land that is designated as agricultural. The property is located over 0.6-miles to the northeast along Pound Road. Therefore, for the purpose of this study, the residence is considered a sensitive land use from the construction, drilling, and operational activities.

5.0 CONSTRUCTION NOISE

5.1 County of Imperial Construction Standards

Construction noise, from a single piece of equipment or a combination of equipment, shall not exceed 75 dB L_{eq}, when averaged over an eight (8) hour period, and measured at the nearest sensitive receptor. This standard assumes a construction period, relative to an individual sensitive receptor of days or weeks. In cases of extended length construction times, the standard may be tightened so as not to exceed 75 dB L_{eq} when averaged over a one (1) hour period. Construction equipment operation shall be limited to the hours of 7 a.m. to 7 p.m., Monday through Friday, and 9 a.m. to 5 p.m. Saturday. No commercial construction operations are permitted on Sunday or holidays.

5.2 Potential Project Construction Noise Impacts

Noise levels resulting from proposed construction activities were obtained from the Controlled Thermal Resources (US), Inc.'s (CTR) equipment lists and process descriptions, reports prepared by the FTA and the Federal Highway Administration (FHWA), satellite imagery from the site, and field data from files.

On-site noise-generating activities associated with the Hudson Ranch I Additional Geothermal Well Project would include short-term construction noise, mechanical equipment noise related to geothermal drilling, and associated vehicles. Well-testing and construction of the proposed interconnection line would involve the short-term use of heavy equipment. Estimations made based on the proposed equipment list result in composite noise from well pad grading of 83 dBA Leq(h) at 50 feet and 80 dBA Leq(h) for drill rig assembly, well drilling, and testing. It is expected that well drilling average noise would be 80 dBA at 50 feet.

Major noise sources during construction of the Project would include the diesel engines on the construction equipment, operation of the drilling rig, and noise associated with the movement of pipes and casing. Construction noise is usually made up of intermittent noise peaks and continuous lower levels of noise from equipment cycling through use. Noise levels associated with individual pieces of equipment can generally range between 70 and 90 dBA (FTA, 2018). Based on the proposed construction equipment list and industry-wide noise reference levels, the estimated maximum composite construction noise level for the Project is 83 dBA at a distance of 50 feet from the work site (EMA, 2012a) (FHA, 2006). Additionally, noise from trucks, commuter vehicles, and other on-road equipment, which would mainly be along streets and access roads, would produce short term levels of approximately 68 dBA at 50 feet from the source (FTA, 2018).

During a typical day, equipment would not be operated continuously at peak levels. While the average noise levels on-site could exceed the 75 dBA Leq construction noise standard established

by County of Imperial for General Industrial Zones, noise would attenuate to levels below the threshold with increasing distance until it reaches the nearest sensitive receptors. To abate noise pollution, the applicant would install mufflers on engine-driven equipment during both construction and development operations. Additionally, the applicant would implement an exhaust emissions control program during Project construction, which would include, but not limited to, engine maintenance, and procedures to minimize emissions that would assist in reducing noise. Generally, exhaust emission control programs include the minimization of unnecessary vehicle and equipment idling time either by shutting equipment off when not in use or reducing idling time. Therefore, it is anticipated that construction noise would be reduced from the estimated peak levels.

Most of the project construction would be located within the area of the well pad approximately 0.6-miles or more away from the nearest residential noise receptor along Pound Road. As shown on Table 5-1, construction noise levels would attenuate from 83 dBA at 50 feet from the source to 47 dBA at the closest residential receptor due to geometric spreading of sound energy. Therefore, all calculated noise levels would fall within the normally acceptable range of the guidance set forth in the County of Imperial General Plan Noise Element.

Table 5-1: Construction Noise Levels

Sensitive Receptor	Source Level @ 50-Feet (dBA)	Approximate Distance to Project Site Property Line	Noise Reduction Due to Distance (dBA)	Resultant Noise Level at Sensitive Receptor (dBA)
Residence	83	0.6-miles northeast	-36	47
			County of Imperial Threshold	75
			IMPACT?	**NO**

The Hudson Ranch I Additional Geothermal Well drilling would take more time than those established by the County of Imperial construction noise standards. Drilling operations would occur 24 hours a day, 7 days a week. However, the Imperial County Land Use Ordinance (Division 17) includes general drilling standards specific to geothermal projects. This ordinance allows for drilling on a 24-hour basis, provided the County-specified noise control measures (Land Use Ordinance 91702.01, Sections B, D, M, O, and S) are implemented. The Project proponent will be required to implement these measures in order to comply with the local applicable standards.

