

**United States Department of the Interior
Bureau of Land Management
Bakersfield Field Office**

Environmental Assessment

**Holmes Western Oil Corporation
Ten Applications for Permit to Drill in Midway Sunset
DOI-BLM-CA-C060-2024-0060-EA**

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Chapter 1. Introduction

1.1 Background

On 17 October 2022, the Bureau of Land Management (BLM) Bakersfield Field Office (BKFO) received ten (10) Applications for Permit to Drill (APD) from Holmes Western Oil Corporation (Holmes Western).

Proposed Wells: USL 17-143, USL 17-146, USL 17-147, USL 17-148, USL 17-149, USL 17-151, USL 17-152, USL 17-153, USL 17-154, and USL 17-155

Oilfield: Midway Sunset Oilfield

Mineral Lease: CALA0164691

Section/Township/Range: S17, T11N, R23W, San Bernadino Meridian (SBM)

County: Kern County, CA

This Environmental Assessment (EA) has been prepared in compliance with the National Environmental Policy Act (NEPA); relevant federal and state laws and regulations; and BLM policy.¹ The purpose of this document is to analyze and disclose expected environmental consequences of the proposed action.

1.2 Purpose and Need

The BLM's purpose for the proposed action is to respond to the APDs. The BLM's need is created by its responsibility to allow reasonable access to develop federal oil and gas leases. This responsibility is established by the following laws and regulations:

- Mineral Leasing Act of 1920, as amended
- Mining and Minerals Policy Act of 1970
- Federal Land Policy and Management Act of 1976
- National Materials and Minerals Policy
- Research and Development Act of 1980
- Federal Onshore Oil and Gas Leasing Reform Act of 1987

1.3 Conformance with BLM Land Use Plans

Land Use Plan: Bakersfield Resource Management Plan (RMP)

Date Approved: December 22, 2014

The BLM has reviewed the proposed action for conformance with the Bakersfield RMP and determined the proposed action is specifically provided for in the following land use plan objective:

¹ The BLM is aware of the November 12, 2024 decision in *Marin Audubon Society v. Federal Aviation Administration*, No. 23-1067 (D.C. Cir. Nov. 12, 2024). To the extent that a court may conclude that the Council on Environmental Quality (CEQ) regulations implementing NEPA are not judicially enforceable or binding on this agency action, the BLM has nonetheless elected to follow those regulations at 40 C.F.R. Parts 1500– 1508, in addition to the DOI's procedures/regulations implementing NEPA at 43 CFR Part 46, to meet the agency's obligations under NEPA, 42 U.S.C. §§ 4321 et seq.

MM-O-1 “Facilitate reasonable, economical, and environmentally sound exploration and development of leasable minerals while minimizing impacts to other resources” (BLM, 2014; pg 75).

The proposed action is located on a lease issued prior to the 2014 Bakersfield RMP. The 2014 Bakersfield RMP recognizes all valid existing rights (BLM, 2014; pg 1). Therefore, the project conforms to the Bakersfield RMP.

1.4 Relationship to Statutes, Regulations and Related Plans

Oil and Gas Laws and Regulations

The BLM manages lands that contain a number of extractable minerals including oil and gas, which are managed in accordance with the *Mineral Leasing Act* of 1920, as amended; the *Mining and Minerals Policy Act* of 1970; the *Federal Onshore Oil and Gas Leasing Reform Act* of 1987; 43 CFR Part 3160-Onshore Oil and Gas Operations (including Onshore Orders 1, 2, 6, and 7) and 43 CFR Part 3170-Onshore Oil and Gas Production; the *Energy Policy Act* of 2005; and other laws, regulations, orders, and also in accordance with all applicable state, county, and local laws and ordinances. BLM requires existing lessees to strictly adhere to all laws, regulations, and policies that govern oil and gas leases, while at the same time recognizing that existing leases grant the lessee certain rights. No additional requirements can be placed on an existing lessee that conflict with the rights already granted, however the lessee may elect to commit to new measures discussed with BLM.

Onshore Order No. 1 identifies the requirements necessary for approving proposed oil and gas exploration, development, and servicing of wells on all Federal and Indian oil and gas leases. This includes all components required for the management of fluid minerals including completed Form 3160-3, well plat, drilling plan, surface use plan, bonding, operator certificate, onsite inspection, processing, reclamation, and Sundry Notices. Onshore Order No. 1 also identifies processing timelines and the valid period of approvals. Onshore Order No. 2 provides requirements and standards for drilling and abandonment. 43 CFR 3173 establishes standards to ensure that oil and gas are properly and securely handled to prevent loss and theft, and to enable accurate measurement and production accountability. 43 CFR 3174 establishes minimum standards for the accurate measurement of all oil. 43 CFR 3175 establishes minimum standards for the accurate measurement of gas. Onshore Order No. 6 provides the requirements and standards for conducting oil and gas operations in an environment known to or expected to contain hydrogen sulfide (H₂S) gas. Onshore Order No. 7 provides the methods and approvals necessary to dispose of produced water associated with oil and gas operations.

Endangered Species Act

The Endangered Species Act of 1973 (ESA) requires federal agencies to complete consultation with the United States Fish and Wildlife Service (FWS) for actions which “may affect” a federally listed species or designated critical habitat. The ESA also requires federal agencies to use their authorities to carry out programs for the conservation of endangered and threatened species.

Clean Air Act

The San Joaquin Valley Air Pollution Control District (SJVAPCD) has state air quality jurisdiction over the project area. The San Joaquin Valley is classified as nonattainment for ozone and PM_{2.5}.

Section 176(c) of the Clean Air Act (CAA), as amended (42 U.S.C. 7401 et seq.) and Regulations 40 CFR Part 93, Subpart B (with respect to conformity of general Federal actions to the applicable State Implementation Plan (SIP)) apply to projects within nonattainment and maintenance areas. Under those authorities “no department, agency or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license or permit, or approve any activity which does not conform to an applicable implementation plan.” Under CAA 176(c) and 40 CFR Part 93 Subpart B, a federal agency must make a determination that a Federal action conforms to the applicable implementation plan before the action is taken.

National Historic Preservation Act of 1966, as amended

Section 106 of the National Historic Preservation Act (NHPA) requires agencies to make a reasonable and good faith effort to identify historic properties that may be affected by an agency’s undertakings and take those effects into account in making decisions. The BLM process for implementing this NHPA requirement is set forth in the *State Protocol Agreement Among the California State Director of the Bureau of Land Management and the California State Preservation Officer and the Nevada State Historic Preservation Officer (2019)*. Pursuant to 36 CFR 800.8(a), the BLM has coordinated compliance with Section 106 and its implementing regulations at 36 CFR 800 with the steps taken to meet the requirements of the National Environmental Policy Act (NEPA).

Paleontological Resources Preservation Act (PRPA)

This Act was passed as part of the Omnibus Public Lands Management Act of 2009 as directed in 16 USC 470aaa-3 and requires Interior agencies to manage and protect paleontological resources on Federal land. This includes developing plans for the inventory, monitoring, and scientific and educational use of paleontological resources. The Act also describes criteria for issuing permits to collect and study paleontological resources on Federal land.

Clean Water Act

The Clean Water Act of 1977 establishes authority to regulate any action where pollutants may be discharged into waters of the United States. Section 303 of the federal Clean Water Act requires states to adopt water quality standards that “consist of the designated uses of the navigable waters involved and the water quality criteria for such waters based upon such uses.” In California, these water quality standards and the administrative policies and procedures for protecting state waters are disclosed in regional water quality control board basin plans. These basin plans establish standards for groundwater in addition to surface waters, unlike the federal program.

The Clean Water Act also established the National Pollutant Discharge Elimination System (NPDES) permit program, regulating point source discharges of pollutants into waters of the United States. Section 402 of the Clean Water Act provides that storm water discharges associated with industrial activity and construction must be authorized under a NPDES permit. Clearing, grading, and excavation projects that disturb more than one acre are required to obtain a NPDES storm water discharge permit under United States Environmental Protection Agency (EPA) regulations, though certain regulations (e.g., 40 CFR parts 122.26 (a)(2), (e)(8), and (c)(1)(iii)) codify exemptions for oil and gas operations. Section 404 of the Clean Water Act establishes the authority to issue permits for dredged or fill material.

Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) of 1974 regulates the nation's public drinking water supply to protect public health. SDWA authorizes the EPA to set national health-based standards for drinking water to protect against both naturally occurring and man-made contaminants that may be found in drinking water.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) of 1976 establishes a regulatory structure for the management and disposal of solid and hazardous wastes. Solid wastes consist of any discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities. Solid wastes include both hazardous and nonhazardous waste. A waste may be considered hazardous if it is ignitable, corrosive, reactive, or contains certain amounts of toxic chemicals. Subtitle C of RCRA creates a cradle-to-grave management system for hazardous waste, governing the generation, transportation, treatment, storage, and disposal of hazardous wastes. Subtitle D regulates the management of nonhazardous solid waste, establishing minimum federal technical standards and guidelines for state solid waste plans to promote environmentally sound management of solid waste.

Oil and gas exploration and production (E&P) wastes that are intrinsically derived from primary field operations are exempt from Subtitle C hazardous waste regulations, although Subtitle D, other federal regulations, and state regulations still apply. Exempt E&P wastes include any produced fluids or waste otherwise generated by contact with the oil and gas production stream during the removal of produced water or other contaminants from the product. Some specific E&P wastes designated as exempt include produced water, drilling fluids, drill cuttings, rig-wash, work-over wastes, and well completion, treatment, and stimulation fluids. Examples of non-exempt wastes include unused fracturing fluids or acids, waste solvents, used equipment lubricating oils, and caustic or acid cleaners.

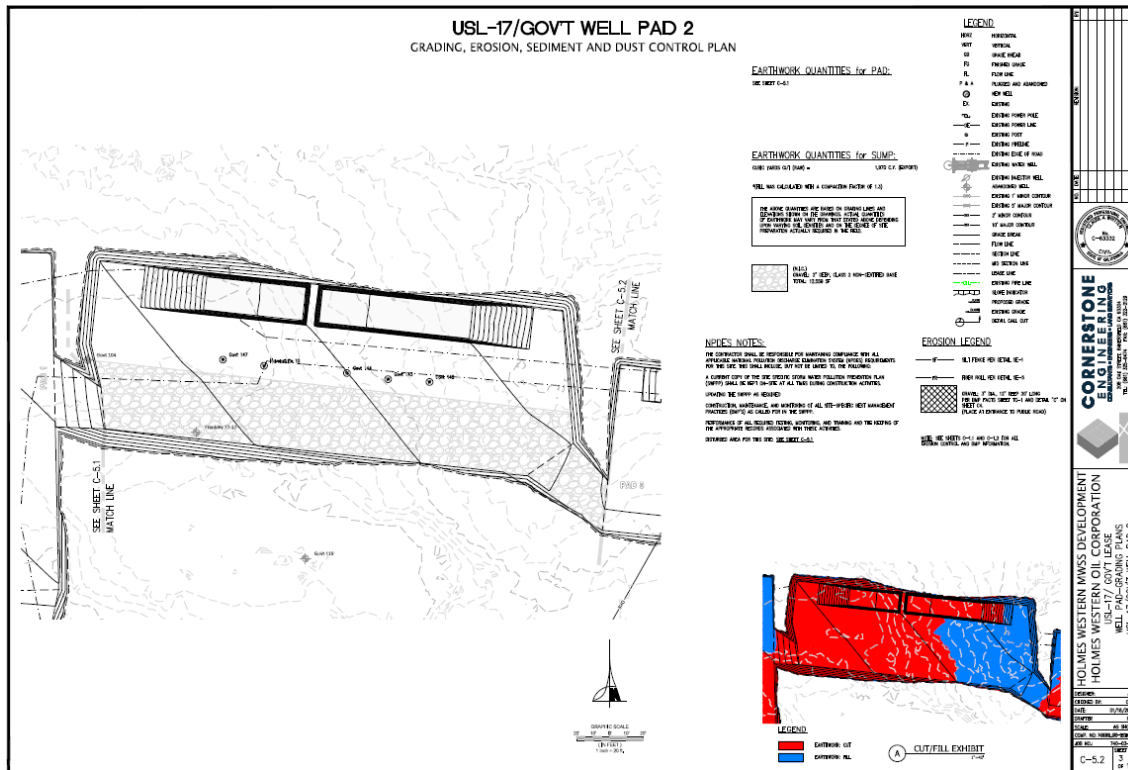


Figure 2.2 Well Pad 2.

