U.S. Department of the Interior
Bureau of Land Management

Colorado Oil and Gas Lease Sale
DRAFT Environmental Assessment
Arapahoe, Moffat, Rio Blanco, and Weld Counties, Colorado
Quarter 3 2025
DOI-BLM-CO-0000-2025-0001-EA"

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CHAPTER 1. INTRODUCTION

1.1 BACKGROUND

The Bureau of Land Management (BLM) Colorado State Office is holding a September 2025 Competitive Oil and Gas Lease Sale. This environmental assessment (EA) analyzes the potential effects of leasing 13 parcels (12,114.89 acres) for potential future oil and gas exploration and development. The BLM Royal Gorge Field Office (RGFO, Rocky Mountain District) has three split estate (private surface overlying Federal minerals) parcels proposed for leasing in Arapahoe and Weld counties, Colorado. The BLM White River Field Office (WRFO, Northwest District) has ten parcels (seven Federal and three split estate) proposed for leasing in Moffat and Rio Blanco counties, Colorado. The nominated parcels contain Federal minerals managed by the BLM and consist of BLM-administered surface land and private surface land. **Appendix A** lists the parcels by legal land description. For detailed information on the leasing process, see the following website: https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/leasing/parcel-nominations.

1.2 PURPOSE AND NEED

The purpose of preparing this EA is to respond to expressions of interest in leasing specific parcels of land for potential future exploration and development of Federal oil and gas resources. The need is established by BLM's responsibility under the Mineral Leasing Act of 1920 (MLA), as amended, to make mineral resources, such as oil and gas, available for development, and is consistent with BLM's multiple-use and sustained-yield mandate under the Federal Land Policy and Management Act of 1976 (FLPMA).

1.3 DECISION TO BE MADE

The BLM Authorized Officer will decide whether certain parcels of land are eligible and available for lease and whether constraints in the form of lease stipulations based on the applicable land use plans are necessary. If the decision is to make the lands eligible and available for lease, and, if sold, subsequently issue leases, standard terms and conditions under Section 6 of the BLM lease form (Form 3100-11, Offer to Lease and Lease for Oil and Gas) would apply. The BLM Authorized Officer also has the authority to defer parcels based on the analysis of potential effects presented in this EA. The Decision Record will identify whether the BLM decided to offer and issue leases for the nominated parcels and the rationale for the decision.

1.4 PLAN CONFORMANCE REVIEW

The BLM, under the MLA and FLPMA, as amended, must make mineral resources, such as oil and gas, available for development. Additionally, the Federal Onshore Oil and Gas Leasing Reform Act of 1987 states that lease sales shall be held for each state where eligible lands are available at least quarterly and more frequently if the Secretary of the Interior determines such sales are necessary.

Under FLPMA, the BLM must manage public lands, resources, and resource values according to its multiple-use, sustained-yield mandate in a manner that will best meet the present and future needs of the public, and in accordance with applicable land use plans. For split estate lands where the surface estate and mineral estate differ, the BLM is required to identify appropriate lease stipulations. 43 Code of Federal Regulations [C.F.R.] § 3101.13 and 43 C.F.R. § 1601.0-7(b).

The alternatives evaluated in this EA conform with the following approved RMPs (43 C.F.R. § 1610.5-3) and Records of Decision (RODs) for the applicable planning areas:

BLM Office: Colorado State Office
Name of Plan: Record of Decision and Approved Resource Management Plan Amendment for Big Game Habitat Conservation for Oil and Gas Management in Colorado (Big Game RMPA) (BLM 2024a)
Date Approved: October 2024

Pertinent Decisions:
Fluid Mineral Objective: "Minimize impacts of new oil and gas leasing and development within big game HPH [high priority habitat] on BLM land and mineral estate (decision area). Additionally, consider and avoid indirect impacts from BLM management actions that may push new oil and gas leasing and development onto big game HPH on non-BLM lands and minerals, to the extent practicable."

BLM Office: Colorado State Office
Name of Plan: Greater Sage-Grouse Rangewide Planning Record of Decision and Approved Resource Management Plan Amendment for Colorado (2025 GRSG RMPA) (BLM 2025)
Date Approved: January 2025
Pertinent Decisions:
Fluid Mineral Objective: "Manage fluid mineral leasing and development (including geothermal) in GRSG habitat management areas to avoid, minimize, and compensate for adverse impacts to GRSG habitat to the extent practical under the law and BLM jurisdiction."

BLM Office: Royal Gorge Field Office (RGFO)
Name of Plan: Record of Decision and Approved Eastern Colorado Resource Management Plan (ECRMP) (BLM 2024b)
Date Approved: January 2024
Pertinent Decisions:
Fluid Mineral Objective: "Facilitate environmentally sound exploration and development of fluid minerals."
Fluid Mineral Allowable Uses

- "Open 9,300 acres of BLM-administered surface land (119,600 total acres of Federal mineral estate) to fluid mineral leasing with major constraints (NSO stipulations)."
- "Open 4,600 acres of BLM-administered surface land (182,800 total acres Federal minerals) to fluid mineral leasing with moderate constraints (CSU)."
- "Open 4,600 acres BLM-administered surface land (500,600 total acres of Federal mineral estate) to fluid mineral leasing with moderate constraints (TLs)."

BLM Office: White River Field Office (WRFO)
Name of Plan: White River Record of Decision and Approved Resource Management Plan (WRFO RMP) (BLM 1997)
Date Approved: July 1997
Pertinent Decisions:

Fluid Mineral Objective: "Make federal oil and gas resources available for leasing and development in a manner that provides reasonable protection for other resource values."

BLM Office: WRFO
Name of Plan: White River Field Office Record of Decision and Approved Resource Management Plan Amendment for Oil and Gas Development (WRFO RMPA) (BLM 2015a)
Date Approved: August 2015
Pertinent Decisions:
Minerals Goals

- "Reduce potential conflicts of oil and gas activities with other resource uses while promoting efficient recovery of oil and gas resources.
- Promote environmental stewardship among oil and gas operators."

Minerals Objectives

- "Make federal oil and gas resources available for leasing and development in a manner that provides reasonable protection for other resource values.
- Manage oil and gas activities to prevent degradation of resources (including oil and gas resources).
- Manage oil and gas activities to complement or contribute to improving trends in achieving Colorado Public Land Health Standards.

- Establish partnerships with cooperating entities to develop and adapt BMPs in response to site-specific conditions and other resource objectives."

The nominated lease parcels are in areas open to leasing under the RMPs indicated above, as amended, and are subject to stipulations. **Appendix B** details the lease parcels with surface ownership, legal land description, total acreage, and applicable lease stipulations and notices. **Appendix C** provides the descriptions of stipulations and lease notices.

1.5 PUBLIC PARTICIPATION AND ISSUES

1.5.1 Scoping

The principal goal of scoping is to identify issues and alternatives that may require detailed analysis. To identify potentially affected resources and values, scoping included:

- internal BLM scoping through discussions among interdisciplinary teams of resource specialists;
- courtesy letters to the private surface owners whose lands overlay the Federal minerals proposed for leasing;
- notifications to pertinent counties;
- letters to potentially interested Native American tribes; and
- public scoping.