The Hudson Ranch I Additional Geothermal Well construction schedule is based on a 10-hour/day, 7-days/week basis. This implies that the proposed Project may exceed the County Noise Element's construction limits for construction on Saturdays, when the allowed construction time is limited to 8 hours, and on Sunday, when no construction is allowed. Therefore, the proposed Project will be

required to comply with all applicable noise control measures contained in the County General Plan Noise Element and Noise Abatement and Control Ordinance. In addition, the Project will be required to comply with the standards of Division 17 (Geothermal) of the County's Land Use Ordinance, which include specific noise control measures associated with geothermal well drilling.

Based on the County of Imperial's Noise Element of the General Plan, construction noise from a single piece of equipment or a combination of equipment, shall not exceed 75 dB L_{eq}, when averaged over an eight (8) hour period, and measured at the nearest sensitive receptor. This standard assumes a construction period, relative to an individual sensitive receptor of days or weeks. In cases of extended length construction times, the standard may be tightened so as not to exceed 75 dB L_{eq} when averaged over a one (1) hour period. Since the nearest receptors are located over a half mile from the construction, the 75 dBA in a one hour period is not anticipated to be exceeded as can be seen in Table 5-1 above. Therefore, the project may request to work outside the normal construction hours.

5.3 Construction Vibration

The County has not yet adopted vibration criteria. The United States Department of Transportation Federal Transit Administration (FTA) provides criteria for acceptable levels of groundborne vibration for various types of special buildings that are sensitive to vibration. For purposes of identifying potential project-related vibration impacts, the FTA criteria will be used.

The FTA has determined vibration levels that would cause annoyance to a substantial number of people and potential damage to building structures. The FTA criterion for vibration induced structural damage is 0.20 in/sec for the peak particle velocity (PPV). Project construction activities would result in PPV levels below the FTA's criteria for vibration induced structural damage. The FTA criterion for infrequent vibration induced annoyance is 80 Vibration Velocity (VdB) for residential uses. Construction activities would generate levels of vibration that would not exceed the FTA criteria for nuisance for nearby residential uses.

There are no vibration-sensitive uses located adjacent to the proposed construction. The nearest residential use is located over 0.6-miles from any construction activities. Table 5-2 lists the average vibration levels that could be experienced at adjacent land uses from the temporary construction activities at a distance of 100-feet. Project construction activities are located a minimum of 0.6-miles away, therefore, would not result in vibration induced structural damage or vibration induced annoyance to adjacent land uses. Therefore, vibration impacts would be less than significant.

Table 5-2: Vibration Levels from Construction Activities

Equipment	Approximate Velocity Level at 25 Feet (VdB)	Approximate RMS Velocity at 25 Feet (in/sec)	Approximate Velocity Level at 100 Feet (VdB)	Approximate RMS Velocity at 100 Feet (in/sec)
Small bulldozer	58	0.003	40.0	0.0004
Jackhammer	79	0.035	61.0	0.0044
Loaded trucks	86	0.076	68.0	0.0095
Large bulldozer	87	0.089	69.0	0.0111
		FTA Criteria	80	0.2
		Significant Impact?	**No**	**No**

[1] PPV at Distance D = PPVref x $(25/D)^{1.5}$

5.4 Construction Conclusions

As can be seen in Table 5-1, at a distance of 0.6-miles from the residential property, the point source noise attenuation from construction activities is reduced 36 dBA to a level of approximately 47 dBA. This would result in an anticipated worst case eight-hour average combined noise level well below 75 dBA at the property line. Given this, the noise levels will comply with the County of Imperial's 75 dBA standard at all Project property lines and no impacts are anticipated.

There are no vibration-sensitive uses located adjacent to the proposed construction. The nearest residential use is located over 0.6-miles from any construction activities. Therefore, project construction activities would not result in vibration induced structural damage or vibration induced annoyance to adjacent land uses. Therefore, vibration impacts would be less than significant.