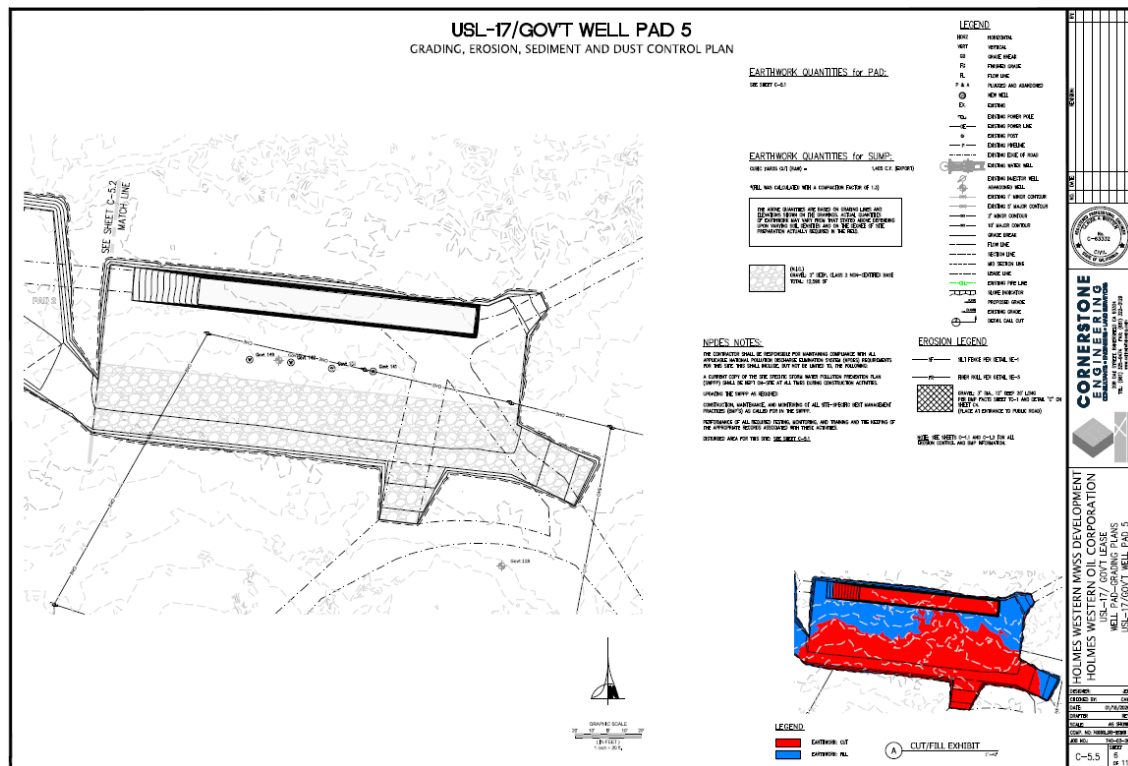
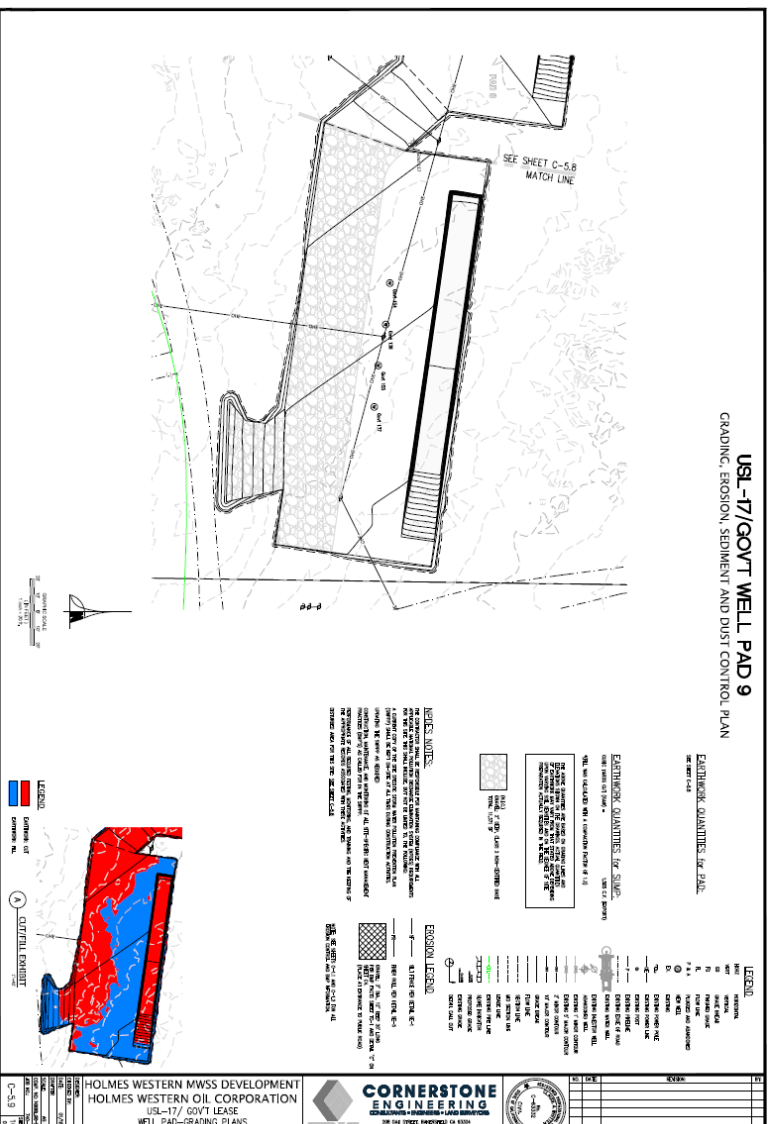
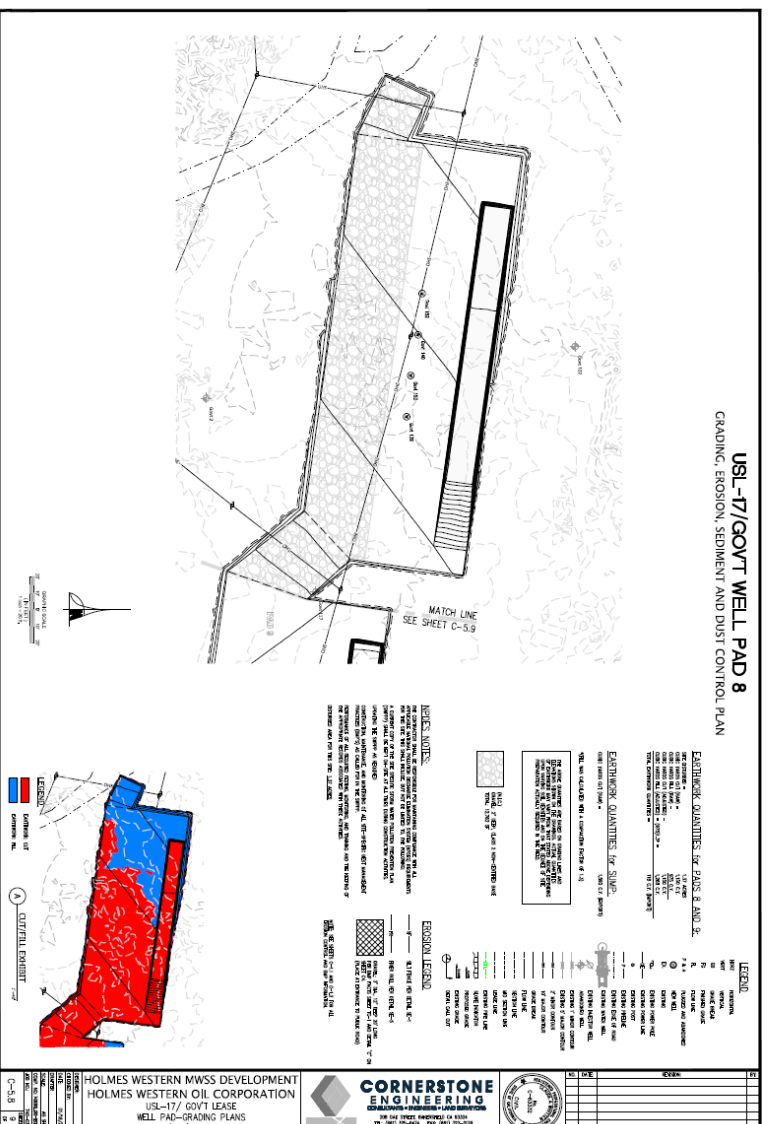


Figure 2.3 Well Pad 5.



Disturbance and Reclamation

Holmes Western will only use existing, previously disturbed areas to avoid new surface disturbance and minimize potential impacts to listed species (**Figure 2.6**). No new habitat disturbance is included in the proposed action. No temporary disturbance is proposed, and no off-road travel will be required to install the pipelines associated with the wells. After drilling and completions, Holmes Western will reclaim unused portions of the well location which are no longer necessary for use.

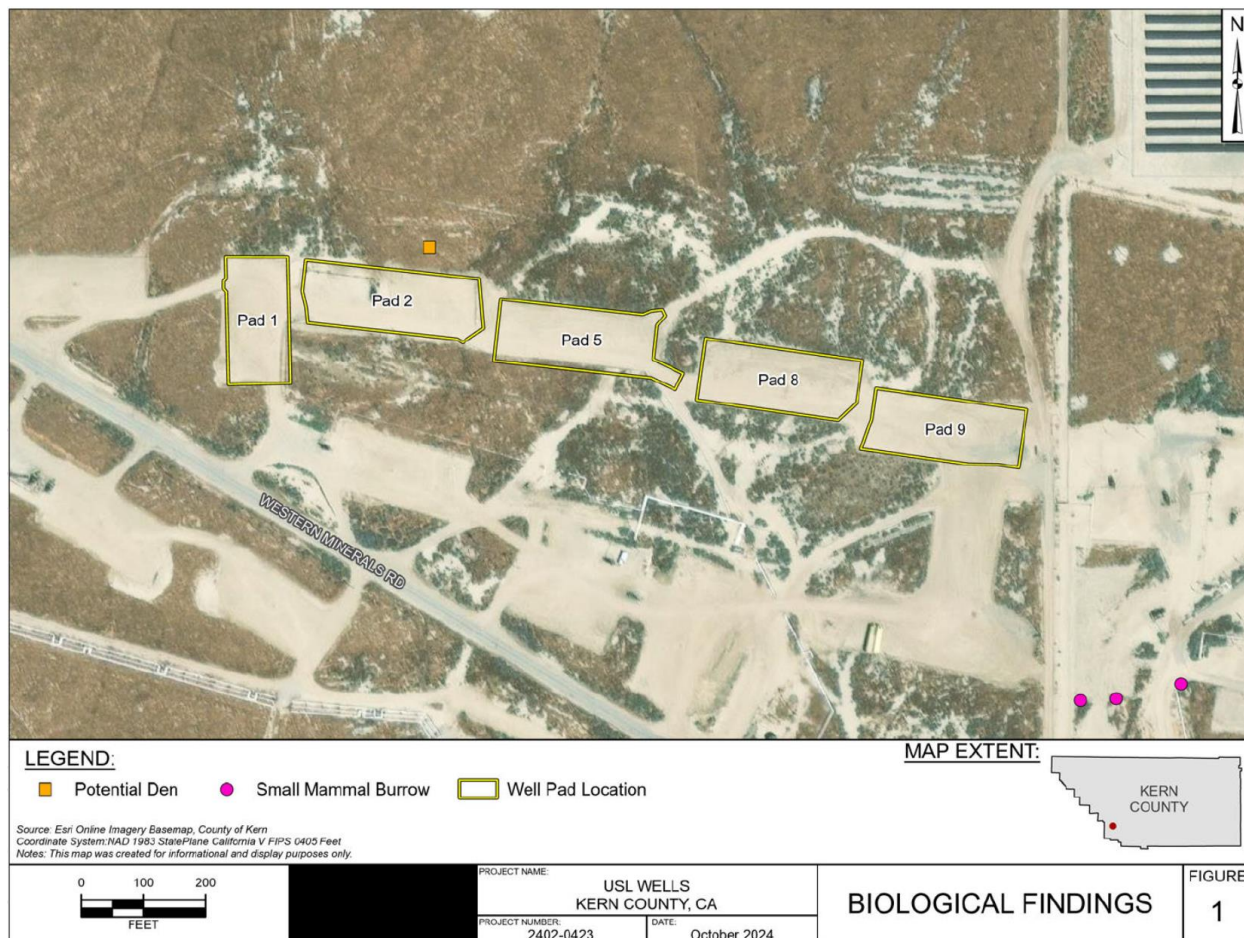


Figure 2.6. Aerial photograph of the project site.

Revegetation of side slopes or areas not required for operation and maintenance (O&M) activities will be achieved using native seed supplied by the BLM. Reseeding will be performed to coincide with the rainy season (October to April). Existing access roads that are open cut to install the pipelines will be scheduled where rain is not anticipated within 24-48 hours of the proposed work. Further, trenches will not be left open greater than 48 hours and after the pipeline is installed, the trench will be backfilled and compacted for continued use as an oilfield lease road.

Water Use

Holmes Western proposes to use approximately 1,500 barrels of fresh water for drilling and dust abatement per well. All water would be obtained from a private municipal fresh water meter in Section 5, T11N, R23W and trucked to the project site. Fresh water would be applied to the surface

for dust abatement and used during the drilling phase for intermediate/production casing, and surface casing. Holmes Western has provided the BLM, and the BLM has reviewed, a copy of the NOA (Notice of Applicability) of Water Quality Order 2003-0003-DWQ issued by the regional water board to Holmes Western for sump use and burying well bore cuttings. During well drilling, Holmes Western proposes to use the West Kern Water District acquired water to create a non-hazardous, water-based drilling mud for drilling operations. Excess drilling mud and well bore cuttings would be disposed of on-site in a reserve pit (sump) measuring approximately 200 feet by 20 feet and 10 feet in depth. Drilling water would be allowed to evaporate from the sump while well bore cuttings would remain. Prior to pit closure, testing would be conducted to confirm the mixture is non-hazardous. The sump would be closed in accordance with the NOA.

Drilling Technologies

Holmes Western proposes to use current best available technologies to drill and complete the proposed well; modern controls and monitoring would be in place to prevent failures of mechanical well integrity. All aspects of well completions and design are conducted according to American Petroleum Institute standards whereby specifications and recommended practices are detailed to ensure mechanical well integrity. For these reasons, well failures are not anticipated in the new wells proposed in the Midway Sunset Oilfield. Holmes Western has stated that there is no intention (and there is no authorization to conduct) well stimulation activities regulated by California Senate Bill No. 4 (hydraulic fracturing, matrix or fracture acidization) on the proposed wells.

Design Features

The Design Features of this proposed project are outlined in **Appendix 1**. These Design Features serve as the Conditions of Approval (COAs) addressing various aspects crucial to the project's execution and environmental impact. These COAs encompass considerations for biological, cultural, and paleontological resources, as well as construction and interim reclamation procedures. Additionally, they detail management strategies and outline plans for final reclamation efforts. These COAs ensure that the proposed action adheres to regulatory standards and mitigates potential adverse effects on the surrounding ecosystem and community.

2.2 Alternative 2 (No Action)

Under this alternative, BLM would not approve the ten APDs submitted by Holmes Western. By denying the applications, the federal lessee/operator would be denied the opportunity or right to develop and produce the federal mineral estate. Not approving this action would not affect demand for petroleum products. Any new oil and gas development required to meet demand would be carried out by drilling a well or wells in some other location.

Chapter 3. Affected Environment & Environmental Impacts

This chapter includes brief descriptions of the physical and regulatory environment for elements that may be affected by the proposed action as well as an analysis of the environmental impacts of the Proposed Action and No Action Alternatives.

Issues Considered but Eliminated from Further Analysis

The following elements of the human environment were considered but determined to be either not present or unaffected by the proposed action and will therefore not be addressed further in this analysis:

- This project location does not occur within a designated Area of Critical Environmental Concern or National Conservation Lands.
- The project does not contain essential fish habitat, and there are no wetlands or riparian zones in the project area.
- The proposed project would not affect recreational experience as it occurs within a BLM administered oil and gas lease that does not currently attract recreational use, nor is it anticipated to attract significant recreational use in the future.
- Visual resources would not be impacted since the project occurs within a Class IV Visual Resource Management area that is not visible from any main access road or highway and is not likely to attract attention.
- Pursuant to Section 106 of the National Historic Preservation Act, BLM Archaeologists conducted an assessment to determine whether the proposed undertaking would adversely affect historic properties. Assessment included a review of Bakersfield Field Office cultural program records. A Class III cultural resources inventory was conducted in 2013 which included the Area of Potential Effect (APE) for the ten proposed well locations (BLM Cultural Resource Inventory Report # LLCAC06000-979). No cultural resources were identified within the proposed project Area of Potential Effect (APE). Therefore, no additional investigation or mitigation required.
- Certified letters containing maps and a description of development activities that would occur within the project area for the 10 wells was mailed to Native American Tribes affiliated with the project area in 2013 (Tribal Notification Letter 13-28). No recipient provided a response to requesting consultation or further information regarding the proposed project.

Issues for Detailed Analysis

- How would emissions generated by construction activities (e.g., generation of dust, burning of diesel) and subsequent operation of the well impact air quality?
- How would emissions generated by construction activities, subsequent operation of the well, and downstream use of the produced petroleum contribute to increases in Green House Gases (GHGs) (CO₂e) impact climate change?
- How would construction activities (e.g., drill rig noise, vehicle traffic), ongoing operations (e.g., vehicle traffic) and habitat disturbance impact threatened and endangered species?
- How would construction activities (e.g., grading, drilling) impact soil productivity and erodibility?
- How would drilling through aquifers impact drinkable groundwater? How would construction and operations activities (potential for erosion, sediment carry, spills and

leaks) impact surface water? How would the use of water for drilling and dust abatement impact availability of fresh water for other beneficial uses?

- How would air quality impacts and climate change contributions from the project affect low income and minority populations? How would the creation of jobs and additional revenue impact the local community?

3.1 Air Quality

3.1.1 Affected Environment

Air quality and related health impacts are driven by pollutant concentrations in the air. Pollutant concentrations depend primarily on the rate at which pollutants are emitted within an air basin or its co-located air district or counties. If pollutants are emitted at a higher rate than natural processes (such as rainfall, atmospheric chemical reactions, absorption on surfaces, or respiration) can remove them, air quality decreases.

The air resources analysis area for the proposed project area is the San Joaquin Valley Air Basin. At the state level, Clean Air Act (CAA) regulatory and enforcement duties lie with the California Air Resources Board (CARB) and regional or county air districts. At the federal level, the EPA has statutory authority under the CAA. The San Joaquin Valley Air Pollution Control District (SJVAPCD) is co-located with air basin, and SJVAPCD and CARB have been delegated CAA jurisdiction over it. The BLM does not have any statutory authority under the Clean Air Act and may not overrule agencies that do (16-285 - State of Wyoming et al v. United States Department of the Interior et al) but rather analyzes air resources impacts as part of NEPA analysis to inform approval of projects on Public Lands and to demonstrate compliance with Clean Air Act (CAA) General Conformity regulations.