On November 15, 2024, a project summary page for the September 2025 Competitive Oil and Gas Lease Sale (DOI-BLM-CO-0000-2025-0001-EA) was posted on BLM's National NEPA Register website (https://eplanning.blm.gov). The posting included the preliminary parcel list, links to associated land use plans, links to other informative websites, maps, and map data. A 30-day public scoping period was open from November 15 to December 16, 2024.

The BLM Colorado State Office received 16 comment submissions during the public scoping period, comprising six submissions from individuals, five from governmental entities, four from environmental organizations or societies, and one from an energy alliance. Scoping comments expressed concerns related to air, climate, economics, policy and procedure, sensitive wildlife, and water. The scoping comments were considered during development of this EA.

In **Appendix D**, the parcels were evaluated for leasing preference based on the following criteria: proximity to existing oil and gas development, presence of important fish and wildlife habitats or connectivity areas (giving preference to lands that would not impair the proper functioning of such habitats or corridors), presence of cultural resources, presence of recreation and other important uses or resources, and oil and gas development potential. Three overlapping resources or values were identified in the evaluation: (1) big game habitat; (2) Greater sage-grouse habitat; and (3) a proposed Area of Critical Environmental Concern for cultural and landscape values formally requested by the Ute Tribes. All parcels overlap with big game habitat; however, due to the application of stipulations from the Big Game RMPA (BLM 2024a), significant impacts will be mitigated. All ten WRFO parcels intersect with Greater sage-grouse habitat; however, similar to big game, due the application of stipulations from the 2025 GRSG RMPA (BLM 2025), significant impacts will be mitigated. The proposed Area of Critical Environmental Concern for cultural and landscape values formally requested by the Ute Tribes overlaps with five WRFO parcels. Given ongoing discussion with the Tribes, these five parcels are considered as low preference.

The BLM considered the issues identified during internal and external scoping. Although many issues may be raised during scoping, not all raised issues warrant detailed analysis. **Section 1.5.2** identifies the issues analyzed in detail and the rationale for warranting additional analysis. **Section 1.5.3** identifies the issues considered but not analyzed in detail, and provides the rationale for no additional analysis.

1.5.2 Issues Analyzed in Detail

This analysis adheres to requirements of the National Environmental Policy Act, 42 U.S.C. §§ 4321–4370m-11 (NEPA) and the Department of the Interior's NEPA regulations at 43 C.F.R. §§ 46.10-46.450.[1] **Table 1** lists the issues identified for detailed analysis. Note that the issue of Native American cultural interests for detailed analysis is specific to the WRFO.

Table 1. Issues Identified and Analyzed in Detail in the EA

Issue	Issue Statement	Impact Indicator
1. Air Quality	How would leasing and the potential subsequent oil and gas development /operations affect air quality and related values?	Predicted air pollutant emission levels relative to current and foreseeable baselines, Federal action contributions compared to significant impact levels, predicted reasonably foreseeable concentrations compared to ambient air quality standards, predicted visibility levels relative to planning goals, and predicted deposition levels relative to critical loads.
2. Greenhouse Gas (GHGs) Emissions	How would leasing and potential oil and gas development affect GHG emissions levels at multiple scales?	Metric tonnes (t) or megatonnes (Mt). Net changes to overall GHG levels.
3. Social and Economic Conditions	How would oil and gas leasing and potential development affect the socioeconomic conditions of the surrounding areas?	Potential effects to public revenues, employment opportunities, natural resources and mining, agricultural industries, and property values.
4. Native American Cultural Interests	How would leasing and potential future oil and gas development affect Native American religious concerns or places of traditional cultural importance in the WRFO?	Potential effects to traditional cultural and religious properties and values.

1.5.3 Issues Considered but Not Analyzed in Detail

The final environmental impact statements (FEISs) for each of the land use plans identified in **Section 1.4** analyzed reasonably foreseeable effects of oil and gas leasing and development in the planning areas, and include the following:

- Proposed Resource Management Plan Amendment and Final Environmental Impact Statement for Big Game Habitat Conservation for Oil and Gas Management in Colorado (Big Game FEIS) (BLM 2024c);
- Greater Sage-Grouse Rangewide Planning Proposed Resource Management Plan Amendment and Final Environmental Impact Statement (2024 GRSG FEIS) (BLM 2024d);
- Proposed Eastern Colorado Resource Management Plan and Final Environmental Impact Statement (Eastern Colorado FEIS) (BLM 2023a);

[1] Executive Order 14154, *Unleashing American Energy* (Jan. 20, 2025), and a Presidential Memorandum, *Ending Illegal Discrimination and Restoring Merit-Based Opportunity* (Jan. 21, 2025), require the Department to strictly adhere to the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321 *et seq.* Further, such Order and Memorandum repeal Executive Orders 12898 (Feb. 11, 1994) and 14096 (Apr. 21, 2023). Because Executive Orders 12898 and 14096 have been repealed, complying with such Orders is a legal impossibility. The BLM verifies that it has complied with the requirements of NEPA, including the Department's regulations and procedures implementing NEPA at 43 C.F.R. Part 46 and Part 516 of the Departmental Manual, consistent with the President's January 2025 Order and Memorandum.

- White River Resource Area Proposed Resource Management Plan and Final Environmental Impact Statement (WRRA FEIS) (BLM 1996); and
- Proposed Resource Management Plan Amendment and Final Environmental Impact Statement for White River Field Office Oil and Gas Development (WRFO Oil and Gas FEIS) (BLM 2015b).

In addition to the avoidance or minimization of impacts achieved through lease stipulations, the FEISs accounted for regulatory requirements and project-specific conditions of approval (COAs) that can be applied to avoid or minimize effects of activities at the development proposal stage. For many resource issues, information allowing for more detailed analysis will not be available until a specific development project is proposed by an operator. Based on a review of the available information, existing analyses, required stipulations, and public scoping, the interdisciplinary team determined that the potential issues listed in **Table 2** are unlikely to be significantly affected by the alternatives, and further analysis is not necessary to make a reasoned choice between the alternatives. **Appendix E** provides the rationale for not analyzing each resource or value in detail.