6.0 OPERATIONAL NOISE

6.1 Guidelines for the Determination of Significance

The County Ordinance, Title 9, Division 7 (Noise Abatement and Control) states it is unlawful for any person to make or cause any noise to the extent that the one-hour average sound level, at any point on or beyond the boundaries of their property exceeds the applicable limits provided above in Table 3-1. The project and surrounding land uses to the east and south are designated as Industrial with a Zoning Designation of M-2-G-PE. The surrounding land uses to the north and west are designated as Agricultural with a Zoning Designation of S-1-G. The nearest residence is located 0.6-miles northeast along Pound Road.

Section 90702.00 of the Noise Ordinance sets a sound level limit of 50 dBA Leq for daytime hours of 7 a.m. to 10 p.m. and 45 dBA Leq during the noise sensitive nighttime hours of 10 p.m. to 7 a.m. for residential noise sensitive land uses. The proposed Project components are expected to operate during both daytime and nighttime hours and therefore the most restrictive and conservative approach is to apply the 45 dBA Leq nighttime standard at the property lines.

6.2 Potential Operational Noise Impacts

This section examines the potential stationary noise source impacts associated with the operation of the proposed Project. Primary noise sources at the additional well pad would include testing and monitoring which would require pumps and power generators. Operational noise levels for the operating wells were obtained from the Hudson Ranch Power II and Simbol Calipatria II Noise Study (Hudson Ranch Power II and Simbol Calipatria II Final EIR, 2012). The Final EIR gathered noise level measurements from the Hudson Ranch I geothermal power plant. Based on noise levels referenced during the operation of production wells 13-2 and 13-3 at the HR-1 Project, the average maximum operational noise level from production wells would be approximately 58 dBA at 50 feet.

The nearest project property line is located as close as 0.6-miles from the sensitive residential receptor to the northeast. This would result in a noise level at the closest receptor of approximately 22 dBA, which would be below the County Property Line Noise Standards. Additionally, the Hudson Ranch I Additional Geothermal Well will be required to comply with the County Land Use Ordinance 91702.01(B), which limits drilling noise to a sound level equivalent to CNEL 60 dBA as measured at the nearest human receptor location outside the parcel boundary. This level may be exceeded by 10% if the noise is intermittent and during daylight hours.

Table 6-1 provides an estimate of the projected noise levels from the proposed Hudson Ranch I Additional Geothermal Well Project operations at the nearest sensitive receptor. As presented in the table, operating sound levels from the Hudson Ranch I Additional Geothermal Well Project is

estimated to be below 45 dBA at the closest sensitive receptors.

Table 6-1: Operational Noise Levels

Sensitive Receptor	Source Level @ 50-Feet (dBA)	Approximate Distance to Project Site Property Line	Noise Reduction Due to Distance (dBA)	Resultant Noise Level at Sensitive Receptor (dBA)
Residence	58	0.6-miles southeast	-36	22
			County of Imperial Threshold	45
			IMPACT?	**NO**

Implementation of the Hudson Ranch I Additional Geothermal Well Project would not result in a substantial increase in ambient noise levels at off-site noise-sensitive receptors or exceed the County of Imperial Property Line Noise Standards (50 dBA daytime and 45 dBA nighttime for Residential Zones) and the applicable Noise/Land Use Compatibility criteria. Based on reported noise levels from similar operations, it is anticipated that noise levels would not exceed the County property line noise limits at the closest sensitive receptors. Therefore, operational noise impacts would be less than significant.

6.3 Conclusions

Based on the empirical data and the distances to the property lines the unshielded noise levels from the proposed equipment were found to be below the County's most restrictive nighttime property line standard of 45 dBA. No impacts are anticipated and no mitigation is required.

7.0 TRANSPORTATION NOISE

According to the Project proponent, as many as ten tractor-trailer truck trips may be generated during active drilling operations on the busiest day, although on average about two to three large tractor-trailer trucks and about 12 to 16 small trucks will be driven to the well pad each day throughout the typical 60-day drilling process.

Access to the Project will be via State Route 111 (SR-111) to the east and either Hazard Road or McDonald Road. The existing average daily traffic (ADT) volumes on SR-111 is several thousand ADT. Typically, it requires a project to double (or add 100%) the traffic volumes to have a direct impact of 3 dBA CNEL or be a major contributor to the cumulative traffic volumes. The project will add less than a 1% increase to SR-111 volumes. Hazard Road and McDonald Road are unpaved west of SR-111 to the Project site and experience minimal traffic. The Project has the potential to impact noise levels along these roadways, however, no sensitive uses exist along these roadway segments. Therefore, no direct or cumulative impacts are anticipated.

8.0 REFERENCES

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