The federal Clean Air Act (CAA), as amended, and the California Clean Air Act (CCAA) are the primary laws related to air quality. Provisions of the federal CAA that apply to BLM actions include the National Ambient Air Quality Standards (NAAQS), nonattainment area designation, rules that are part of state implementation plans (SIPs), air permitting including prevention of significant deterioration (PSD) and New Source Review (NSR), air toxics rules, and General Conformity. The EPA, CARB, and regional air districts have all issued rules to implement federal and state Clean Air Acts and SIPs.

EPA has identified seven criteria pollutants as indicators of air quality and has established for each of them a threshold concentration above which adverse effects on human health and the environment may occur. These threshold concentrations are called National Ambient Air Quality Standards (NAAQS) (<https://www.epa.gov/criteria-air-pollutants>). One set of limits (primary standard) protects health; another set of limits (secondary standard) is intended to prevent environmental and property damage. Under the federal CAA, the EPA has established NAAQS for: ozone, respirable particulate matter (PM₁₀), fine particulate matter (PM_{2.5}), carbon monoxide, nitrogen dioxide, lead, and sulfur dioxide. California has established state Ambient Air Quality Standards for the same criteria pollutants, plus an additional three pollutants (visibility reducing particulates, sulfates, and hydrogen sulfide). A geographic area that meets the primary standard is called an attainment area; areas that do not meet the primary standard are called nonattainment areas (<https://www.epa.gov/clean-air-act-overview>).

The SJVAPCD operates and maintains a network of air monitoring sites throughout the eight counties of the San Joaquin Valley Air Basin so that air quality can be compared to the NAAQS. In addition, CARB, the National Park Service, and tribal nations also operate air monitoring stations. In total, 38 air monitoring sites are currently in operation in the San Joaquin Valley. Data from these stations is used to calculate the EPA air quality index (AQI) within the SJVAPCD so criteria pollutant levels can be reported to the public in real time (<https://www.airnow.gov/>). The AQI is one way to evaluate how clean or polluted an area's air is and whether associated health effects could be a concern. When the AQI value is between 0 and 50 (green), air quality is categorized as “good” and criteria air pollutants pose little or no risk. AQI between 51 and 100 (yellow) indicates moderate air quality posing little risk. An AQI of 100 indicates at least one pollutant is at the NAAQS concentration threshold. AQI values between 101 and 150 (orange) indicates a pollutant concentration above the NAAQS and air quality that might be unhealthy for sensitive groups. AQI values higher than 150 means generally unhealthy (red), very unhealthy (purple), or hazardous (maroon) air quality. The average number of days per year in each SJVAPCD county over a five-year period (2018-2022) for each AQI category is presented in Table 3.1.

Table 3.1 SJVAPCD Five-Year Average Air Quality by County as shown by AQI, 2018 - 2022 (average days per year)

County	Good Days	Moderate Days	Unhealthy for Sensitive Groups Days	Generally Unhealthy Days	Very Unhealthy Days	Hazardous Days
Fresno	99.2 / 27.9%	166.2 / 46.7%	59.2 / 16.6%	14.8 / 4.2%	1.4	0
Kern	81.6 / 23.1%	151.4 / 42.9%	81.2 / 23.0%	18.8 / 5.3%	0.8	0.4
Kings	105.6 / 29.4%	197.2 / 54.8%	42.0 / 11.7%	7.4 / 2.1%	0	0.8
Madera	141.0 / 43.8%	147.6 / 45.8%	21.4 / 6.6%	5.8 / 1.8%	0.4	0
Merced	156.4 / 49.6%	130.8 / 41.5%	17.8 / 5.6%	5.2 / 1.6%	0	0
San Joaquin	176.2 / 52.8%	133.4 / 40.0%	13.0 / 3.9%	5.4 / 1.6%	0.4	0.2
Stanislaus	150.6 / 44.7%	146.6 / 43.6%	24.8 / 7.4%	7.2 / 2.1%	0.2	0
Tulare	85.4 / 24.1%	145.8 / 41.2%	82.6 / 23.3%	19.8 / 5.6%	0.8	0.2

Source: EPA Annual AQI Summary Data by County. (https://aq5.epa.gov/aq5web/airdata/download_files.html#Annual)

The data show that low air quality presents some health risk to residents throughout the air district and basin, and air quality in the most impacted counties exceeds at least one NAAQS on about one-third of days. These conditions have resulted in the district being designated as a federal non-attainment area for PM_{2.5} and ozone under the NAAQS. Air quality has improved in some ways over recent years and the district has recently been designated as a federal maintenance area for PM₁₀. Ozone is created in the atmosphere by a reaction involving nitrogen oxides (NO_x), VOCs, and sunlight. Based on the EPA designations, the primary pollutants of concern for the Project area are NO_x and VOC (ozone), PM₁₀, and PM_{2.5}. The remaining criteria pollutants are either unclassified or in attainment with the NAAQS.

There are ongoing efforts to improve air quality in the SJVAPCD led by agencies with Clean Air Act authority. The proposed project area is within the EPA Pacific Southwest Region 9 Planning Area; a State Implementation Plan (SIP) has been prepared for the planning area, which identifies sources of emissions and control measures to reduce emissions. The SJVAPCD has implemented these control measures by issuing District rules. In 2016, CARB updated the State Strategy for

achieving emissions reductions toward bringing these areas into attainment with federal standards for ozone and PM_{2.5}. A San Joaquin Valley Supplement to the 2016 State Strategy was adopted in October 2018.

District air quality plans that have been adopted and are relevant to the proposed Project include the *SJVAPCD 2016 Ozone Plan*, *2013 Plan for the Revoked 1-Hour Ozone Standard*, *2022 Plan for the 2015 8-Hour Ozone Standard*, *2018 PM_{2.5} Plan*, and *2007 PM₁₀ Maintenance Plan*. EPA reclassified the District to Serious PM_{2.5} nonattainment, effective December 2021. Following the reclassification, the District must submit a Serious Plan to reduce PM_{2.5} concentrations to EPA by December 31, 2023. These plans outline the strategy for achieving federal air quality standards by specific dates and identify control measures to reduce criteria pollutant emissions. Control measures identified in the *2007 Ozone Plan* reduce ozone precursor emissions, NO_x and Volatile Organic Compounds (VOCs). Particulate matter attainment strategies include control measures to reduce dust from unpaved roads and construction activities.

Applicable SJVAPCD Rules to Implement Air Quality Plans

Once air quality attainment demonstration Plans are adopted, the reductions necessary to meet the respective reduction mandates contained in the Plan(s) are achieved through prohibitory rules implemented through the SIP. Compliance with applicable Rules, Regulations, and land use and zoning requirements ensures continued movement towards achieving the SJVAPCD attainment goals. Examples of SJVAPCD rules that may be applicable to the proposed project are described below.

Rule 2280 (Portable Equipment Registration): Certain portable emissions units would be required for well drilling, service or workover rigs, pumps, compressors, generators, and field flares.

Rule 4101(Visible Emissions): The purpose of this rule is to prohibit the emissions of visible air contaminants to the atmosphere.

Rule 4401 (Steam-Enhanced Crude Oil Production Wells): The purpose of this rule is to limit the VOC emissions from steam-enhanced crude oil production wells.

Rule 4402 (Crude Oil Production Sumps): The purpose of this rule is to limit VOC emissions from sumps.

Rule 4623 (Storage of Organic Liquids): The purpose of this rule is to limit VOC emissions from the storage of organic liquids.

Regulation VIII (Fugitive PM₁₀ Prohibitions): The purpose of Regulation VIII is to reduce ambient concentrations of particulate matter (PM₁₀) by requiring actions to prevent, reduce, or mitigate anthropogenic fugitive dust emissions. Regulation VIII rules pertinent to the proposed project include, but are not limited to, the following:

Rule 8021 (Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities): This rule limits fugitive dust emissions (PM₁₀) from construction, demolition, excavation, extraction, and other earthmoving activities. This rule applies to any such activity and other earthmoving activities, including, but not limited to, land clearing, grubbing, scraping, travel on-site, and travel on access roads to and from the site.

Rule 8031 (Bulk Materials): The purpose of this rule is to limit fugitive dust emissions from the outdoor handling, storage, and transport of bulk materials.

The BLM does not have authority to issue or enforce CAA rules; however, the BLM supports the actions of CAA-authorized agencies and encourages rule compliance on Public Lands.

Air Emission Sources

There are many sources of criteria pollutants in the SJVAPCD. Table 3.2 presents 2020 criteria pollutant emissions as estimated by the EPA, along with the percent contributed by each source category.

Table 3.2 Sources of Criteria Pollutants in the SJVAPCD, 2020

Source	tons per year	%
Wildfire	1,715,443	78.70%
Mobile Sources	250,812	11.51%
Agriculture	108,753	4.99%
Solvent Use	29,293	1.34%
Waste Disposal	25,789	1.18%
Residential Fuel Combustion	21,576	0.99%
Commercial and Industrial Fuel Use	11,014	0.51%
Industrial Processes other than Petroleum and Natural Gas	8,164	0.37%
Oil & Gas Production	5,370	0.25%
Commercial Cooking	2,507	0.12%
Oil & Gas Midstream (transportation, refining, gas stations)	1,142	0.05%
Total	2,179,863	100%

Source: EPA. 2020 National Emissions Inventory (NEI) Online 2020 NEI Data Retrieval Tool. <https://www.epa.gov/air-emissions-inventories/2020-air-emissions-data>

As shown in Table 3.2, fires, mobile sources (cars, trucks, construction equipment), and agriculture caused about 95% of the air pollution in the SJVAPCD in 2020. For comparison, the previous NEI, which inventoried emissions for 2017, showed the same top three categories as sources for about 96% of SJVAPCD emission with wildfire the source of 76%. Oil & Gas Production operations and related Oil & Gas infrastructure were the source of about 0.30% of air pollution. Well construction emissions fall under the Mobile Sources category and the EPA did not separate them out in their analysis. BLM estimates that cumulative criteria pollutant emissions from all well construction approved on BLM California Public Land since the beginning of Fiscal Year 2024 plus the proposed action would total to 12.23 tons and would have represented about 0.005% of total mobile source criteria pollutant emissions in 2020. More information on the relationship between potential air emissions related to the proposed action and total emissions in the SJVAPCD are presented in the cumulative impacts analysis in Section 4.2.1.

Hazardous Air Pollutants

CAA regulations also address the release of hazardous air pollutants (HAPs): chemicals that are known or suspected to cause cancer or other serious health effects, such as reproductive effects, birth defects, or adverse environmental effects. In addition to federally listed HAPs, California also regulates State-identified Toxic Air Contaminants (TACs). HAPS and TACs are referred to as air toxics. EPA currently lists 189 compounds as HAPs, some of which, such as benzene,

toluene, and formaldehyde, can be emitted from oil and gas development operations. NAAQS have not been set for HAPs; rather HAP emissions are controlled by source type- or industrial sector-specific regulations through National Emission Standards for Hazardous Air Pollutants (NESHAPs). Hydrogen sulfide (H₂S) gas is not regulated under the NAAQS or as a HAP. However, it is known to be hazardous, and is monitored for worker health and safety at oil and gas sites.

Table 3.3 presents 2020 total HAP emissions in the SJVAPCD as estimated by the EPA, along with the percent of total HAPs from each source category.

Table 3.3 Sources of Hazardous Air Pollutants in the SJVAPCD Counties, 2020

Source	tons per year	%
Wildfire	49,160	74.04%
Agriculture	7,561	11.39%
Mobile Sources	5,791	8.72%
Solvent Use	2,494	3.76%
Residential Fuel Combustion	804	1.21%
Waste Disposal	374	0.56%
Oil & Gas Midstream	92	0.14%
Oil & Gas Production	62	0.09%
Industrial Processes other than Petroleum and Natural Gas	40	0.06%
Commercial and Industrial Fuel Use	21	0.03%
Commercial Cooking	0	0.00%
Total	66,398	100%

Source: EPA. 2020 National Emissions Inventory (NEI) Online 2020 NEI Data Retrieval Tool. <https://www.epa.gov/air-emissions-inventories/2020-air-emissions-data>

Similar to criteria pollutants, the top three categories emitted 94% of all HAPs in 2020, with solvent use making up more than half of the remain 6%. Oil & Gas Production operations and related Oil & Gas infrastructure were the source of about 0.23% of HAP emissions in the air basin. As with criteria pollutants, well construction HAP emissions are included with mobile sources. Cumulative HAP emissions from all well construction approved on BLM California Public Land since the beginning of Fiscal Year 2024 plus the proposed action would totaled 0.23 tons and would have represented about 0.0039% of total mobile source criteria pollutant emissions in 2020. According to the EPA EJScreen mapping tool (<https://ejscreen.epa.gov/mapper/>), SJVAPCD overall shows air toxics cancer risk and air toxics hazard index below the 50th percentile and air toxic releases to air in the 40th percentile. More information on the relationship between potential HAP emissions related to the proposed action and HAP health risks in the SJVAPCD are presented in the cumulative impacts analysis in Section 4.2.1.

General Conformity

The classification of any area as a federal nonattainment and/or maintenance area brings an additional requirement for federal agencies. Section 176(c) of the CAA, as amended (42 U.S.C. 7401 et seq.), and regulations under 40 CFR, Part 93, Subpart B, state that “no department, agency or instrumentality of the federal Government shall engage in, support in any way or provide financial assistance for, license or permit, or approve any activity which does not conform to an applicable implementation plan.” This means that under the CAA 176(c) and 40 CFR, Part 93,

Subpart B (conformity rules), federal agencies must make a determination that proposed actions in federal nonattainment areas conform to the applicable EPA approved implementation plans (if pertinent) before the action is taken. See the heading General Conformity heading in Chapter 4 below for related analysis.

3.1.2 Environmental Impacts

The proposed project would result in generation of air pollutants, including the three criteria pollutants (ozone, PM₁₀, and PM_{2.5}) for which the San Joaquin Valley Air Basin has non-attainment or maintenance designations. Project-related emissions are divided into the following categories for purposes of analysis:

- **Well Development** emissions occur on the leased well site during site preparation, well drilling and construction, and production testing. Emission sources include: diesel drilling rig engines, drill pad construction equipment (i.e., dozers, backhoe, grader, etc.), equipment trucks, water trucks, drill rig crew trucks/vehicles, and portable lift equipment; worker commuting and material deliveries; and fugitive dust emissions as a result of soil disturbance and vehicle traffic on unpaved surfaces. The 10 proposed wells will not undergo fracking or any other post drilling treatments and no treatment-related emissions are expected.
- **Production** emissions occur at the leased well site and include travel for daily inspections. Criteria pollutants or hazardous air pollutants could also occur through venting or fugitive losses during maintenance, emissions from use of chemicals, and leakage from valves, fittings, piping, and the well head.
- **Mid-Stream** emissions occur away from the well site and include emissions from transportation and processing of produced fluids after they leave the wellhead and before crude oil enters a pipeline to a refinery. For the proposed action, a portion of mid-stream emissions related to the project come from an oil and gas handling facility, Facility S-1626. This facility processes fluids from multiple wells. It is subject to a set of CAA New Source Review air permits issued by the SJVAPCD and is not part of the APD. Air emissions from Facility S-1626 and other midstream operations farther removed from the proposed well sites are monitored, regulated, limited, and mitigated by the SJVAPCD and CARB through the SIP under EPA oversight. Therefore, midstream emissions related to the proposed action are not expected to affect the NAAQS status of the SJVAPCD.
- **End-Use** emissions come from the refining of crude oil produced from the proposed wells and its eventual consumption as petroleum fuels and other products. Air emissions related to petroleum refining and consumption are regulated by air districts and CARB in California and by EPA and delegated state and local agencies in the rest of the country and are outside of BLM jurisdiction. There are many possibilities for the processing and consumption of oil produced and the specific transportation, processing, and consumption of any barrel of oil produced are not reasonably foreseeable. Potential end-use emissions related to the proposed action are estimated by representing produced crude oil as the equivalent volume of gasoline refined and consumed in cars in the SJVAPCD as modeled by the Argonne National Laboratory Greenhouse gases, Regulated Emissions, and Energy use in Technologies (GREET) Well-to-Wheels (WTW) calculator.