Table 2. Issues Considered but Not Analyzed in Detail

Resource or Value	Not Present/ Applicable	Unlikely to Be Significantly Affected
Cultural Resources		Both
Farmlands, Prime & Unique		Both
Forest Management	RGFO	WRFO
Invasive Plants		Both
Lands & Realty		Both
Minerals		Both
National and State Scenic and Historic Byways	WRFO	RGFO
National Historic Trails	Both	
Native American Cultural Interests		RGFO
Paleontological Resources		Both
Permitted Range Management	RGFO	WRFO
Public Recreation	RGFO	WRFO
Riparian Zones & Wetlands		Both
Soil		Both
Special Designations	RGFO	WRFO
Vegetation – Threatened, Endangered, and Sensitive Plant Species		Both
Visual Resources		Both
Wastes, Hazardous or Solid		
Water Resources		Both
Wilderness	RGFO	WRFO
Wild Horses and Burros	RGFO	WRFO
Wildlife – Aquatic		Both
Wildlife – Big Game		Both
Wildlife – Greater Sage-Grouse	RGFO	WRFO
Wildlife – Migratory Birds		Both
Wildlife – Special Status Species		Both

CHAPTER 2. ALTERNATIVES

2.1 NO ACTION ALTERNATIVE

The No Action Alternative is used as the baseline for comparison of the alternatives. Under the No Action Alternative, BLM Colorado would not offer the nominated parcels for competitive leasing at the September 2025 sale. Expressions of interest would be processed and the final status recorded in the public National Fluid Lease Sale System. Selection of the No Action Alternative would not prevent future nomination and the potential offering of the parcels for lease consistent with land use planning decisions and subject to appropriate stipulations identified in the pertinent land use plans.

2.2 FULL LEASING ALTERNATIVE

Under this alternative, BLM Colorado would offer the 13 nominated parcels (12,114.89 acres) for competitive leasing of Federal mineral estate for potential future oil and gas exploration and development, subject to standard lease terms and conditions (43 C.F.R. Part 3100), stipulations, and lease notices. Stipulations to protect other surface and subsurface resources would apply, as prescribed by the applicable land use plans listed in **Section 1.4**. These stipulations are identified in **Appendix B** and described in detail in **Appendix C**.

Note that drilling wells on lease parcels is not permitted until an Application for Permit to Drill (APD) is submitted, and the BLM approves (after completing a site-specific environmental review) a complete APD package (Form 3160-3) following the requirements specified in 43 C.F.R. § 3162.3-1 and 43 C.F.R. Part 3170, Subpart 3171. According to standard lease terms and conditions, the BLM has authority to attach COAs to an APD that reduce or avoid impacts to public land, resources, and/or resource values. Under 43 C.F.R. § 3101.12, such reasonable measures may include, but are not limited to, modification to siting or design of facilities, timing of operations, and specification of interim and final reclamation measures. Measures shall be deemed consistent with lease rights granted, provided they do not require relocation of proposed operations by more than 800 meters (2,625 feet); require that operations be sited off the leasehold; or prohibit new surface-disturbing operations for a period in excess of 90 days in any lease year.

CHAPTER 3. AFFECTED ENVIRONMENT AND EFFECTS

The land use plans identified in **Section 1.4** are based on analyses of the affected environment and reasonably foreseeable effects of potential oil and gas leasing, exploration, and development in the planning areas. The following analysis tiers to and expands upon these previous land use plan analyses by incorporating new information. This new analysis will allow the BLM to determine whether the No Action or Full Leasing alternatives may have significant impacts on the affected environment, and if so, whether any of those impacts exceed the effects previously identified and analyzed.

Despite uncertainty at the lease sale stage of whether, when, and in what manner and intensity a lease may be explored or developed, the BLM considered the potential for future oil and gas development of the lease parcels based on recent nearby proposals and development. **Section 3.1** describes the analysis assumptions related to potential future oil and gas development of the nominated lease parcels, as well as an overview of reasonably foreseeable actions. **Section 3.2** describes the general environmental effects of the No Action Alternative. **Section 3.3** describes the general environmental effects of the Full Leasing Alternative. **Section 3.4** presents in detail the environmental effects of leasing and potential future oil and gas development by the issues identified in **Section 1.5.2**.

3.1 ANALYSIS ASSUMPTIONS

While leasing would not authorize any future oil and gas development, future oil and gas development is a reasonable outcome of a granted lease right. To inform this analysis, the following subsections outline three hypothetical future oil and gas development scenarios of the nominated lease parcels by county.

3.1.1 Hypothetical Future Parcel Oil and Gas Development Scenarios

To formulate reasonably foreseeable future oil and gas development scenarios, the parcels were categorized into three distinct areas of the State: (1) Arapaho Parcel, (2) Moffat and Rio Blanco Parcels, and (3) Weld County Parcels. Recent oil and gas development proposals in the vicinity of the three areas were identified and characterized by well spacing order, wells per pad, well lateral reach, and surface disturbance. With these data, a hypothetical development scenario for each area was developed. **Appendix F** provides the detailed characterization of each area.

Arapahoe Parcel

Split estate Parcel CO-2025-09-6253 is located at the Denver Arapahoe Disposal Site in Arapahoe County, with subdivisions to the north, existing and planned public facilities to the east (Ridge View Academy and future athletic field complex), the Lowry Superfund Site and continuation of the Denver Arapahoe Disposal Site to the south, and East 470 Tollway to the west. The parcel is situated amongst existing and planned oil and gas development, and is a part of the Lowry Ranch Comprehensive Area Plan for oil and gas development. After evaluating the Lowry Ranch Comprehensive Area Plan for potential impacts to public health, safety, welfare, the environment, and wildlife resources, the Colorado Energy and Carbon Management Commission approved the proposal on August 7, 2024.

Hypothetical development: Assuming an average 160-acre well spacing across 1,280 acres of Federal and non-Federal mineral estate, develop 8 wells from one disturbance area (hereinafter referred to as "well pad"), which typically includes an access road, pad, and pipelines. From a maximum 25-acre well pad, develop up to 8 horizontal wells with 2-mile lateral reaches (12.5% Federal) to target production in the Niobrara formation, optimizing resource recovery while adhering to state spacing and development regulations.

Moffat and Rio Blanco Parcels

Ten parcels (CO-2025-09-0293, CO-2025-09-0294, CO-2025-09-0295, CO-2025-09-0296, CO-2025-09-0363, CO-2025-09-0371, CO-2025-09-0377, CO-2025-09-0383, CO-2025-09-6031, and CO-2025-09-6251) are located in Rio Blanco and Moffat counties known for agriculture, grazing, oil and gas development, public utilities, recreation, wild horses, and wildlife. This portion of the Uinta-Piceance Basin has a long history of oil and gas drilling and production activity. The WRFO RMP identifies this area as eligible and within a high potential for leasing and subsequent future development of oil and gas. The ten parcels are located within the same general area of northern Rio Blanco County, including one parcel (CO-2025-09-6031) that partially overlaps with Moffat County. The parcels are situated amongst existing and planned oil and gas development.

Hypothetical development: Assuming an average 470-acre well spacing across approximately 11,500 acres of Federal and non-Federal mineral estate (10,391.25 acres of Federal mineral estate plus an additional 10 percent non-Federal), develop 24 wells from 16 well pads (based on the distribution of the parcels). Each well pad is projected to disturb approximately 30 acres. Each well is horizontal with a 2-mile lateral reach (100% Federal) to target production in the Niobrara formation, optimizing resource recovery while adhering to state spacing and development regulations.