Air emissions from the ten proposed wells are reduced or mitigated by the following factors:

- CARB and SJVAPCD have established and enforce rules and permitting, inspection and monitoring requirements that reduce or mitigate emissions from the proposed wells.
- The proposed wells will not undergo hydraulic fracturing or other well stimulation processes.
- These wells are not expected to produce natural gas.

General Conformity

The General Conformity rule applies to individual decisions, excluding leases, and does not include any provision requiring cumulative analysis. Where the Federal Action is a permit, license, or approval for some aspect of a non-Federal undertaking, such as drilling and operating oil wells on Public Land, the relevant activity is the part, portion, or phase of the non-Federal undertaking that requires the Federal permit, license, or approval. General Conformity applicability analysis is required for direct and indirect criteria pollutant emissions meeting the following conditions: 1) they are caused by the Federal action; 2) the agency (BLM) has a practical way to impose controls on them; 3) they are not subject to a CAA new source review permit. Based on these conditions, the BLM has determined that Well Development and Production Operation emissions are subject to General Conformity applicability analysis. Table 3.4 compares subject emissions of nonattainment pollutants with the General Conformity *de minimis* thresholds for the SJVAPCD to complete the applicability analysis.

Table 3.4 General Conformity Applicability Analysis (tons per year)

Activity	PM₁₀	PM_{2.5}	VOC	NO_x
Well Development (Max)	2.79	0.32	0.16	2.13
Well Development (Average)	0.09	0.01	0.01	0.07
Production Operations (Max)	0.03	0.03	5.55	3.54
Production Operations (Average)	0.03	0.03	5.55	3.54
Maximum Annual Total	2.82	0.35	5.71	5.68
Average Year Total	0.12	0.04	5.56	3.62
Federal Conformity <i>De Minimis</i> Threshold	100	70	10	10

Source: Attachment 1 - 2024 APD Emissions Tool HW USL 17 v2022.c

As shown in the table, maximum estimated well development and production emissions from the 10 proposed wells combined are below the *de minimis* threshold for each nonattainment criteria pollutant. This means that project emissions are expected to be consistent with the SIP and that a formal conformity determination under 40 CFR Part 93.153 is not required. Since the emissions conform to the SIP, they would not be likely to cause or contribute to an exceedance of the NAAQS or impair the ongoing SIP-based efforts to bring the SJVAPCD into attainment.

Potential for Criteria Pollutant Impacts

Table 3.5 presents estimated highest annual emissions of each criteria pollutant and total HAPs related to the project in the context of emissions of the same pollutants in the SJVAPCD and the State of California.

Table 3.5 Estimated Maximum Annual Emissions related to Well Development, Production Operations, Mid-stream, and End-use with context (tons per year)

Activity	PM ₁₀	PM _{2.5}	VOC	NO _x	CO	SO ₂	HAPs
Well Development	2.8	0.3	0.2	2.1	1.1	0.0	0.0
Production Operations	0.0	0.0	5.6	3.5	2.5	0.0	0.3
Mid-Stream ¹	8.0	5.4	17.9	32.7	16.4	21.0	4.2
End-Use ^{2,4}	22.2	4.8	147.7	52.9	1760.7	1.3	14.8
Total	33.0	10.5	171.2	91.3	1780.6	22.3	19.3
Total Pollutants of Concern	306.0						
Context							
SJVAPCD - Annual ³	187,145	125,056	365,612	86,815	1,404,148	11,086	130,320
Context Pollutants of Concern	764,628						
California - Annual ³	867,341	667,424	3,620,907	477,283	8,545,507	60,853	533,537

1 - Midstream emissions estimated as the GREET WTW Calculator Well to Pump (WTP) emissions, minus the average site-specific well operations emissions estimated by BLM for all pollutants except PM₁₀ and PM_{2.5}. These emissions come largely from facilities that require a permit issued by the SJVAPCD or other California air districts under the new source review (NSR) program and the applicable SIP or from vehicles over which BLM has no authority to impose controls. BLM does not have practical control or continuing program responsibility over these emissions.

2 - End use emissions estimated based on an equivalent volume of gasoline used as modeled by Argonne National Laboratory 2022. GREET WTW Calculator (<https://greet.es.anl.gov/tools>). BLM does not have practical control or continuing program responsibility over these emissions.

3 - Total annual pollutant emissions for the SJVAPCD, and the State of California reported by EPA in the 2020 National Emission Inventory (<https://www.epa.gov/air-emissions-inventories/2020-national-emissions-inventory-nei-data>)

4- End-Use HAP emissions estimated as 1/10th of VOC emissions

As shown in Table 3.5, total emissions of pollutants of concern for the Project area (PM₁₀, PM_{2.5}, VOC, and NO_x) would add up to 306.0 tons or less each year. Total 2020 emissions of the same pollutants in SJVAPCD add up to 764,628.4 tons per year. This means total project-related well development, production related, midstream, and end-use criteria pollutant emissions would make up at most 0.04% of pollutant of concern emissions in SJVAPCD compared to 2020 emissions levels. (306.0 / 764,628.4 = 0.04%).

In addition to the General Conformity *de minimis* thresholds, the AQI can also illustrate the potential for the proposed emissions to have an impact on air quality. AQI generally increases with increasing pollutant emissions, but the relationship between AQI and emissions is complex, meaning that a change in emissions may not result in the same amount of change in the AQI. However, for discussion purposes we can consider that the 0.04 percent emissions increase described in the preceding paragraph would cause only a negligible increase in the AQI. In fact, it appears likely that the AQI change would be less than one point (1% of the AQI at the NAAQS concentration). The AQI is designed so that it takes a 50- or 100-point change to indicate a significant change in health risk. In fact, the EPA determined that changes less than one are not even large enough to report. This example illustrates the conclusion that the small pollutant of concern increase related to the project (0.04 percent) would have a negligible effect on air quality or on air-quality-related impacts.

As described in Section 3.1.1, CARB and the SJVAPCD have been delegated CAA authority by the EPA to monitor and manage air quality in California. There are several SJVAPCD rules that

would minimize air quality impacts related to the proposed action, such as Rules 2280, 4101, 4401, 4402, 8021, and 8031. For example, applicant compliance with Regulation VIII (Rules 8021 and 8031) would minimize particulate emissions by requiring proponents to water unpaved access roads in the project area and to water soils prior to excavation and trenching and during backfilling while compacting. Proponent compliance with Rule 2280 would ensure that ROG/VOC and NOx emissions from portable units, such as the drilling rig, would be evaluated per the SJVAPCD's calculation methodologies, and any increase in emissions would be fully offset during the air permitting process. Current and proposed CARB rules limit emissions from cars, trucks, and construction equipment. Implementation of these existing and proposed regulatory requirements would mitigate the increase in potential emissions related to the proposed project.

Potential for Hazardous Air Pollutant / Toxic Air Contaminant Impacts

As described above, well development and oil production may result in HAP/TAC emissions. The two most prevalent-oil-well related TACs are hydrogen sulfide and diesel exhaust (diesel particulate matter or DPM). The specific HAP compounds and the amounts of these compounds emitted depend on the HAP content of the produced oil as well as well development and management techniques. The wells proposed in this project will not undergo hydraulic fracturing or other well stimulation procedures and so HAP/TAC emissions are limited to HAPs contained in the produced fluids and emitted by construction and workover equipment.

Estimated representative HAP/TAC emissions from the proposed wells are presented in Table 3.6. HAP/TAC emissions of the same compounds for the SJVAPCD and the State of California from the EPA National Emissions Inventory are also provided as context. Because of the many different transportation, processing, and end use possibilities for crude oil produced in SJVAPCD, it is not feasible to estimate detailed midstream or end-use HAP and TAC emissions related to the proposed action. However, these emissions are presented as total project HAP in Table 3.5 above.

Table 3.6 Estimated Maximum Air Toxic (HAP/TAC) Emissions from Well Development and Production Operations by Compound with Context (pounds)

HAP/TAC¹	Well Development	Production Operations	SJVAPCD⁵	State of California⁵
Diesel Exhaust Particulate^{1,2,3}	35.520	23.840	not reported	35,770,000.0
Hydrogen Sulfide⁴	0.000	63.503	not reported	3,177,200.0
1,3-Butadiene	0.014	0.000	3,074,981.5	16,757,041.4
Acetaldehyde	0.266	2.683	28,897,627.9	153,052,607.7
Acrolein	0.032	2.683	5,301,966.5	27,906,697.3
Benzene	0.323	15.543	6,050,289.2	34,948,871.6
Ethyl benzene	0.000	2.300	651,263.9	5,276,991.9
Formaldehyde	0.409	6.325	40,477,090.2	224,160,324.8
Naphthalene	0.029	0.036	5,110,731.3	27,543,187.3
Polycyclic Organic Matter (POM)	0.000	0.010	5,773,741.1	5,773,741.1
Propylene	0.894	114.992	not reported	not reported
Toluene	0.142	15.099	7,496,955.6	50,895,027.0
Xylene	0.099	31.086	5,926,484.8	39,317,295.8

Total Pounds	37.728	278.098	108,761,132	585,631,786
Total Tons	0.02	0.14	54,381	292,816

1- for more information on the health effects of listed HAPs see: EPA. *Health Effects Notebook for Hazardous Air Pollutants*.

<https://www.epa.gov/haps/health-effects-notebook-hazardous-air-pollutants>

Emission estimates were based on AP-42 Table 3.2 emission factors. Compound emission factors indicated in Table 3.4-2 of EPA - EMISSION FACTOR DOCUMENTATION FOR AP-42 SECTION 3.2, NATURAL GAS-FIRED RECIPROCATING ENGINES.

Alpha-Gamma Technologies, Inc. July 2000 as having emission factors based solely on methode detection limts were excluded as speculative.

2 - Production Operations DPM emissions estimated by proponent based on exected well maintenance and workover activities)

3- CA statewide emissions source: CARB. Almanac 2013 – Chapter 2: Current Emissions and Air Quality, page 2-6. 2013.

<https://ww2.arb.ca.gov/sites/default/files/2021-01/chap213.pdf>

4- H₂S emissions estimated by project proponent. For more information on sulfur dioxide health effects see:

<https://ww2.arb.ca.gov/resources/hydrogen-sulfide-and-health>. H₂S is is not a federally listed HAP and is not included in the HAP emission totals presented in Table 4.1.

5 - Annual HAP emissions for the SJVAPCD, and the State of California reported by EPA in the 2020 National Emission Inventory (<https://www.epa.gov/air-emissions-inventories/2020-national-emissions-inventory-nei-data>). Total H₂S emissions for California from the 2010 California Toxic Inventory (cti-2010.xlsx) <https://ww2.arb.ca.gov/sites/default/files/2023-07/cti-2010.xlsx>

BLM has considered air toxic (HAP and TAC) emissions from the proposed action in several ways to assess their potential for impacts:

- Beginning in the 1990s EPA studied oil exploration and production operations to determine if oil and gas exploration and production HAP emission impacts were significant enough to require regulation under the National Emission Standards for Hazardous Air Pollutants (NESHAP). Oil and gas production NESHAP rules and rule revisions were promulgated in 1999, 2001, 2007, and 2012. To date, only one type of oil exploration and production equipment, glycol dehydrators, has been identified as a significant source of HAP emissions requiring regulation. No glycol dehydrators or any other new processing operations are proposed as part of the project. BLM reviewed the EPA rulemaking and data on HAP emissions from representative single oil wells and found that in each case HAP emissions were below the threshold requiring controls under the NESHAP.
- The SJVAPCD includes a large number and variety of HAP and TAC emission sources including highways (a major source of diesel exhaust particulate), factories, and chemical facilities (See Table 3.3 above). Estimated maximum HAP and TAC emissions from the proposed action are 315.8 pounds per year. That would represent 0.000012% of the 130,320 tons (260,640,807 pounds) of HAP and TAC emissions reported in the SJVAPCD in 2020. Because emissions from the proposed wells are very small, the estimated wellsite emissions would not be expected to increase current HAP or TAC health impacts in the SJVAPCD.
- The State of California oversees a statewide program required by AB2588 that includes air toxics emissions reporting and health risk assessment covering air toxic sources, including sources in the midstream and end-use supply chain related to the proposed wells. The program includes a computer modeling package designed to allow facility operators to perform a basic air toxics risk prioritization. The package is called the Hotspots Analysis and Reporting Program Emission Inventory Module (HARP). HARP models air toxic concentrations at the nearest receptor to a facility being assessed and provides a prioritization score for use by air districts in determining whether that facility should conduct further risk assessment or further reporting. The SJVAPCD also provides a

prioritization score calculator to use for screening analysis and interprets prioritization scores as follows:

Prioritization	Prioritization Score	Outcome
Low Priority	$\text{Prioritization} \leq 1$	Exempt from further requirements
Intermediate Priority	$1 < \text{Prioritization} \leq 10$	Facility updates report every four years
High Priority	$10 < \text{Prioritization}$	Facility required to report a Health Risk Assessment

Well Development and production operation emissions from the 10 proposed wells were each entered into SJVAPCD Air Toxics Hot Spots Facility Prioritization Score Calculator (https://ww2.valleyair.org/media/shpectx4/prioritization_2023_air_toxic_hot_spots.xls) and so were analyzed as if originating at a single location. Combining sources into a single location increases the modeled concentration at the receptor as so overestimates risk. Even so, the HARP prioritization score for the ten proposed wells combined had a maximum value of 3.29 at two potential residences identified on satellite imagery as located within 1,000 meters of the nearest well site. This score is below the level where a Health Risk Assessment would be required and indicated no need for further analysis. BLM has reviewed the AB2588 program and concurs that it adequately assesses and informs the public on air toxic health risks.

No Action:

There would be no new impacts to air quality under the No Action Alternative because the proposed wells would not be drilled. Ongoing air quality issues and impacts described in Chapter 3 above would remain the same in absence of the proposed project.

3.2 Climate Change

3.2.1 Affected Environment

Climate change is a global process that is affected by the sum total of GHGs in the Earth's atmosphere. The incremental contribution to global GHGs from a single proposed land management action cannot be accurately translated into its potential effect on global climate change or any localized effects in the area specific to the action. Currently, global climate models are unable to forecast local or regional effects on resources as a result of specific emissions. However, there are general projections regarding potential impacts on natural resources and plant and animal species that may be attributed to climate change resulting from the accumulation of GHG emissions over time. GHGs influence the global climate by increasing the amount of solar energy retained by land, water bodies, and the atmosphere. GHGs can have long atmospheric lifetimes, which allows them to become well mixed and uniformly distributed over the entirety of the Earth's surface no matter their point of origin. Therefore, potential emissions resulting from the proposed action can be compared to state, national and global GHG emission totals to provide context of their potential contribution to climate change impacts.

Further discussion of climate change science and predicted impacts, as well as the reasonably foreseeable and cumulative GHG emissions associated with BLM's oil and gas leasing actions, are included in the *BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends* (BLM, 2023) (hereinafter referred to as the Annual GHG Report). This report presents the estimated emissions of greenhouse gases attributable to development and consumption of fossil fuels produced on lands and mineral estate managed by the BLM. The Annual GHG Report is

incorporated by reference as an integral part of this analysis and is available at <https://www.blm.gov/content/ghg/2022/>.