Weld County Parcels

Split estate Parcels CO-2025-09-0372 and CO-2025-09-0373 are located in Weld County in a rural setting with various land uses, including, but not limited to, agriculture, grazing, oil and gas development, recreation, utility corridors, wildlife, and wind development. The parcels are in the Denver Julesberg Basin, an area identified by the ECRMP as a high potential area prolific in oil and gas development. Parcel CO-2025-09-0373 is located within the administrative boundary of the Pawnee National Grassland. However, the surface of the parcel is privately owned and the parcel is surrounded by privately owned surface estate. US Interstate 76 bisects Parcel CO-2025-09-0372 with a small riparian area located between the interstate and the frontage road. Both parcels are in areas with existing and planned oil and gas development.

Hypothetical development: Assuming an average 150-acre well spacing across 2,560 acres of Federal and non-Federal mineral estate, develop a combined 18 wells from two well pads. From each maximum 20-acre well pad, develop up to 9 horizontal wells with 2-mile lateral reaches (25% Federal) to target production in the Niobrara and other formations (e.g., Carlile, Codell, Fort Hays, and Sharon Springs), optimizing resource recovery while adhering to state spacing and development regulations.

3.1.2 Reasonably Foreseeable Impacts

Oil and gas development in both the RGFO and WRFO is anticipated to continue in the foreseeable future, increasing overall surface disturbance and potential impacts to resources and values. In recent years, Federal well development has changed from conventional vertical and directional drilling to horizontal drilling. This has reduced the number of developed wells and habitat fragmentation through fewer well pads, but has increased overall oil and gas production.

In 2023, the RGFO produced about 75 percent of Federal oil and about 7 percent of Federal natural gas in Colorado (BLM 2024e). However, this Federal production was a fraction of the total production for the State; about 95 percent of the total oil production and about 97 percent of total natural gas production in the State was non-Federal. Oil and gas development in the RGFO is largely fee/fee-Federal (drilled from a location with non-Federal surface estate overlying non-Federal mineral estate and laterally reaching into and producing from Federal mineral estate) in the Denver Julesburg Basin, which is north of the Denver metro area and east of Interstate 25. These existing trends in the RGFO are anticipated to continue in the foreseeable future.

In the past decade, the WRFO has generally maintained a steady rate of oil and gas development; however, oil and gas development proposals are increasing in number and differ from traditional proposals. Current proposals include horizontal wells targeting the Niobrara Formation.

3.2 General Environmental Effects of the No Action Alternative

Under the No Action Alternative, the parcels totaling 12,114.89 acres would not be offered for competitive leasing in the September 2025 Competitive Oil and Gas Lease Sale. Subsequent impacts from oil and/or gas construction, drilling, completion, and production activities of the lease parcels, or downstream use of produced oil and gas, would not occur. The No Action Alternative would not affect the continuation of current land uses. Oil and gas exploration and development activities may continue in surrounding leased areas. In some areas, the No Action Alternative may increase the likelihood of oil and gas well development on adjacent private lands, which could "drain" Federal minerals of certain lease parcels.

The No Action Alternative (no lease option) in the short-term may result in reduced Federal oil and gas production compared to the Full Leasing Alternative. This reduction would affect Federal and State royalty income and could increase the potential for Federal mineral estate to be drained by wells on adjacent private or State lands until such time as BLM leases the lands or establishes a Compensatory Royalty Agreement. Regardless, oil and gas production and consumption are driven by a variety of complex interacting factors including energy costs, energy efficiency, availability of other energy sources, economics, demographics, geopolitical circumstances, and weather. Therefore, the extent of the No Action Alternative's effects on overall domestic oil and gas production and associated royalties is speculative. The lands could be renominated and offered at a later sale.

3.3 General Environmental Effects of the Full Leasing Alternative

Under the Full Leasing Alternative, the BLM would offer for lease all 13 nominated parcels (**Appendix A**). The sale of parcels and issuance of oil and gas leases are administrative actions. Under the approved RMPs, stipulations are applied to leases to mitigate any known environmental or resource conflicts that may occur on a lease parcel (**Appendix B** and **Appendix C**). On-the-ground impacts would not occur until a lessee or its designated operator applies for and receives approval to undertake surface-disturbing lease actions. Upon receipt of an application for an exploration or development action, the BLM prepares site-specific environmental review documentation. At that time, the BLM may attach COAs to

avoid or minimize potential impacts to resource values and uses beyond the protections provided by the lease stipulations. Under 43 C.F.R. § 3101.12, such reasonable measures may include, but are not limited to, modification to siting or design of facilities, timing of operations, and specification of interim and final reclamation measures. Measures shall be deemed consistent with lease rights granted provided they do not require relocation of proposed operations by more than 800 meters (2,625 feet); require that operations be sited off the leasehold; or prohibit new surface-disturbing operations for a period in excess of 90 days in any lease year.

3.4 Detailed Environmental Effects of Alternatives by Issue

3.4.1 Issue 1: How would leasing and potential oil and gas development affect air quality and related values?

Affected Environment

Affected environment-related data and information describing historical trends and current conditions for air quality in the land use planning areas can be found in BLM Colorado's latest Air Resources Annual Report (www.blm.gov/programs/air-resources/colorado). The following outlines existing conditions and recent air quality related trends for the project area as described in the BLM Colorado Air Annual Report (2024e).

- Section 4.2, Table 8 of the Air Annual Report (BLM 2024e) presents year 2020 National Emissions Inventory (NEI) oil and gas emissions levels for each BLM Colorado Field Office.
    - As shown, RGFO oil and gas exploration and production is responsible for approximately 82 percent of oil and gas related nitrogen oxides (NO_x) and 60 percent of volatile organic compounds (VOCs) emissions statewide. WRFO is third among Colorado Field Offices for NO_x emissions and second for VOC emissions as WRFO has many oil producing wells that typically generate relatively higher VOC levels than gas wells. Table 10 of the Air Annual Report presents 2020 NEI oil and gas hazardous air pollutant (HAP) levels by BLM Colorado Field Office and shows that approximately 49 percent of the state-wide hexane and 12 percent of total benzene emissions from all sources are associated with oil and gas with over 50 percent of these oil-and-gas-related Colorado HAP emissions coming from RGFO-based oil and gas sources. WRFO ranks second in oil-and-gas-related HAPs emissions for BLM Colorado field offices and generates about one-half as much HAPs as RGFO.
- Section 4.4 of the BLM Colorado Air Annual Report (BLM 2024e) discusses the air quality index (AQI). The AQI is designed to help individuals and communities understand the potential health effects associated with different pollution levels, providing guidance on protective measures, especially for vulnerable populations, during periods of poor air quality. For the past 10 plus years, BLM Colorado has operated two (2) air quality monitoring stations in WRFO and data from these stations is used by the Colorado Department of Public Health and Environment (CDPHE) and the United States (U.S.) Environmental Protection Agency (EPA) to estimate AQI values and standards attainment status for northwest Colorado.
    - For Weld County years 2021 to 2023, the AQI was "good" (well below ambient air quality standards) 43 percent of the time, "moderate" (below but near ambient standards) 52 percent of the time, unhealthy for sensitive groups five (5) percent of the time, and unhealthy for all groups zero percent of the time. For Rio Blanco County, the AQI was good 64 percent of the time, moderate 35 percent of the time, unhealthy for sensitive groups one percent of the time, and unhealthy for all groups zero percent of the time. Adverse air quality conditions in northwest Colorado are generally caused by regional wildfires or winter-time ozone intrusions from the Uinta Basin in northeast Utah.
- Section 4.5, Table 12 of the Air Annual Report (BLM 2024e) shows 2021 to 2023 design values for annual average particulate matter less than or equal to 2.5 microns ($PM_{2.5}$).
    - The Weld and Rio Blanco counties' values shown for this period were below the current applicable ambient air quality standard. Table 16 of the Air Annual Report shows county-level ozone 8-hour design values; the Weld County 3-year average value was 74 parts per billions (ppb) for 2021 to 2023, which is

above the ambient standard of 70 ppb. The Rio Blanco County 3-year average ozone 8-hour value was 67 ppb for 2021 to 2023.