Table 3.7 shows Global, National and State GHG emissions data for 2018 - 2022. GHG emissions include emissions from fossil fuel use across all sectors (residential, commercial, industrial, transportation, and electricity generation) as well as other source categories such as waste management.

Table 3.7 Global and U.S. GHG Emissions 2018 - 2022 (Mt CO₂/yr)

Scale	2018	2019	2020	2021	2022
Global ¹⁻³	51,800	52,600	50,800	52,800	57,400
U.S. ⁴	5,990	5,914	5,250	5,586	6,343
California ⁵	411	405	369	381	NA

Mt = Megatonnes or million metric tons

NA = Not Available

1 - UNEP Emission Gap Report 2018. <https://www.unep.org/resources/emissions-gap-report-2018>

2 - UNEP Emission Gap Report 2019. <https://www.unep.org/resources/emissions-gap-report-2019>

3 - For 2020, 2021 and 2022 - UNEP Emission Gap Report 2022. Table 2.1. <https://www.unep.org/resources/emissions-gap-report-2022>

4 - EPA. Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2022. <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2022>

5- CARB. 2000–2021 GHG Emissions Trends Report Data. https://ww2.arb.ca.gov/sites/default/files/2023-12/2000_2021_ghg_inventory_trends.pdf

The continued increase of anthropogenic GHG emissions over the past 60 years has contributed to global climate change impacts. A discussion of past, current, and projected future climate change impacts is described in Chapters 8 and 9 of the Annual GHG Report. These chapters describe currently observed climate impacts globally, nationally, and in each State, and present a range of projected impact scenarios depending on future GHG emission levels. These chapters are incorporated by reference in this analysis.

Applicable Federal, State, and Local Regulations to Reduce Impacts of Oil and Gas Production on Climate Change

On April 17, 2012, EPA issued Final Air Rules to reduce harmful air pollution from the oil and natural gas industry. In addition, EPA issued final updates to its 2012 VOC performance standard for storage tanks used in crude oil and natural gas production and transmission on August 5, 2013. In addition, on May 12, 2016, EPA issued final rules to reduce emissions of methane, smog-forming volatile organic compounds, and toxic air pollutants from new, reconstructed, and modified oil and gas sources; these final rules established updates to the New Source Performance Standards (NSPS) and the Source Determination Rule. The EPA also requires reporting of greenhouse gases from large GHG emissions sources in the United States through the Greenhouse Gas Reporting Program (GHGRP) (EPA, 2020). The facilities that would be built under the proposed action are not expected to have large enough direct GHG emissions to trigger GHGRP reporting.

The California Legislature passed the California Global Warming Solutions Act of 2006 [Assembly Bill 32 (AB 32)], creating a comprehensive, multi-year program to reduce greenhouse

gas emissions in California. AB 32 requires the reporting of GHGs by major sources, applicable to industrial facilities, fuel suppliers, and electricity reporters. In 2022, CARB issued an updated Scoping Plan to address AB 32 and subsequent legislative actions and policies related to climate change. The 2022 Plan lays out a path to achieve targets for carbon neutrality and reduce anthropogenic greenhouse gas (GHG) emissions by 85 percent below 1990 levels no later than 2045, as directed by Assembly Bill 1279. The Plan intends to achieve significant reductions in fossil fuel combustion by deploying clean technologies and fuels, further reductions in short-lived climate pollutants, support for sustainable development, increased action on natural and working lands to reduce emissions and sequester carbon, and the capture and storage of carbon.

SJVAPCD has developed *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA and District Policy Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA*, intended to be applied to CEQA analysis. Although these policies are only available for CEQA analyses, the air district guidance may be generally applied by land-use agencies for reference. BLM concludes that the SJVAPCD requirement to quantify GHG emissions and to implement SJVAPCD Best Performance Standards to reduce GHG emissions would occur at the APD or Sundry stage, to be analyzed in a site-specific NEPA analysis. Therefore, this environmental assessment includes an analysis of GHG emissions for the proposed action.

3.2.2 Environmental Impacts

Proposed Action:

The proposed action would result in emissions of GHGs that are known to contribute to global climate change. These emissions are associated with combustion sources such as diesel drill and completion/workover rig engines, drill pad construction equipment (i.e., dozers, backhoe, grader, etc.), equipment trucks, water trucks, drill rig crew trucks/vehicles, and portable lift equipment. Emissions of GHGs could also occur through venting or fugitive losses from valves and fittings, pumps, compressors, and the well head.

There are four general phases of post-lease development that would generate GHG emissions: 1) well development (well site construction, well drilling, and well completion), 2) well production operations, 3) mid-stream (processing, refining, storage, and transport/distribution), and 4) end-use (combustion or other uses) of the fuels produced. While well development and production operation emissions occur on-lease and the BLM has program authority over these activities, mid-stream and end-use emissions typically occur off-lease where the BLM has no program authority.

The amount of oil or gas that may be produced by the proposed wells is not known. For purposes of estimating production and end-use emissions, potential wells are assumed to produce oil and gas in similar amounts to existing nearby wells. BLM received initial production estimates from the project proponents to use as a basis for production estimates. While the BLM has no authority to direct or regulate the end-use of the products, for this analysis, the BLM assumes all produced oil or gas will be combusted (such as for domestic heating or energy production). The BLM acknowledges that there may be additional sources of GHG emissions along the distribution, storage, and processing chains (commonly referred to as midstream operations) associated with production from the lease parcels. These sources may include emissions of methane (a more potent GHG than CO₂ in the short term) from pipeline and equipment leaks, storage, and maintenance activities. The specific details on these sources of emissions are highly speculative, therefore, the

BLM has chosen to assume that mid-stream emissions associated with wells for this analysis will be similar to the national level emissions identified by the Department of Energy's National Energy Technology Laboratory (NETL, 2009) (NETL, 2019).

The emission estimates calculated for this analysis were generated using the assumptions previously described above using the BLM APD Emissions Tool. Emissions are presented for each of the four phases of post-lease development described above as follows:

- **Well Development** GHG emissions occur on the leased well site during site preparation, well drilling and construction, and production testing.
- **Production Operations, Mid-stream, and End-Use** emissions occur over the entire production life of a well, which is assumed to be 30 years for this analysis based on the productive life of a typical oil/gas field.
- **Production Operations** emissions result from wellhead operations, fugitives, and vehicle exhaust. Emission sources including storage tank breathing and flashing, truck loading, pump engines, heaters and dehydrators, pneumatic instruments or controls, flaring, and fugitives are located at the North Treatment unit.
- **Mid-stream** emissions occur from the transport, refining, processing, storage, transmission, and distribution of produced oil and gas. Mid-stream emissions are estimated by multiplying the estimated ultimate recovery (EUR) of produced oil and gas with emissions factors from NETL life cycle analysis of U.S. oil and natural gas. Additional information on emission factors can be found in the Annual GHG report (Chapter 6, Tables 6-8 and 6-10).
- For the purposes of this analysis, **End-Use** emissions are calculated assuming all produced oil and gas is combusted for energy use. End-use emissions are estimated by multiplying the EUR of produced oil and gas with emissions factors for combustion established by the EPA (Tables C-1 and C-2 to Subpart C of 40 CFR § 98). Additional information on emission factors and EUR factors can be found in the Annual GHG Report (Chapter 6, Figure 6-3).

Table 3.8 presents the estimated direct (well development and production operations) and indirect (mid-stream and end-use) GHG emissions in metric tons (tonnes) for the subject leases over the average 30-year production life of the lease. Total CO₂e emission estimated on either 100-year or 20-year time frame add up to 0.76 million metric tons (Megatonnes or Mt).

Table 3.8 Estimated Production Life Emissions from Well Development, Production Operations, Mid-stream, and End-use (Metric tonnes)

Activity	CO ₂	CH ₄	N ₂ O	CO ₂ e (100-yr)	CO ₂ e (20-yr)
Well Development	475	0.04	0.006	478	480
Production Operations	23,598	0.61	0.207	23,673	23,705
Mid-Stream	82,701	88.89	1.404	85,733	90,418
End-Use	648,051	26.08	5.216	650,253	651,627
Total	740,382	115.23	6.705	745,646	751,719

Source: BLM APD Emissions Tool

GHG emissions vary annually over the production life of a well due to declining production rates over time. Figure 3.1 below shows the estimated GHG emissions profile over the production life of the proposed wells including well development, well production operations, mid-stream, end-use, and gross (total of well development, well production, mid-stream, and end-use) emissions.

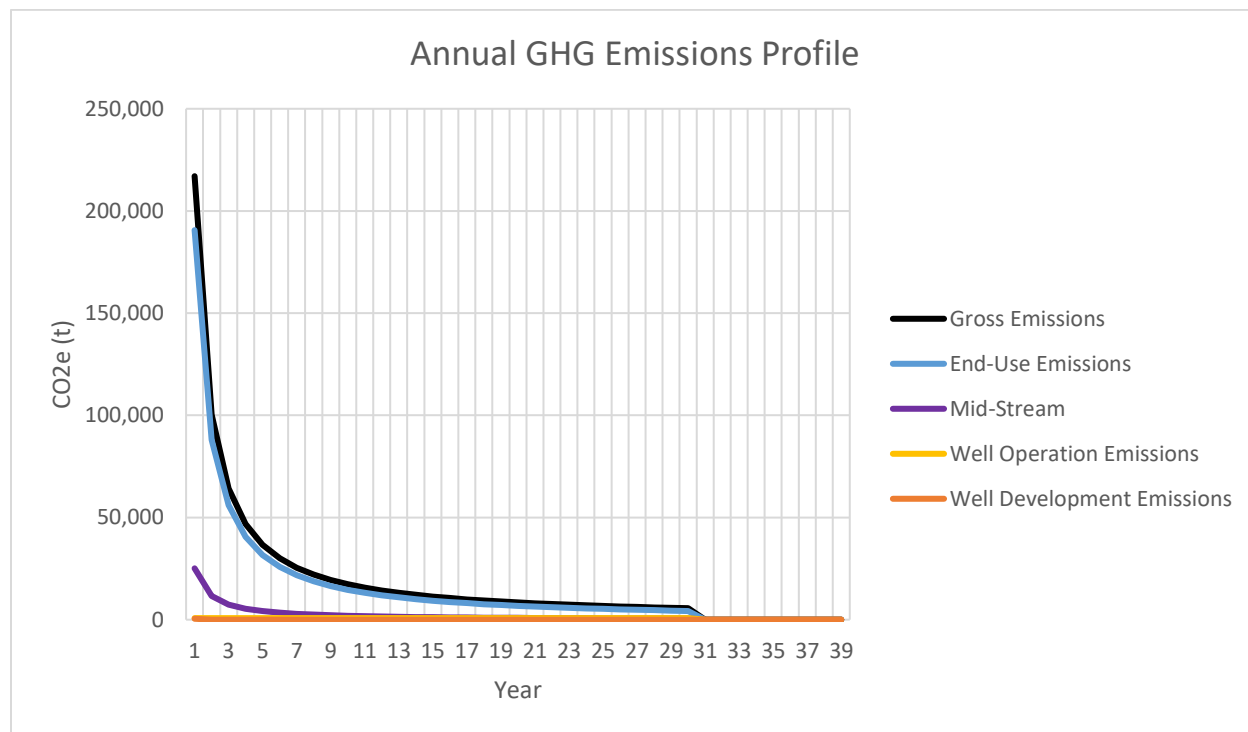


Figure 3.1 Estimated GHG Emissions Profile over the Production Life of the Proposed Wells

Source: BLM APD Emissions Tool

As Figure 3.1 shows, all categories of GHG emissions related to the proposed wells decrease as oil productions declines. Similar decreases occur for midstream and end-use criteria and HAP/TAC emissions.

To put the estimated GHG emissions for the proposed wells in a relatable context, potential emissions that could result can be compared to other common activities that generate GHG emissions and to emissions at the state and national level. The EPA GHG equivalency calculator can be used (<https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>) to express the potential average year GHG emissions on a scale relatable to everyday life. For instance, the projected average annual GHG emissions from potential development (total CO₂e emissions from Table 3.8 divided by 30 years) of the subject lease are equivalent to 5,461 gasoline-fueled passenger vehicles driven for one year, or the emissions that could be avoided by operating 7 wind turbine as an alternative energy source or offset by the carbon sequestration of 30,164 acres of forest land.

Table 3.9 compares emission estimates over the 30-year life of the lease compared to the 30-year projected Federal emissions in the state and nation from existing wells, the development of approved APDs, and emissions related to reasonably foreseeable lease actions.

Table 3.9 Comparison of the Life of Lease Emissions to other Federal Oil and Gas Emissions From Existing Wells, Development of Approved APDs, and Other Leasing Actions in the State and Nation (Mega Tonnes)

Reference	Mt CO ₂ e	Life of Lease % of Reference
Proposed Action - Production Life Total	0.76	100.00%
CA Reasonably Foreseeable Short-Term Onshore Federal (O&G)	51.49	1.476%
CA Projected Long-Term Onshore Federal (O&G)	202.74	0.375%
U.S. Reasonably Foreseeable Short-Term Onshore Federal (O&G)	6,033.00	0.013%
U.S. Projected Long-Term Onshore Federal (O&G)	16,523.00	0.005%

1- Foreseeable Federal short-term and long-term emissions come from the APD Emissions Tool and BLM Specialist Report on Annual Greenhouse Gas Emissions. Tables 7-18 and 7-19.

2 - Short-term projections are based on existing production, approved permits, and potential new leases.

3 - Long-term projections are based on the projections from the U.S. Energy Information Administrations energy outlook.

Compared to emissions from other existing and foreseeable short-term Federal oil and gas development, the life of lease emissions for the Proposed Action is between 0.375% to 1.476% of Federal fossil fuel authorization emissions in the state and between 0.005% to 0.013% of Federal fossil fuel authorization emission in the nation. In summary, potential GHG emissions from the Proposed Action could result in GHG emissions of 0.76 MT CO₂e over the production life of the proposed wells.

The “social cost of carbon”, “social cost of nitrous oxide”, and “social cost of methane” – together, the “social cost of greenhouse gases” (SC-GHG) are estimates of the monetized damages associated with incremental increases in GHG emissions in a given year. Such analysis should not be construed to mean a cost determination is necessary to address potential impacts of GHGs associated with specific alternatives. These numbers were monetized; however, they do not constitute a complete cost-benefit analysis, nor do the SC-GHG numbers present a direct comparison with other impacts analyzed in this document. SC-GHG is provided only as a useful measure of the benefits of GHG emissions reductions to inform agency decision-making. For Federal agencies, the best currently available estimates of the SC-GHG are the interim estimates of the social cost of carbon dioxide (SC-CO₂), methane (SC-CH₄), and nitrous oxide (SC-N₂O) developed by the Interagency Working Group (IWG) on the SC-GHG. Select estimates are published in the Technical Support Document (IWG 2021) and the complete set of annual estimates are available on the Office of Management and Budget’s website.²³

The SC-GHGs associated with estimated emissions from development of the proposed wells are reported in Table 3.10. These estimates represent the present value (from the perspective of 2021) of future market and nonmarket costs associated with CO₂, CH₄, and N₂O emissions from potential well development and operations, and potential end-use, as described in Subsection 1.2.1. Estimates are calculated based on IWG estimates of social cost per metric ton of emissions for a

given emissions year and BLM’s estimates of emissions in each year. They are rounded to the nearest \$1,000.