- Section 4.6 of the Air Annual Report (BLM 2024e) discusses air quality related values (AQRVs), including visibility and nitrogen deposition.
    - Table 18 of the Air Annual Report shows significant visibility improvements for "clearest days" and "most impaired days" at Rocky Mountain National Park and White River National Forest over the historical monitoring periods. Table 19 of the Air Annual Report shows annual nitrogen deposition for years 2022 and 2023 at locations around Colorado; the annual nitrogen deposition at Rocky Mountain National Park and locations in northwest Colorado has been below the threshold determined to protect natural plant communities and ecosystem services.

Colorado is in attainment with all criteria air pollutants except some areas in the northern portion of the RGFO currently in non-attainment status for ozone. The lease parcels in Arapahoe and the central portion of Weld counties are in the Denver / Front Range "severe" ozone non-attainment area (NAA); the northern Weld County parcel is in the "moderate" ozone NAA.

Environmental Consequences

No Action Alternative

As described in **Section 2.1**, under this alternative, the parcels would not be offered for lease. Consequently, new oil and gas development and operations as analyzed for the Full Leasing Alternative would not occur in the short-term and potentially long-term if not renominated and subsequently offered. However, since the project-level impacts for new oil and gas development that could result from the Full Leasing Alternative would be minimal, the potential impacts for the Full Leasing Alternative and No Action Alternatives would be similar. The reasonably foreseeable air quality analysis under the Full Leasing Alternative would be applicable to the No Action Alternative since new oil and gas that could occur on the subject lease parcels would constitute a small fraction of the overall reasonably foreseeable level of oil and gas (i.e., air pollutant emissions) analyzed. Future local and regional air quality conditions under the No Action Alternative would be similar to those as described for the Full Leasing Alternative.

Full Leasing Alternative

At the leasing stage, no APDs have been submitted, and BLM does not know how the lessee or operator will propose to develop the lease parcel. To assess potential air quality impacts, the BLM prepared air pollutant emissions estimates for a projected number of potential wells that could be developed on the parcels using operator-provided input for nearby projects. It is estimated that as many as 24 new horizontal oil and gas wells could be developed on the WRFO parcels group (from 16 30-acre well pads), approximately 18 new horizontal oil and gas wells on the northern and central Weld County (RGFO) parcels (nine [9] oil and gas wells and 20-acre well pads for each parcel), and up to eight (8) new horizontal wells could be developed on the Arapahoe County (RGFO) parcel (from one 25-acre well pad); see discussion in **Section 3.1.1** for more information related to how these well counts were estimated. An emissions inventory was developed for the projected levels of new oil and gas development on the subject lease parcels based on the following operator input and design features consistent with recent nearby projects:

WRFO Representative Project

- Operation of drilling- and completion-related (including frac pump) engines meeting EPA's nonroad diesel engine Tier 2 emissions standards (https://dieselnet.com/standards/us/nonroad.php).
- "Green" completions utilizing a flare achieving up to 98 percent emissions control efficiency.
- Use of non-natural-gas- (methane) emitting pneumatic devices.
- Controlling up to 98 percent of production storage tank emissions utilizing a flare; tanks will be permitted by the CDPHE.

- Production phase stationary engines and heaters (both powered by natural gas) will be permitted by the CDPHE.
- Leak detection and repair (LDAR) monitoring of components, which reduces volatile organic compounds (VOCs, including HAPs) and methane emissions; components will be permitted by CDPHE.
- Controlling up to 98 percent of emissions from production-phase well blowdowns utilizing a flare.

After applying these assumptions based on operator-provided input for a nearby project and recent oil and gas development activity into BLM's emissions inventory tool (EMIT; see online technical support document for how emissions are calculated here: https://emit-docs-v2.replit.app/), the estimated per-well emissions levels for the hypothetical future project are (values greater than one are rounded to the nearest integer; values less than one are rounded to the nearest tenth):

- Construction / development: approximately 1 ton per year of $PM_{2.5}$ (does not include dust), 2 tons per year of VOCs, 31 tons per year of NO_x, and 0.4 ton per year of HAPs.
- Production (post-development): 0.2 ton per year $PM_{2.5}$ (does not include dust), 8 tons per year of VOCs, 7 tons per year of NO_x, and 0.7 ton per year of HAPs.

RGFO Representative Project

- Application of water on access roads, including portions of county roads, during construction and development phases of the project to effectively minimize local dust impacts.
- Operation of drilling- and completion-related (including frac pump) engines meeting EPA's nonroad diesel engine Tier 4 emissions standards and / or powered by natural gas.
- "Green" completions achieving at least 95 percent of emissions control efficiency.
- Use of non-natural-gas- (methane) emitting pneumatic devices.
- Powering stationary production phase engines with electricity.
- Controlling approximately 95 percent of production storage tank emissions permitted by the CDPHE.
- LDAR monitoring of components, which reduces VOCs, including HAPs, and methane emissions.
- Controlling approximately 95 percent emissions from production-phase well blowdowns.

After applying these assumptions based on operator-provided input for a nearby project and recent oil and gas development activity into BLM's EMIT, the estimated per-well emissions levels for the hypothetical future project are (values greater than one are rounded to the nearest integer; values less than one are rounded to the nearest tenth):

- Construction / development: approximately 1 ton per year of $PM_{2.5}$ (does not include dust), 1 ton per year of VOCs, 8 tons per year of NO_x, and 0.2 ton per year of HAPs.
- Production (post-development): 0.1 ton per year $PM_{2.5}$ (does not include dust), 4 tons per year of VOCs, 0.3 tons per year of NO_x, and 0.1 ton per year of HAPs.

Most of the air quality impacts associated with any new wells developed on the lease parcels would be relatively short-lived as most of the total NO_x and particulate matter (dust, etc.) emissions would occur during the construction / development phase of the projects. Emissions for the post-development / production phase are generally permitted and controlled / limited by the CDPHE. During the construction / development phase when NO_x and PM emissions are expected to be the highest, the maximum air quality impacts (contributions) associated with projects on the lease parcels would likely be insignificant based on the representative project-specific emissions inventory levels and considering the topography, typical meteorological conditions, and sparse network of "sensitive" receptors (residences) in the immediate vicinity of the subject parcels.

Using construction / development engines meeting Tier 4 diesel engine emissions standards (or cleaner) as opposed to dual fuel or natural gas-powered engines meeting Tier 2 diesel nonroad engine emissions standards could result in 50 percent or more NO_x emissions reductions. An ozone sensitivity analysis discussion is provided in the section below

describing ozone benefits that could be realized with using cleaner drilling and fracing engines. As described for the mitigation discussion later, BLM will work with operators to explore the feasibility of using cleaner development-related engines as BLM receives permit applications.

General Conformity

The central Weld and Arapahoe counties' lease parcels are in the Denver – Front Range (DFR) "severe" 8-hour ozone Non-Attainment Area (NAA), and the northern Weld County lease parcel is in the "moderate" ozone NAA. Section 176(c) of the Clean Air Act (CAA), 42 U.S.C. § 7506, prohibits Federal entities from approving actions in nonattainment or maintenance areas that do not "conform" to the State Implementation Plan (SIP). The purpose of this conformity requirement is to ensure that Federal activities (1) do not interfere with the budgets in the SIP, (2) do not cause or contribute to new violations of the National Ambient Air Quality Standards (NAAQS), and (3) do not impede the ability of regulators to attain or maintain the NAAQS. To implement CAA Section 176(c), the EPA issued the General Conformity Rule (40 C.F.R. Part 93, Subpart B), which applies to all Federal actions not funded under U.S.C. Title 23 or the Federal Transit Act. (BLM actions are not funded by U.S.C. Title 23 or the Federal Transit Act.)

The General Conformity Rule established emission thresholds ("de minimis levels") for use in evaluating the conformity of a project (40 C.F.R. § 93.153(b)(1)). If the net increase in reasonably foreseeable upstream and midtream/downstream emissions due to the project or action is less than these thresholds, no further conformity evaluation is required (40 C.F.R. § 93.153(c)(1)). If the emission increase exceeds any of these thresholds, a formal conformity determination would be required. For the DFR "severe" 8-hour ozone NAA, the "de minimis level" is 25 tons per year for NO_x or VOCs, and 100 tons per year (NO_x or VOCs) for the DFR "moderate" ozone NAA. The rule also identifies other actions to which the conformity requirements do not apply (40 C.F.R. § 93.153(c)(2), (d), (e)), as well as actions that are "presumed to conform" with the applicable SIP (40 C.F.R. § 93.153(f)-(i)).

The Full Leasing Alternative has been evaluated in accordance with the provisions of 40 C.F.R. § 93.153, which covers the applicability of conformity determinations. As stated in 40 C.F.R. § 93.153(c)(3), the conformity determination requirements do not apply to Federal actions where the emissions are not reasonably foreseeable. Although subsequent new Federal oil and gas development / operations could occur on the lease parcel, the act of selecting a management alternative and issuing a new lease does not authorize emission-generating activities. Design features, including emission generating equipment operations and activities for a specific project that could occur on a lease parcel, are not known at the planning or leasing stages; and, therefore, it is infeasible to develop an accurate emissions inventory for general conformity purposes. In addition, timing for new oil and gas development is not known until the BLM receives a proposal or APD. For these reasons, BLM Colorado formally conducts general conformity applicability analyses at the permitting (APD) phase, especially when there is a potential of the reasonably foreseeable development representing more than one project as would be the case for large or multiple parcels.

A formal conformity determination can entail air quality modeling studies (not applicable for ozone or $PM_{2.5}$), consultation with state air regulatory and planning agencies to obtain commitments to revise the SIP and include the Federal emissions or to acknowledge that the current SIP inventories include the proposed projects, or to implement measures to mitigate the air quality impacts (i.e., offset all of the reasonably foreseeable emissions for the actions/ projects). The Federal entity responsible for approving the proposed project must demonstrate that the proposed project meets the requirements of the General Conformity Rule. While working under a BLM-CDPHE Memorandum of Understanding (MOU), in late 2023, BLM provided CDPHE with a technical memo including levels of projected Federal oil and gas development and production for future year 2026 (analysis year for DFR "severe" SIP) and BLM received a response letter from CDPHE stating that the projections look reasonable and confirmed that future Federal oil and gas development and production are included in the SIP inventories. It is estimated for the DFR ozone NAA SIP inventories, that approximately 73 new Federal wells will be developed each calendar year, which would adequately account for new wells on the subject RGFO lease parcels and other foreseeable new Federal annual oil and gas development / operations in the NAAs.

Reasonably Foreseeable Effects

In 2017, BLM completed air quality modeling for the Colorado Air Resource Management Modeling Study (CARMMS) version 2.0 that modeled two oil and gas development scenarios ("low" and "high") for 10 years (2016 through 2025) of new oil and gas development / operations in Colorado. The CARMMS 2.0 low scenario assumes that new oil and gas development would follow historical trends and the high scenario is based on full reasonably foreseeable development levels for each BLM Colorado planning area. CARMMS 2.0 used the Western Regional Air Partnership (WRAP) 2011 platform for meteorological dataset and reasonably foreseeable emissions inventories, boundary, and initial air quality conditions. Although it is currently 2025 (projected year for CARMMS 2.0), the modeling results are useful to describe contributions to air quality conditions if the inputs are representative / well understood, and the results are adequately interpolated for describing current or future conditions. In 2023, a Rocky Mountain regional energy-focused air quality modeling study was completed for the BLM that predicted future year 2032 concentrations based on the EPA's 2016 v2 year 2032 future projections for non-oil, gas and coal related upstream / midstream operations, other anthropogenic (mobile, etc.) activities and natural (vegetation, etc.) emissions sources while the U.S. Energy Information Administration (EIA) Annual Energy Outlook (AEO) oil and gas projections were used with BLM fluid minerals specialists input to allocate new oil and gas development and production levels for each Rocky Mountain Region Basin. For the DJ Basin in northeast Colorado, the "high supply" AEO scenario was modeled for both future oil and gas development and production, while for the Piceance Basin in northwest Colorado, the "high supply" AEO scenario was modeled for gas well development / production and the "low" supply scenario for oil well development / production. A copy of the reports with details and information for CARMMS 2.0 and the 2032 Regional Modeling Study can be found online at: https://www.blm.gov/programs/air-resources/colorado.

For this environmental assessment, a "budget" type analysis is used to compare the levels of oil and gas that have been developed in the areas surrounding the subject parcels since baseline years (2019 for Regional Modeling Study) to the levels modeled for the 2032 Regional Study to determine whether the modeling study projected and allocated adequate levels of new oil and gas development in areas near the subject lease parcels in order to validate using the modeling results to describe potential reasonably foreseeable air quality conditions. The 2032 Regional Modeling Study results are used to describe reasonably foreseeable conditions for the project areas since the 2032 Study is based on newer EPA projections for all sectors (i.e., complete reasonably foreseeable air pollutant emissions inventory). In addition, CARMMS 2.0 source apportionment results are used to describe potential Federal oil and gas contributions associated with new development that could be developed / operate in the land use planning areas. Note that air quality concentrations were modeled at four (4)-kilometer (km) and 16-km resolutions for CARMMS 2.0 and the 2032 Regional Modeling Study, respectively (see images below).