Table 3.10 SC-GHG Associated with Future Potential Development

	Social Cost of GHGs (2020 \$)			
	Average Value, 5% discount rate	Average Value, 3% discount rate	Average Value, 2.5% discount rate	95 th Percentile Value, 3% discount rate
Development and Operations	\$281,000	\$1,095,000	\$1,667,000	\$3,334,000
Mid-Stream and End-Use	\$10,351,000	\$37,153,000	\$55,578,000	\$111,915,000
Total	\$10,632,000	\$38,248,000	\$57,245,000	\$115,249,000

As detailed in the Annual GHG Report (BLM, 2022), which the BLM has incorporated by reference, the BLM also looked at other tools to inform its analysis, including the MAGICC model (see Section 9.0 of the Annual GHG Report). This model run suggests that “federal minerals emissions are predicted to have minimal impacts to future global climate change through the end of the century.” As this is an assessment of what BLM has projected could come from the entire Federal fossil fuel program, including the projected emissions from the proposed action, over the next 30 years, the reasonably foreseeable lease sale emissions contemplated in this EA are not expected to substantially affect the rate of change in climate effects, bring forth impacts that are not already identified in existing literature, or cause a change in the magnitude of impacts from climate change at the state, national, or global scales.

As shown in Table 3.9, emissions from the proposed action would not significantly change current total GHG emissions or the expected course of climate change in the State, given it is reasonably foreseeable that GHG emissions related to oil production in California will decrease.

In addition, The California Energy Commission (CEC), reported that nearly three-quarters of the crude oil refined in California was imported in 2022. (<https://www.energy.ca.gov/data-reports/energy-almanac/californias-petroleum-market/annual-oil-supply-sources-california>) The fraction of oil imported has increased from half in 2000 to three-quarters today as California production has decreased. Imports are reasonably foreseeable to increase further as California oil production declines and would therefore offset some or all of GHG reductions achieved through reduced in-state production unless demand for petroleum products is reduced. See Section 4.2.1 for further discussion of oil production trends and cumulative impacts related to the proposed action.

No Action:

Under the No Action Alternative, the BLM would not permit the 10 proposed wells. However, the proponent could apply for application to drill at other locations or at future times. Although no new GHG emissions associated with new Federal oil and gas development for the subject leases would occur under the No Action Alternative in the foreseeable future, the cumulative demand for energy is not expected to differ regardless of BLM decision-making (EIA, 2020) and currently observed and projected climate impacts would be expected to continue. The BLM has no information regarding what energy source could fill the energy demand if development does not occur on the subject leases. Although the change in emissions compared to the Proposed Action

could range from a 98.5% decrease if hydroelectricity is substituted to a 110.7% increase if coal is substituted, see Table 10-3 in Section 10.0 of the Annual Report (BLM, 2022). Over the past decade the increasing mix of natural gas has contributed to lower emissions as it has replaced energy produced from coal. In 2022, high prices for natural gas and demand exceeding supply have resulted in some countries reactivating or delaying planned closures of coal fired power plants (Reuters, 2022). In the future, renewable energy is anticipated to become a larger part of the U.S. energy mix and reducing energy related carbon emissions. It has been estimated that with a 35% integration of wind and solar energy into the Western United States electric grid, there would be an additional 25-45% reduction in carbon emissions (BLM 2022). Based on this information there is potential for higher emissions over the short-term and reduced emissions over the long-term. The BLM cannot estimate the net effects across all energy markets to understand the mix of energy resources that will meet demand, and therefore can't provide an estimate of SC-GHG for the No Action Alternative.

3.3 Biological Resources

3.3.1 Affected Environment

The 2014 Bakersfield RMP delineated areas known as “Conserved Lands” with the goal of maintaining suitable amounts of habitat largely undisturbed by development activities. Limiting the amount of habitat (and ground) disturbance allows sufficient habitat to remain intact, keep ecosystem processes functioning properly, and connect viable species populations across the landscape (see Bakersfield Proposed RMP/Final EIS, Appendix B, pp. 771-775). Conserved Lands are subdivided into two components: reserve areas (red zones) and habitat corridors (green zones). Reserve areas are managed with a 10% disturbance limit and habitat corridors are managed with a 25% disturbance limit. The proposed wells would be developed on existing well pads located on BLM federal mineral lease CALA0164691, which encompasses public surface lands that occur within an area identified as a “Green Zone” or wildlife corridor in the Bakersfield RMP and the 1998 *Recovery Plan for Upland Species of the San Joaquin Valley, California* (USFWS, 1998).

Federally listed plant species in the southern San Joaquin Valley include Kern mallow (*Eremalche kernensis*), San Joaquin woolly-threads (*Monolopia congdonii*), California jewelflower (*Caulanthus californicus*), and Bakersfield cactus (*Opuntia basilaris* var. *treleasei*). California jewelflower is not known to naturally exist in Kern County, and Bakersfield cactus is endemic to a limited area of central Kern County in the vicinity of the city of Bakersfield. Federally listed animal species include San Joaquin kit fox (*Vulpes macrotis*), blunt-nosed leopard lizard (*Gambelia sila*), giant kangaroo rat (*Dipodomys ingens*), and Tipton kangaroo rat (*Dipodomys nitratooides*). Additionally, this region contains the State listed San Joaquin antelope squirrel (*Ammospermophilus nelsoni*), which BLM treats as a special status species (SSp.) pursuant to its policy of the same name (BLM 6840). There is no designated critical habitat for any threatened or endangered species on the project site or in the vicinity.

A field survey to identify the potential for the occurrence of these listed species in the general project area was conducted by Magaly Jurado (Padre Associates, Inc) on October 18th, 2024. A project-specific onsite inspection was completed by BLM Natural Resource Specialist Fernando Baños on September 11th, 2024.

The proposed project location is located within non-native annual grassland and valley saltbush scrub habitat that is moderately developed with oilfield infrastructure. Plant species observed on

site include alkali saltbush (*Atriplex polycarpa*), red brome (*Bromus madritensis* ssp. *rubens*), fiddleneck (*Amsinckia menziesii*), totalote (*Centaurea melitesis*), white bursage (*Ambrosia dumosa*), tamarisk (*Tamarix* sp.) and annual sunflower (*Helianthus annuus*). Kern mallow, San Joaquin woolly-threads, California jewelflower, and Bakersfield cactus were not observed in or near the project area. Animal species observed on site include common side-blotched lizard (*Uta stansburiana*), common raven (*Corvus corax*), Bewick's wren (*Thryonmanes bewickii*), and black-tailed jackrabbit (*Lepus californicus*).

The biological surveys found no evidence of giant kangaroo rat (*Dipodomys ingens*) or Tipton kangaroo rat (*Dipodomys nitratoide nitratoide*) in the vicinity of the project sites, nor were there any observations of San Joaquin antelope squirrel (*Ammospermophilus nelsoni*); these species are not known to occur within the project site. There are no California Natural Diversity Data Base (CNDDB) records of these species within the footprint or surrounding areas of the project. In addition, disturbance levels and density of oilfield development make the project area unlikely habitat for these species. This project would not affect giant kangaroo rat, Tipton kangaroo rat, or San Joaquin antelope squirrel.

No species-specific protocol surveys for blunt-nosed leopard lizard (*Gambelia sila*) were carried out. There are no CNDDB records of blunt-nosed leopard lizard within the project footprint or surrounding areas. There are no burrows suitable for use by blunt-nosed leopard lizard within the proposed project site. Due to disturbance levels and density of oilfield development, blunt-nosed leopard lizards are not likely to occur at the project site. This project would not affect the blunt-nosed leopard lizard.

No species-specific protocol surveys for temblor legless lizard (*Anniella alexanderae*) were carried out. There are no CNDDB records of temblor legless lizard within the project footprint or surrounding areas. There are no burrows suitable for use by temblor legless lizard within the proposed project site. Due to disturbance levels and density of oilfield development, temblor legless lizards are not likely to occur at the project site. This project would not affect the temblor legless lizard.

CNDDB records indicate a presumed extant population of San Joaquin kit fox 0.80 miles north, and east of the project footprint and surrounding area in the Midway Sunset. During the biological surveys, one potential San Joaquin kit fox (*Vulpes macrotis*) den was observed within the survey area. However, no individuals or their sign were observed.

3.3.2 Environmental Impacts

Proposed Action:

The proposed project would not disturb federally listed species potential habitat. Based on field surveys, federally listed plant and animal species and their sign (scat, tracks, etc.) are absent from the project footprint and a 250-foot area around the project site, therefore direct impacts, such as vehicle collisions, entrapment in open trenches or sumps, and ingestion of oil field fluids, would not be expected.

Considering that there are no anticipated direct impacts or indirect impacts due to loss of potential habitat, the BLM concludes that the project will have "no effect" on listed species. BLM completed consultation with the U.S. Fish and Wildlife Service on a programmatic basis for oil and gas development in the southern San Joaquin Valley in 2017 (2017 Oil and Gas Programmatic

Biological Opinion 08ESMF00-2016-F-0683, “2017 BO”). Since this project will have “no effect” on listed species, the 2017 BO does not apply to this project. Regardless, applicable minimization measures outlined in the 2017 BO have been included in the proposed project description as Design Features (COAs). Implementation of these measures would further reduce the potential for impacts on both listed and non-listed species.

Additionally, the 2017 BO requires off-site conservation of listed species habitat in perpetuity for projects which disturb potential habitat of listed species. Since the proposed project would not disturb potential habitat of listed species, compensation acres are not required for this project.

No Action:

There would be no impacts to biological resources from the No Action Alternative.

3.4 Paleontological Resources

3.4.1 Affected Environment

Every geologic unit can be assigned a Potential Fossil Yield Classification (PFYC) class based on the probability and abundance of known vertebrate fossils and scientifically significant invertebrate and plant fossils (BLM 2007). The PFYC scheme ranges from very low (PFYC 1) to very high (PFYC 5) depending on the potential fossil yield (BLM 2016). Unknown fossil potential is assigned to geologic units that do not have a clear PFYC assignment (PFYC U). Typically, paleontological resource compliance is required or recommended for earthwork occurring within PFYC classes 3, 4, 5, or U rock units.

The project area is underlain by old alluvial formation deposits (PFYC U). Following the PFYC System of the BLM, a PFYC ranking of Unknown (PFYC Class U) is applied to deposits with old alluvial deposit formations in the study area.

3.4.2 Environmental Impacts

Proposed Action:

The proposed well locations would occur on BLM lands containing BLM administered mineral estate. Federal paleontological compliance requirements for projects conducted under the Mineral Leasing Act are subject to the discretion of the surface landowner. As per BLM guidelines, for projects within PFYC 3 or above locations (including PFYC U), a Paleontological Resource Monitoring & Mitigation Plan is to be followed. Mitigating for adverse effects to paleontological resources is a management practice that preserves resources and accommodates development. This mitigation is required for all project activities on BLM surface or private lands for which federal paleontological compliance requirements have not been waived. A Paleontological Mitigation Plan has been attached to the COAs and will be followed following proposed steps from a Paleontological Resources Survey (Bakersfield Paleontological Resource Inventory Report # 6000-2017-11P). Due to the mitigation measures proposed, the project will have no effect on paleontological resources.

No Action:

There would be no direct impacts to paleontological resources under the no action alternative. Any fossils would stay in place, and there would be no ground disturbance in the area. As a result, there would be no opportunity to study depositional environments or collect fossils where there are no natural exposures. Buried fossils do not provide opportunity for scientific investigation.

3.5 Soil Resources

3.5.1 Affected Environment

There is one soil map unit present in the project footprint:

- **Guijarral gravelly sandy loam, 2 to 5 percent slopes (# 193)** – This soil map unit is present on hillslopes. The typical profile of these soils are fan remnants derived from calcareous sedimentary rock. These soils are well drained and not designated as prime farmland.

Soil Erosion Factors

Soil Map Unit	K Factor*	Wind Erodibility Group**
Guijarral gravelly sandy loam, 2 to 5 percent slopes (#193)	0.24 Moderately low	5 Moderate

*Values of K can range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Guijarral gravelly sandy loam map unit is assigned to wind erodibility group 5. A wind erodibility group consists of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The wind erodibility group provides an indication of how susceptible areas disturbed by construction activities are to wind erosion. Soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.

The project location is within a previously developed oilfield lease with numerous access roads, wells, and facilities such as heater-treaters, pipelines, and power lines. Many of these soils are compacted from vehicle and heavy equipment use, and naturally occurring vegetative cover has been removed. As such, previously disturbed soils within the project area are particularly prone to erosion from water and wind.

3.5.2 Environmental Impacts

Proposed Action:

Soil disturbance would occur as a result of re-clearing and re-grading the existing well pads and existing access roads, staging site construction, and drilling operations. Topsoil and soil horizons would be removed and/or mixed, changing soil-water dynamics and removing nutrients from the project site. In addition, soils would be compacted, which could lead to surface water runoff, sediment carry, and water erosion concerns. Potential for water erosion is moderately low (K factor = 0.24), while there is a moderate potential for erosion from wind at the project site. Holmes Western would minimize and mitigate impacts to soil by conducting interim reclamation utilizing site-specific topsoil on the temporary staging areas, cut and fill slopes, and the sump subsequent to drilling operations, including all practicable measures to minimize erosion and stabilize disturbed soils. Also, Holmes Western would conduct final reclamation at the project site when the wells are abandoned. In addition, Holmes Western would comply with all relevant federal, and applicable state, and local air quality rules and regulations to reduce emissions of particulate matter originating from soil disturbance at the project site.

Holmes Western is required to comply with all relevant federal, and applicable state, and local laws and regulations, including provisions of EPA regulation 40 CFR 112, Oil Pollution Prevention, and BLM California IM CA-92-124, Oil and Gas Guidelines for Undesirable Events

(NTL-3A). Nonetheless, the potential remains for hydrocarbon and chemical leaks or spills to occur on the project site and contaminate soils during project implementation. Given the required regulatory compliance framework, the likelihood of these spills is low and the impacts to soils from spills would not be significant.

No Action:

There would be no additional impacts beyond existing activities to soil from the No Action alternative because the project would not occur.

3.6 Water Quality and Quantity

3.6.1 Affected Environment

No underground source of present or potential future drinking water as defined in 40 CFR 144.3 exist in the project area. The Tulare formation extends to the surface and is an exempt aquifer as defined in the 1982 Underground Injection Control Program Memorandum of Agreement (MOA) between California Geologic Energy Management Division and the EPA. The proposed project area is outside the boundary of any groundwater basin established by the California Department of Water Resources, Groundwater Management Bulletin 118. Impermeable rock formations lie between the hydrocarbon producing formations and the Tulare aquifer. These rock formations have isolated the hydrocarbon accumulation over millions of years. The target formation, Antelope Shale, does not contain an underground source of drinking water.

In addition, there is no record of fresh water in the Buena Vista/McKittrick Oilfield – Main Area (which are adjacent to the Midway Sunset Oilfield) according to the California Oil and Gas Fields, Volume 1 – Central California Report 1998. There are no perennial rivers, lakes, or streams in the project area. There are no ephemeral blue-line drainages in the direct project footprint.

As stated in the Proposed Action, approximately 1,500 barrels per well of fresh water would be used for dust abatement and drilling; all water would be obtained from the West Kern Water District and trucked to the project site.

3.6.2 Environmental Impacts

Proposed Action:

The proposed action would not result in direct or indirect impacts to underground sources of drinking water, surface waters, or available fresh water.

No underground sources of drinking water are known to exist in the project area, therefore no underground sources of drinking water would be impacted by project activities. Still, techniques to separate the well bore from underlying aquifers are incorporated in the design and construction of the well bore. This includes the immediate installation of steel pipe (casing) and cement sheaths to prevent fluid communication (the migration and/or transport of fluids between subsurface layers) once drilling through the aquifer is complete. Holmes Western would follow state drilling regulations, which require the casing to be set below the lowest groundwater aquifer. This requirement ensures isolation of the groundwater aquifer zone from the material inside the well bore. The well bore continues beyond the groundwater zone until it reaches the hydrocarbon bearing zone. The hydrocarbon zone is the target for production. The hydrocarbon zone produces into the well bore, and the production is contained within the well all the way to the surface. This

containment is what is meant by the term “well integrity.” In addition to the structural requirements of the casing and well bore, regular monitoring takes place during drilling and production operations to ensure these operations proceed within established parameters and in accordance with the well design, well plan, and permit requirements.