WRFO Parcels

Figure 1 shows the subject WRFO lease parcels (yellow shaded), new oil and gas spuds since year 2019 (red crosses), and grid cells (bold squares) for CARMMS 2.0 and the 2032 Regional Modeling Study.

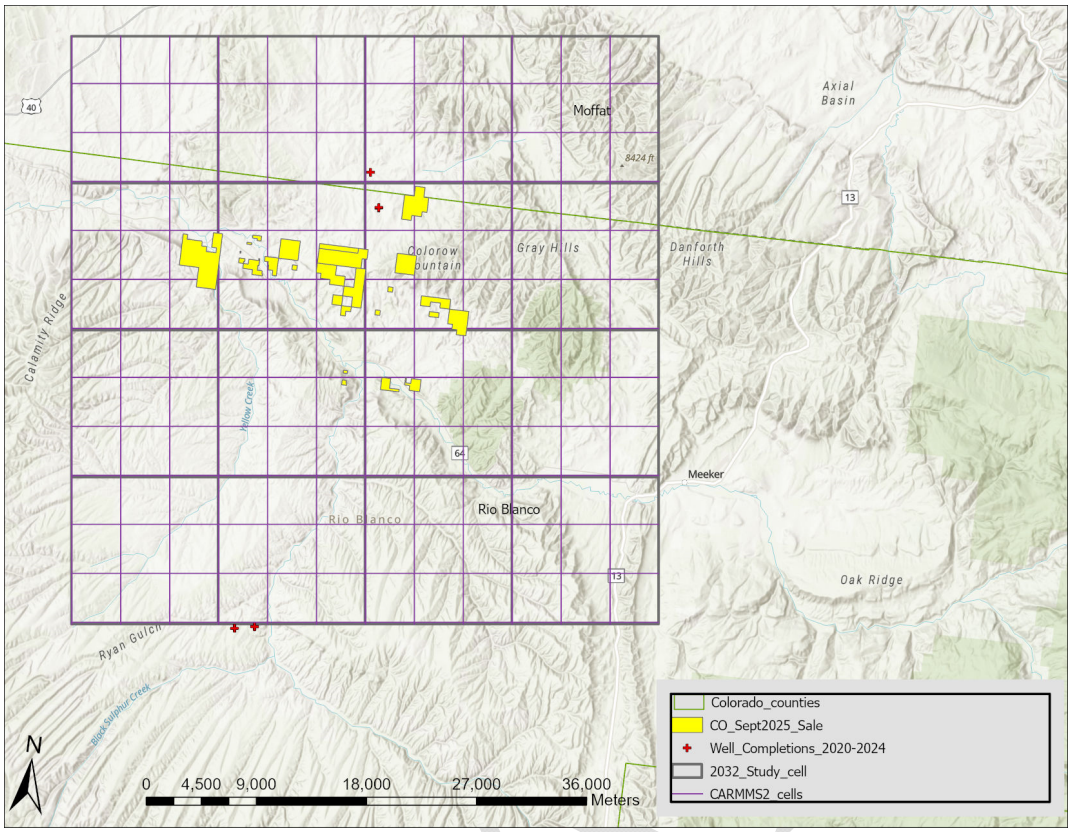

Figure 1. Recent Well Development in Proximity to the WRFO Parcels

CARMMS 2.0

- For the CARMMS 2.0 "low" oil and gas emissions scenario, the level of emissions modeled within the analysis area equates to approximately 15 new Federal wells developed each year or 91 new wells in a production phase operating annually. These well counts were determined using the representative WRFO project previously described. As noted in **Section 3.1.1**, the hypothetical future oil and gas development scenario for the WRFO estimates as many as 24 new Federal wells developed from the subject lease parcels over the lease term.

- The CARMMS 2.0 "low" scenario source apportionment results for the analysis area show that the level of emissions modeled (i.e., number of wells developed or in a post-development production phase annually) would have minimal contribution to reasonably foreseeable ambient air pollutant concentrations for the analysis area. The modeled contribution for the ozone 8-hour average is 1 ppb, for the NO_2 1-hour is 10 ppb, and for the $PM_{2.5}$ annual average is approximately 0.3 micrograms per cubic meter ($\mu g/m^3$). Note that these CARMMS 2.0 "low" scenario source apportionment results also include contributions from new Federal oil and gas outside of the local analysis area (i.e., includes contributions from all new Colorado-based Federal oil and gas).

2032 Regional Modeling Study

- Since Year 2019 (baseline year for the BLM 2032 Regional Modeling Study new oil and gas emissions inventory / modeling), there have been approximately 24 new (Federal and fee) oil and gas wells developed in the sixteen 12-kilometer (km)-by-12 km grid cell local analysis area (**Figure 1**). Applying the production (assuming all wells developed up to this point would be in the production phase) representative per-well levels described earlier

would equate to approximately 189 tons per year of VOCs, 171 tons per year of NO_x, and 5 tons per year of $PM_{2.5}$ from the existing 24 wells in the analysis area. For the 2032 Regional Modeling Study, there were approximately 704 tons per year of VOCs, 388 tons per year of NO_x, and 27 tons per year of $PM_{2.5}$ modeled for new oil and gas development and operations (years 2020 to 2032) in the same sixteen 12-km-by-12-km grid cell area. Using the project-level emissions rates, there are enough emissions left over in the "budget" (levels of the 2032 Regional Modeling Study) to develop seven new wells annually or have 65 additional new wells put into operation through year 2032. As described in **Section 3.1.1**, there could be as many as 24 new Federal wells developed from the subject lease parcels over the lease term period. Therefore, there was an adequate amount of NO_x, VOC, and $PM_{2.5}$ emissions modeled to account for recent oil and gas development as well as foreseeable oil and gas development / operations, including that which could occur on the subject lease parcels supporting the use of the modeling results to describe future air quality conditions for the WRFO area.

- It should be noted that there have been several Federal oil and gas projects approved for this local analysis over the past few years (some of the wells associated with these projects are included in the recent development inventory) and some of the lease parcels for the December 2025 Lease Sale are also located within this area. As described above, the modeling inputs for CARMMS 2.0 and the 2032 Regional Modeling Study adequately account for foreseeable oil and gas development / operations in the area and provide enough budget "space" for additional new oil and gas associated with the recently approved Federal projects and oil and gas that could occur consequent to future leasing.

RGFO Parcels

Figure 2 shows the subject RGFO lease parcels (yellow shaded), new oil and gas spuds since year 2019 (red crosses), and grid cells (bold squares) for CARMMS 2.0 and the 2032 Regional Modeling Study. In addition, ozone non-attainment areas for the 2008 and 2015 standards are shown.