Surface waters are not expected to be directly or indirectly impacted because there are no perennial rivers, lakes or streams in the project area. Furthermore, there are no blue-line drainages that would be altered on the project site. Holmes Western would implement all applicable Design Features (COAs), which would avoid erosion, sediment carry, and other potential impacts to the adjacent drainages in the general project area.

The project would not result in fresh water quantity impacts because Holmes Western would obtain fresh water from the West Kern Water District, a water management agency that implements water conservation measures and efficient use of urban water supplies under the California Urban Water Management Planning Act (West Kern Water District, 2016).

No Action:

There would be no additional impacts to water quality and quantity from the No Action alternative because the project would not occur.

3.7 Environmental Justice

3.7.1 Affected Environment

The EPA defines environmental justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies. (<https://www.epa.gov/environmentaljustice/learn-about-environmental-justice>) Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires each Federal agency to “identify and address . . . disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States.” This includes Tribes. To comply, federal agencies must pay particular attention to potential impacts of agency decisions on minority and low-income populations.

The project is located within the San Joaquin Valley Air Basin (SJVAB). The SJVAB contains the following counties: San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare and the western portion of Kern (<https://ww2.valleyair.org/about/>). According to a report created by the BLM’s Headwaters Economics tool (<https://headwaterseconomics.org/tools/blm-profiles/>), approximately 4,182,406 residents reside within the SJVAB, 69.3% of which are considered minority and 40% of which qualify as low-income. The minority and low-income populations in the SJVAB are higher than those within the State of California (64.2% and 28.5%, respectively). The SJVAB relies more heavily on the mining industry (including fossil fuels) for employment (0.47% of jobs) than the rest of California (0.14% of jobs). The mining industry in the SJVAB has the highest average annual salary when compared to other industries in the area. The Headwaters Economics report is included as Appendix 2.

3.7.2 Environmental Impacts

Proposed Project:

As discussed previously, the project would have a direct impact on air quality in the SJVAB and would contribute to climate change. The direct impact on air quality could potentially result in health impacts to residents of the SJVAB. However, as discussed in Section 3.1.2, air impacts would be de minimis. Similarly, impacts to climate change would affect environmental justice populations due to the disproportionate impact climate change has on these communities (Beberian, et al., 2022).

The project would create new jobs and/or support existing oil and gas industry employment opportunities in the SJVAB. Oil and gas industry jobs are primarily be filled from within the local community. The project would also create additional tax revenue for Kern County. By supporting employment opportunities and additional tax revenue, the project would have a positive impact on the local economy.

No Action:

The No Action Alternative would not contribute to the local economy.

Chapter 4. Cumulative Impacts

A cumulative impact, as defined in 40 CFR 1508.7, is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of which agency (federal or non-federal) or person undertakes such other action. The following section provides details of the cumulative impacts analysis conducted on the project for impacted resources.

4.1 Methodology

Spatial and Temporal Bounds

In order to determine the cumulative impact of an alternative on impacted resources, spatial and temporal bounds were defined for each resource. The spatial bounds consist of the geographic area which will be directly and/or indirectly impacted by the action, referred to as the resource study area (RSA). When possible and logical, natural boundaries are preferred for the RSA. Temporal bounds include the timeframe in which past, present, and reasonably foreseeable future actions must be identified and analyzed. The outer limit of the spatial and temporal bounds was defined as the place where effects of the project are no longer meaningful on their own.

Past, Present, and Reasonably Foreseeable Future Actions

Once spatial and temporal bounds were defined, past, present and reasonably foreseeable future actions that will take place within the RSA during the relevant temporal boundary were identified.

Thresholds

Next, thresholds for which to compare the combined effects of the action with past, present, and reasonably foreseeable future actions were identified. A threshold is a legal, administrative, or technical threshold which provides context for the relative significance of an impact when combined with other past, present, and reasonably foreseeable future impacts. A quantitative analysis is provided where possible; where quantification is infeasible, qualitative effects are described.

4.2 Cumulative Impacts Analysis

As discussed previously, cumulative impacts result from the incremental impact of the action when added to past, present, and reasonably foreseeable future actions. Therefore, only resources on which an incremental impact is expected are analyzed for cumulative impacts.

Proposed Action:

The following table summarizes the determination of the need for cumulative impacts analysis for each resource which was analyzed in detail in this assessment.

Table 4.1 Summary of Impacts Expected to Result from Proposed Action

Resource	Direct/Indirect Impacts	Analysis Required?
Air Quality	Minor increase in NAAQS emissions.	Yes
Climate Change	Minor increase in greenhouse gases.	Yes
Biological Resources	No habitat disturbance.	No

Resource	Direct/Indirect Impacts	Analysis Required?
Paleontological Resources	Potential inadvertent discovery of paleontological materials not expected to cause impacts based on mitigation measures.	No
Soil Resources	Minimization, mitigation, and reclamation efforts eliminate impacts.	No
Water Quality/Quantity	Water quality/quantity not expected to be impacted based on Design Features.	No
Environmental Justice	Minor air quality and climate change impacts.	Yes

Since the project was determined to have no impact on biological resources, paleontological resources, soil resources, and water quality/quantity, no cumulative impact analysis was required for these resources. The remaining resources on which the project would have incremental impacts were included in the following analysis.

No Action Alternative:

Since the No Action Alternative would have no incremental contribution to past, present, and reasonably foreseeable future actions, no cumulative impact analysis is required.

4.2.1 Air Quality

This analysis considers the incremental effect of ten additional oil wells in the Midway Sunset oil field. The RSA for the proposed action (where the effects of the action will be felt) includes the SJVAPCD. As described above, the greatest air quality impacts related to oil production come from use of fuels made from the produced crude oil. These emissions are analyzed in this EA as midstream and end-use emissions. According to the CEC, about three quarters of oil used in California is imported into the State and therefore about three quarters of midstream and end-use emissions in California come from processing and use of imported oil. Of the remaining quarter, one-fifth comes from non-BLM lands. This means that the emissions and impacts from 80% of the crude oil processed and used in California are not related to the proposed action.

The remaining 20% of the crude oil used in California is produced from BLM Public Land. This production is governed by actions of local, state, and Federal agencies including the BLM. As discussed under the Federal Conformity heading in Chapter 3 above, BLM actions can only affect emissions from oil and gas development and production. Midstream (transportation, storage, processing) and end-use emissions are outside of BLM jurisdiction and practical control. Therefore, SJVAPCD Oil & Gas Production emissions estimated by the EPA in the NEI can represent the current cumulative air emissions, air quality, and climate impacts of past actions regarding oil and gas production. Table 4.2 presents maximum annual pollutant of concern emissions related to the proposed action in context with SJVAPCD emissions from oil & gas production and total SJVAPCD emission. For further context, see a breakdown of relative emissions and impacts from major emission source categories in the SJVAPCD presented in Table 3.2 above. Table 3.2 shows that oil and gas production make up only a small fraction of total criteria emissions in the SJVAPCD, less than 1%. Table 4.2 below shows that oil and gas production also cause less than 0.1% of the pollutants of concern that contribute to the SJVAPCD non-attainment status and health concerns.

Table 4.2 Cumulative Analysis: Project-related Pollutant of Concern Emission Rates as Percentage of Past and Present Development (tons per year)

Activity	Totals	PM ₁₀	PM _{2.5}	VOC	NO _x	HAPs
Project Well Development, Production, and Mid-Stream Emissions	83	11	6	24	38	5
SJVAPCD Oil & Gas Production 2020	4,593	39	36	3,660	797	62
Project Max as percent	1.809%					
SJVAPCD Total 2020	894,949	187,145	125,056	365,612	86,815	130,320
SJVAPCD Oil & Gas Production 2020 as percent	0.513%					
Project Max as percent	0.009%					
State of California Total 2020	5,763,275	867,341	667,424	3,620,907	477,283	130,320
Project Max as percent	0.001%					

Source: Oil & Gas Production Emissions and Total annual pollutant emissions for the SJVAPCD, and State of California Total Emissions reported by EPA in the 2020 National Emission Inventory (<https://www.epa.gov/air-emissions-inventories/2020-national-emissions-inventory-nei-data>)

Table 4.2 shows that past agency actions, including the many regulations and other actions taken by CARB and SJVAPCD to limit emissions and protect air quality, have kept air pollution and air quality impacts related to oil and gas production relatively low.

Table 4.2 also shows that the proposed action will increase total emissions of nonattainment pollutants or precursors in the SJVAPCD. However, as described above in the discussion of AQI, the increase is very small compared to ongoing emissions from other sources and would not be expected to degrade current air quality in any substantial or even discernable way. A similar analysis applies to HAP emissions. SJVAPCD residents are exposed to a substantial rate of ongoing HAP emissions and related health risks. The proposed wells would increase those emissions; however, as described above, the increase would be too small to cause a discernable change to existing health risks.

BLM California analyzed a total of four well APDs prior to this analysis since the beginning of Fiscal Year 2024. This cumulative increase from all wells approved in 2024 would not be expected to have discernable effects relative to ongoing emissions from other source categories indicated by the 2020 results presented in Table 3.1. See Section 3.1.1 for more discussion of this point.

BLM reviewed data available from the CalGEM Well Finder website (<https://www.conservation.ca.gov/calgem/Pages/WellFinder.aspx>) to assess the future pollutant emission trends from the proposed wells. Individual records of a representative sample of wells show that oil production declines rapidly beginning within weeks of when a new well comes online and continues to decrease throughout its production life. This pattern of production decline, depicted in Figure 3.1 for GHG emissions, is typical for all emissions related to oil and gas wells. Most of the emissions related the proposed wells, including all the midstream and end use emissions, are directly related to production volumes and so future criteria and HAP emission rates related to the proposed wells are expected to be lower than the rates analyzed in this EA. Therefore, future environmental and health risks related to these wells are expected to decrease from the levels described in this analysis.

Cumulative oil and gas emissions and related health risks in the air district are similarly related to the total number and age of wells. Both BLM and CalGEM (https://www.bakersfield.com/news/state-takes-credit-for-issuing-23-fewer-oil-drilling-permits/article_b81a116c-5f36-11eb-a28c-937444d34f20.html) records show decreased rates of new drilling and increased rates of well abandonment in recent years. If this trend continues, future total oil and gas production industry criteria, GHG and HAP/TAC emissions would be expected to decline. Current California policy calls for significant reductions in fossil fuel use. Laws, regulation and other government actions have been taken to promote use of electric vehicles and to otherwise reduce the demand for petroleum. To the extent that these policies and actions can be effectively implemented, demand for petroleum products and drilling of new oil wells would be expected decline and future cumulative air quality impacts, air toxics (HAP and TAC) health risks, and climate impacts related to fossil fuels will likely be reduced.

4.2.2 Climate Change

The analysis of GHGs contained in this EA includes estimated emissions from the lease as described above. Climate change is global phenomenon with impacts related the average concentration of GHGs in the atmosphere. Therefore, the area of analysis for the proposed action (where the effects of the proposed action will be felt) includes the entire United States of America. An assessment of GHG emissions from other BLM fossil fuel authorizations, including coal leasing and oil and gas leasing and development, is included in the BLM Specialist Report on Annual GHG Emissions (referred to as Annual Report, see Chapter 7). The Annual Report includes estimates of reasonably foreseeable GHG emissions related to BLM lease sales anticipated during the fiscal year, as well as the best estimate of emissions from ongoing production, and development of parcels sold in previous lease sales. It is, therefore, an estimate of cumulative GHG emissions from the BLM fossil fuel leasing program based on actual production and statistical trends.

The Annual Report provides an estimate of short-term and long-term GHG emissions from activities across the BLM's oil and gas program. The short-term methodology presented in the Annual Report includes a trends analysis of (1) leased federal lands that are held-by-production, (2) approved applications for permit to drill (APDs), and (3) leased lands from competitive lease sales occurring over the next annual reporting cycle (12 months), to provide a 30-year projection of potential emissions from Federal oil and gas lease actions over the next 12 months. The long-term methodology uses oil and gas production forecasts from the Energy Information Administration (EIA) to estimate GHG emissions out to 2050 that could occur from past, present, and future development of Federal fluid oil and gas. For both methodologies, the emissions are calculated using life-cycle-assessment emissions and data factors. These analyses are the basis for projecting GHG emissions from lease parcels that are likely to go into production during the analysis period of the Annual Report and represent both a hard look at GHG emissions from oil and gas leasing and the best available estimate of reasonably foreseeable cumulative emissions related to any one lease sale or set of quarterly lease sales.

Table 4.3 shows the aggregate GHG emissions estimate that would occur from Federal leases, existing and foreseeable, between the years 2022 and 2050, using the methodology described above. The 5-year lease averages include all types of oil and gas leases, including leases granted under the Mineral Leasing Act as well as other authorities, that have been issued over the last five years. As such the projections made from the 5-year averages represent the potential for all types of future oil and gas development activity, and although not at exact acreages, include emissions

that would be associated with the subject lease. However, they may also over-estimate the potential emissions from the 12-month cycle of competitive oil and gas leasing activities if the projected lease sale or development activity does not actually occur or is less than estimated.

Table 4.3 Reasonably Foreseeable Projected Emissions from Federal Lease Development

State (BLM Administrative Unit)	GHG Emissions from Past, Present, and Foreseeable Federal Lease Development (Mt CO _{2e} per year)*
Alabama (ES)	9.34
Alaska	136.9
Arkansas (ES)	9.34
California	51.49
Colorado	243.1
Idaho	0.17
Illinois	0.31
Kansas (ES)	3.32
Kentucky (ES)	0.19
Louisiana (ES)	43.29
Michigan (ES)	1.95
Mississippi (ES)	2.89
Montana	58.82
Nebraska (WY)	0.21
Nevada	2.74
New Mexico	1,939.52
New York	0.01
North Dakota (MT)	379.63
Ohio (ES)	0.37
Oklahoma (NM)	20.43
Pennsylvania	0.46
South Dakota (MT)	2.31
Texas (NM)	49.55
Utah	187.84
Virginia	0.15
West Virginia (ES)	0.45
Wyoming	1,487.65
Total	4,614.81

*Emissions obtained from 2021 Annual Report, Figure 5-1

The most recent short-term energy outlook (STEO) published by the EIA (<https://www.eia.gov/outlooks/steo/>) (EIA, 2023) predicts that the world's oil and gas supply and consumption will increase over the next 18-24 months. The latest STEO projections are useful for providing context for the No Action discussion as the global forecast models used for the STEO are not dependent on whether the BLM issues onshore leases but are based on foreseeable short-term global supply and demand and include oil and gas development /operations on existing U.S. onshore leases. The most recent STEO includes the following projections for the next two years:

- U.S. liquid fuels consumption is projected to increase to 20.45 million barrels per day (b/d) in 2023 up from 20.28 million b/d in 2022 and further increase to 20.76 million b/d in 2024.
- U.S. crude oil production is expected to average 11.9 million b/d in 2022 and to rise to 12.4 million b/d in 2023 and 12.63 b/d in 2024.

- U.S. natural gas consumption is expected to average 86.4 Bcf/d in 2023, decreasing from 88.5 Bcf/d in 2022.
- U.S. LNG exports are expected to increase from 10.59 billion cubic feet/day (Bcf/d) in 2022 to 12.07 Bcf/d in 2023 and 12.73 Bcf/d in 2024.
- U.S. Coal production is expected to total 552 million short tons (MMst) in 2023 and 502.6 MMst in 2024 and decrease to 17% of total U.S. electricity generation in 2023 compared to 20% in 2022 driven by on-going retirement of coal-fired generating plants.
- Generation from renewable sources will make up an increasing share of total U.S. electricity generation, rising from 22% in 2022 to 24% in 2023 and 26% in 2024.

Recent events, both domestically and internationally, have resulted in abrupt changes to the global oil and gas supply. EIA studies and recent U.S. analyses (associated with weather impacts, etc.) regarding short-term domestic supply disruptions and shortages or sudden increases in demand demonstrate that reducing domestic supply (in the near-term under the current supply and demand scenario) will likely lead to the import of more oil and natural gas from other countries, including countries with lower environmental and emission control standards than the United States (EIA, 2021). Recent global supply disruptions have also led to multiple releases from the U.S. Strategic Petroleum Reserve in order to meet consumer demand and curb price surges.

The EIA 2023 Annual Energy Outlook (<https://www.eia.gov/outlooks/aeo/>) projects energy consumption increases through 2050 as population and economic growth outweighs efficiency gains. As a result, U.S. production of natural gas and petroleum and liquids will rise amid growing demand for exports and industrial uses. U.S. natural gas production increases by 15% from 2022 to 2050. However, renewable energy will be the fastest-growing U.S. energy source through 2050 as electricity generation shifts to using more renewable sources, domestic natural gas consumption for electricity generation is expected to decrease by 2050 relative to 2022. As a result, energy-related CO₂ emissions are expected to fall 25% to 38% below 2005 level, depending on economic growth factors. Further discussion of past, present and projected global and state GHG emissions can be found in Chapter 6 of the Annual Report.

Executive Order 14008, "Tackling the Climate Crisis at Home and Abroad" (January 27, 2021), directs the executive branch to establish policies or rules that put the United States on a path to achieve carbon neutrality, economywide, by no later than 2050. This goal is consistent with IPCC's recommendation to reduce net annual global CO emissions between 2020 and 2030 in order to reach carbon neutrality by mid-century. Federal agencies are still in the process of developing policies that align with a goal of carbon neutrality by 2050. In the short-term, the order has a stated goal of reducing economy wide GHG emissions by 50 to 52% relative to 2005 emissions levels no later than 2030.

Carbon budgets are an estimate of the amount of additional GHGs that could be emitted into the atmosphere over time to reach carbon neutrality while still limiting global temperatures to no more than 1.5°C or 2°C above preindustrial levels. The IPCC Special Report on Global Warming of 1.5°C is the most widely accepted authority on the development of a carbon budget to meet the goals of the Paris Agreement. None of the global carbon budgets or pledges that countries have committed to stay within as part of the Paris Agreement are binding. Carbon budgets were originally envisioned as being a convenient tool to simplify communication of a complex issue and to assist policymakers considering options for reducing GHG emissions on a national and

global scale. Carbon budgets have not yet been established on a national or subnational scale, primarily due to the lack of consensus on how to allocate the global budget to each nation, and as such the global budgets that limit warming to 1.5 °C or 2.0 °C are not useful for BLM decision making, particularly at the lease sale stage, as it is unclear what portion of the budget applies to emissions occurring in the United States.

However, stakeholders and members of the public have requested that the BLM consider comparing its predicted emissions in the context of global carbon budgets. Table 7-4 in the 2021 BLM Specialist Report provides an estimate of the potential emissions associated with BLMs fossil fuel authorizations in relation to IPCC carbon budgets. Total Federal fossil fuel authorizations including coal, natural gas and oil represents approximately 1.75 % of a suggested global carbon budget of 400-500 GtCO₂ needed to limit global warming to 1.5 C.

While continued fossil fuel authorizations will occur over the next decade to support energy demand and remain in compliance with the leasing mandates in the Inflation Reduction Act (IRA) passed in 2022, the U.S. Energy Information Administration International Energy Outlook expects renewable energy consumption to double between 2020 and 2050 and nearly equal liquid fuels consumption by 2050. The U.S. has committed to the expansion of renewable energy through infrastructure investments in clean energy transmission and grid upgrades include in the Bipartisan Infrastructure Investment and Jobs Act as well as clean energy investments and incentives included in the Inflation Reduction Act. The Department of Energy's Office of Policy developed a preliminary assessment that finds the IRA and BIL, in combination with past actions, are projected to reduce 2030 economy wide GHG emissions to 40% below 2005 level, even with continued oil and gas leasing in the near term. (https://www.energy.gov/sites/default/files/202208/8.18%20InflationReductionAct_Factsheet_Final.pdf)

Greenhouse Gas Mitigation Strategies

GHG emissions contribute to changes in atmospheric radiative forcing resulting in climate change impacts. GHGs act to contain solar energy loss by trapping longer wave radiation emitted from the Earth's surface and act as a positive radiative forcing component. The buildup of these gases has contributed to the current changing state of the climate equilibrium towards warming. Chapters 8 and 9 of the Annual Report provides a detailed discussion of climate change science, trends, and impacts. The relationship between GHG emissions and climate impacts is complex, but a project's potential to contribute to climate change is reduced as its net emissions are reduced. When net emissions approach zero, the project has little or no contribution to climate change. Net-zero emissions can be achieved through a combination of controlling and offsetting emissions. Emission controls (e.g., vapor recovery devices, no-bleed pneumatics, leak detection and repair, etc.) can substantially limit the amount of GHGs emitted to the atmosphere, while offsets (e.g., sequestration, low carbon energy substitution, plugging abandoned or uneconomical wells, etc.) can remove GHGs from the atmosphere or reduce emissions in other areas. Chapter 10 of the Annual Report provides a more detailed discussion of GHG mitigation strategies.

Several Federal agencies work in concert to implement climate change strategies and meet U.S. emissions reduction goals all while supporting U.S. oil and gas development and operations. The EPA is the Federal agency charged with regulation of air pollutants and establishing standards for protection of human health and the environment. The EPA has issued regulations that will reduce

GHG emissions from any development related to the proposed leasing action. These regulations include the New Source Performance Standard for Crude Oil and Natural Gas Facilities (49 CFR 60, subpart OOOOa) which imposes emission limits, equipment design standards, and monitoring requirements on oil and gas facilities. A detailed discussion of existing regulations and Executive Orders that apply to BLM management of federal lands as well as current Federal and state regulations that apply to oil and gas development and production can be found above and in Chapter 2 of the Annual Report.

4.2.3 Environmental Justice

Since the impacts to environmental justice populations are dependent on impacts to air quality and climate change, cumulative impacts to environmental justice populations are the same as those to air quality and climate change.

Chapter 5. Consultation and Public Involvement

Biological Consultation

Formal consultation with the U.S. Fish and Wildlife Service was initiated in 2016. The Fish and Wildlife Service issued a “No jeopardy” biological opinion on December 22, 2017 (Programmatic Biological Opinion on Oil and Gas Activities on Bureau of Land Management Lands in the San Joaquin Valley, 08ESMF00-2016-F-0683).

Persons, groups, and agencies consulted

Romina Copado, Acting - Assistant Field Manager for Minerals
Dawna Melton, Support Department Supervisor at Holmes Western Oil Corporation.

Summary of Public Participation

The BLM posted notification that it was considering these NOSs/APD's on the E-Planning public website on May 9th, 2024. This notice initiated the 30-day scoping period. The BLM also posted copies of the Application for Permit to Drill (APD) in the front lobby of the Bakersfield Field Office for that 30-day period. Comments from the Center of Biological Diversity and Earth Justice were received. Comments have been addressed in this EA.

Recipients of Native American Notification Letters (TNL#13-28)

Tule River Indian Tribe
Tejon Indian Tribe
Santa Rosa Rancheria Tachi Yokut Tribe

List of Preparers

Zachary Day, Archaeologist, Cultural and Paleontological Resources
Fernando Baños, Natural Resource Specialist
Matthew Thomas, Supervisory Natural Resource Specialist
Frank Giles, Air Resource Specialist
Rebecca Daniels, Planning & Environmental Coordinator

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Clean Water Act

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Resource Conservation and Recovery Act

40 CFR § 30.16

Safe Drinking Water Act

§300f et seq. (1974) The Safe Drinking Water Act (SDWA) was established to protect the quality of drinking water in the U.S. This law focuses on all waters actually or potentially designed for drinking use, whether from above ground or underground sources.

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Appendix 1. Design Features

The following design features and conditions of approval are part of the proposed action:

Holmes Western shall comply with all relevant federal, and applicable tribal, state, and local laws during project implementation.

Biological Resources

Incorporate All of the “Avoidance & Mitigation Actions” recommended by consulting biologist Magaly Jurado (Padres Associates, Inc.) in her October 10, 2024, Sensitive Species Review Forms are incorporated into the project design:

- All standard take-avoidance measures should be implemented for the Project.
- During nesting bird season (February 1-August 31), pre-activity and nesting bird surveys are valid for 10 days. If work is not initiated within 10 days of the survey date, a follow-up nesting bird survey must be conducted prior to the start of Project activities.
- Prior to initiating Project activities, all employees who will be working within the Project site should be given an Environmental Awareness and Threatened, Endangered and Sensitive (TES) Species Training which discusses the biology and general behavior of all TES species known to or with potential to inhabit the region. The training will go over Project-specific avoidance and minimization measures.
- A biological monitor should be present during any ground disturbing activities that occur off the established roads or disturbed areas, to ensure burrow avoidance (where necessary), jurisdictional drainage avoidance, and other minimization measures are utilized.
- If any SJKF or other wildlife enter the Project area, all work that may harm the animal should be halted immediately until it has left of its own accord. If any dens/burrows (or open pipes) with a diameter of 3.5-inches or greater are observed within the Project area, a qualified biologist should be contacted to determine if the den is being utilized by SJKF or other TES species.
- If any SJAS are observed in the Project area, all work that may harm the animal should be halted immediately until it has left of its own accord. If any burrows are observed within the Project area that cannot be avoided and left intact, a qualified biologist should be contacted prior to ground disturbing activities within 50 feet of the burrow.
- If any blunt-nosed leopard lizards (BNLL) are observed, all work should stop, and a Padre biologist should be contacted immediately. If any sensitive wildlife are observed during project activities, the Padre biologist and Holmes Western PM should be notified immediately to determine the best course of action.
- All small mammal burrows should be avoided by 50-feet, where feasible. If small mammal burrows cannot be avoided, additional surveys for SJAS and/or BNLL may be required to determine burrow utilization.

- If any active bird nests (nests with eggs, baby birds, or adult birds, in or near them) are observed, all Project activities should immediately halt within 500 feet of the nest and the Padre biologists should be notified immediately to determine the best course of action.
- If Project activities require disturbances to ephemeral drainages (including driving equipment and vehicles, vegetation removal, other ground disturbing activities in the bed or bank) a Streambed Alteration Agreement (SAA) needs to be obtained from CDFW.
- Fueling of equipment or use of other chemicals or fluids should be done at least 100-feet away from the banks of drainages, in areas void of vegetation. Pipes should be flushed and capped before removal to avoid spilling materials into drainages.
- All activities should be limited to daylight hours to avoid potential impacts to sensitive nocturnal wildlife.
- Keep all trash and food items picked up and removed from the site daily including microtrash (i.e. wrappers, bottle tops, and food scraps.)
- No pets (dogs) on site.
- Vehicle traffic should use established roadways. Cross-country travel is prohibited.
- Dust control should be implemented for excavations, spoils piles, access roads, and parking and staging areas.
- Conduct a 360-degree vehicle check before moving vehicle on or from the Project site.
- Maintain a speed limit of 20 mph or less on dirt roads.
- Previously disturbed areas are to be used to stockpile materials, park vehicles and equipment, store equipment, and other surface-disturbing actions. If areas containing habitat need be used for these purposes, they should be cleared by a biologist.

Management of Noxious Weeds

A site-specific weed control Environmental Assessment (EA) and a Pesticide Use Proposal (PUP) must be completed before any use of pesticides on BLM lands. This can be a lengthy process and requires specific information, public notification, and review by the BLM State Office. Currently, the applicant does not have these approvals in place. Therefore, no herbicide treatment is authorized at this time.

Final Reclamation

Disturbed lands shall be re-contoured to conform with existing undisturbed topography unless the BLM determines that re-contouring would result in negative impacts to special status species. No depressions shall be left that trap water or form ponds. All portions of final reclamation may be subject to additional cultural resources and paleontological inventory and may require a permit. The reclaimed landscape shall have characteristics that approximate the visual quality of the adjacent area and consider location, scale, shape, color, and orientation of major landscape features and meet the needs of the planned post disturbance land use.

Final reclamation shall specifically achieve the following:

1. The reclaimed area shall be stable and exhibit none of the following characteristics:
 - a. Large rills or gullies (greater than 6 inches deep).

- b. Perceptible soil movement or head cutting in drainages.
 - c. Slope instability on, or adjacent to, the reclaimed area in question.
- 2. The soil surface must be stable and have adequate surface roughness to reduce runoff and capture rainfall and snow melt. Additional short-term measures, such as the application of mulch, shall be used to reduce surface soil movement.
- 3. Vegetation production and species diversity (including shrubs) shall approximate the surrounding undisturbed area (50-150% of the adjacent species composition and cover). The vegetation shall stabilize the site and support the planned post disturbance land use, provide for natural plant community succession and development, and be capable of renewing itself. This shall be demonstrated by:
 - a. Successful onsite establishment of species included in the planting mixture or other desirable species.
 - b. Evidence of vegetation reproduction, either spreading by rhizomatous species or seed production.
- 4. Habitat Restoration
 - a. Restoration will be required on unused portions of the project area or oil and gas lease, including abandoned, unused, or unnecessary roads, when deemed necessary by the BLM to maintain or improve habitat values. Restoration will be required when reserve area (Red Zone) and habitat corridor (Green Zone) limits are exceeded and when a project or lease is abandoned. Restoration activities will be supervised by an onsite monitoring biologist.
 - b. The following are examples of actions that may be required as part of restoration:
 - i. All trash will be removed from the site and disposed of properly.
 - ii. All cement, asphalt, and oil-contaminated soils will be removed from the site and disposed of properly.
 - iii. All pipelines and other oilfield infrastructure no longer in use will be removed from the site and disposed of properly.
 - iv. Topographic contours will be restored to the maximum extent possible.
 - v. Non-compacted soils or areas previously deep ripped will be disced to a depth of approximately 8 inches.
 - vi. Compacted sites will be deep ripped to a depth of 12 to 18 inches.
 - vii. Slopes greater than 30 per cent will be treated by erosion control methods such as disking along the contour, imprinting, mulching, or installing wattles.
 - viii. Sites will be seeded using methods such as drill or broadcast seeding with a site-appropriate seed mix, approved by the BLM Botanist. Exact seeding mixes and rates will depend on the site characteristics, the species chosen, and the current availability of native seed. Seed mixes will include dominant shrubs and native grasses and herbs compatible with the adjacent plant community. The best time for seeding is generally late summer to early fall prior to the onset of the rainy season.
 - ix. Sites will be considered restored when it can be documented that they support functional, native habitat. Evidence of attainment of this goal will be provided by the project applicant. Restoration in drainages, streambeds, and similar habitats where water is a substantial component may require conformance with conditions of a CDFW Streambed Alteration Agreement

or other state or local permit. Demonstration of restoration may include documentation of:

1. Visual continuity or similarity with adjacent native, undisturbed habitat or a designated reference site.
2. Topography that follows natural contours and allows for the natural flow of water across the landscape.
3. Indiscernible boundary lines or areas between the disturbed and undisturbed areas.
4. Presence of habitat that supports threatened and endangered species.
5. Vegetation community composition within the normal or desired range. Ratios of native and non-native plants within normal or desired parameters. Presence and abundance of reproducing plants. Presence and abundance of biological soil crusts.
6. Evidence or presence of animals or animal sign on the site. Presence and abundance of desired species. Evidence, presence, and abundance of reproducing species.
7. Evidence of species diversity for both plants and animals.
8. Evidence of soil stability (minimal erosion).
9. Absence of signs of vehicle or other trespass. Absence of trash and contaminated soils.