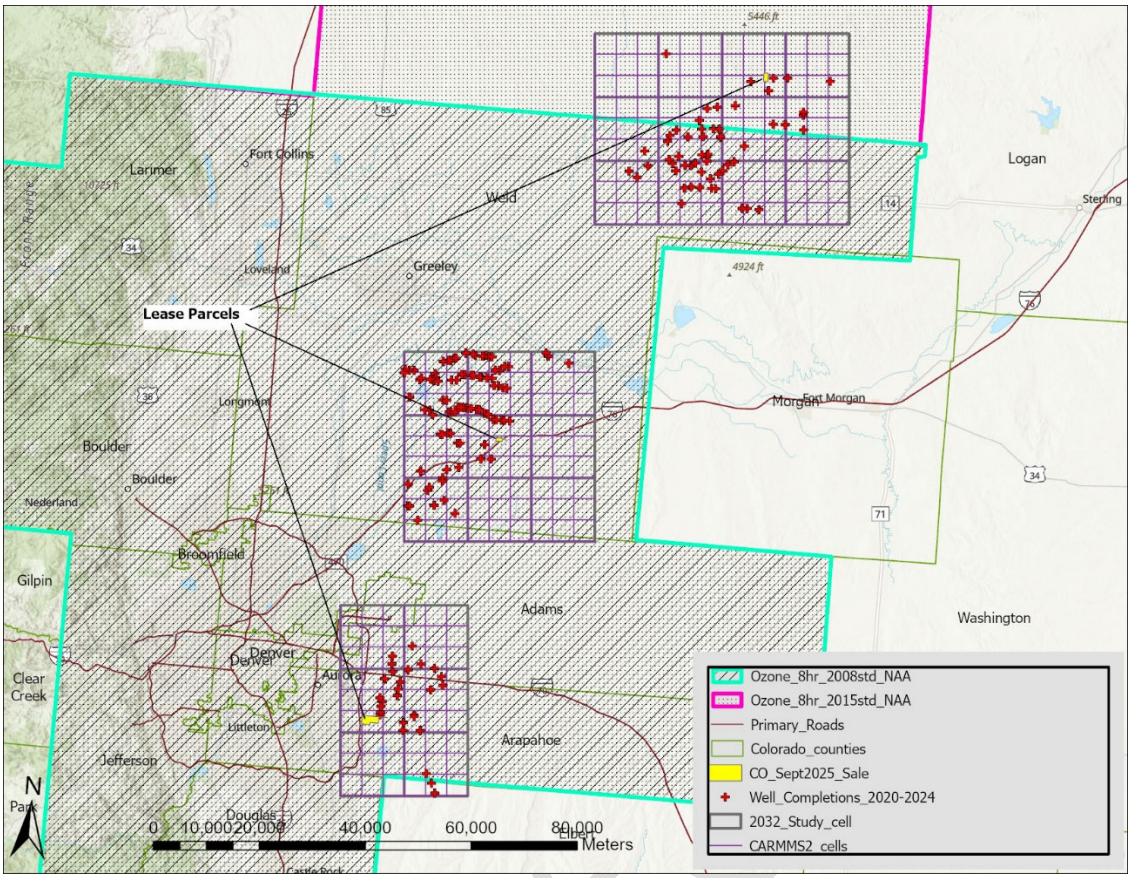

Figure 2. Recent Well Development in Proximity to the RGFO Parcels

Northern Weld County Parcel

CARMMS 2.0

- For the CARMMS 2.0 "low" oil and gas emissions scenario, the levels of emissions modeled within the analysis area equates to approximately 14 new Federal wells developed each year or 136 new wells in a production phase operating annually. These well counts were determined using the representative RGFO project previously described. As noted in **Section 3.1.1**, the hypothetical future oil and gas development scenario for Weld County parcels in the RGFO estimates as many as nine (9) new Federal wells developed from the subject lease parcel over the lease term.

- The CARMMS 2.0 "low" scenario source apportionment results for the analysis area show that the level of emissions modeled (i.e., number of wells developed or in a post-development phase production annually) would have minimal contribution to reasonably foreseeable ambient air pollutant concentrations for the analysis area. The modeled contribution for the ozone 8-hour average is approximately 0.2 ppb, for the NO_2 1-hour is 2 ppb, and for the $PM_{2.5}$ annual average is approximately 0.1 µg/m^3. Note that these CARMMS 2.0 "low" scenario source apportionment results also include contributions from new Federal oil and gas outside of the local analysis area (i.e., includes contributions from all new Colorado-based Federal oil and gas).

2032 Regional Modeling Study

- Since Year 2019 (baseline year for the BLM 2032 Regional Modeling Study new oil and gas emissions inventory / modeling), there have been approximately 349 new (Federal and fee) oil and gas wells developed in the twelve 12-km-by-12-km grid cell local analysis area (**Figure 2**). Applying the production (assuming all wells developed up to this point would be in a production phase) representative per-well levels described earlier for these wells would equate to approximately 780 tons per year of VOCs, 286 tons per year of NO_x, and 18 tons per year of $PM_{2.5}$ from the existing 349 wells recently developed in the analysis area. For the 2032 Regional Modeling Study, there were approximately 3,510 tons per year of VOCs, 807 tons per year of NO_x, and 33 tons per year of $PM_{2.5}$ modeled for new oil and gas development and operations (years 2020 to 2032) in the same twelve 12-km-by-12-km grid cell area. Using the project-level emissions rates, there are enough emissions left over in the "budget" (levels of the 2032 Regional Modeling Study) to develop 63 new wells annually or have 1,221 additional new wells put into operation through 2032. As described in **Section 3.1.1**, there could be as many as nine (9) new Federal wells developed from the subject lease parcel over the lease term period. Therefore, there was an adequate amount of NO_x, VOC, and $PM_{2.5}$ emissions modeled to account for recent oil and gas development as well as foreseeable oil and gas development / operations, including that which could occur on the subject lease parcels supporting the use of the modeling results to describe future air quality conditions for the RGFO area.

- It should be noted that there have been several Federal oil and gas projects approved for this local analysis over the past few years (some of the wells associated with these projects are included in the recent development inventory) and parcels associated with lease reinstatements (2025) are also located within this area. As described above, the modeling inputs for CARMMS 2.0 and the 2032 Regional Modeling Study adequately account for foreseeable oil and gas development / operations in the area and provide enough budget "space" for additional new oil and gas associated with the recently approved Federal projects and oil and gas that could occur consequent to future leasing.

<u>*Central Weld County Parcel*</u>

CARMMS 2.0

- For the CARMMS 2.0 "high" oil and gas emissions scenario, the levels of emissions modeled within the analysis area equates to approximately 6 new Federal wells being developed each year or 62 new wells in a production phase operating annually. These well counts were determined using the representative RGFO project previously described. As noted in **Section 3.1.1**, the hypothetical future oil and gas development scenario for Weld County parcels in the RGFO estimates as many as nine (9) new Federal wells developed from the subject lease parcel over the lease term.

- The CARMMS 2.0 "high" scenario source apportionment results for the analysis area show that the level of emissions modeled (i.e., number of wells developed or in a post-development phase production annually) would have minimal contribution to reasonably foreseeable ambient air pollutant concentrations for the analysis area. The modeled contribution for the ozone 8-hour average is approximately 1 ppb, for the NO_2 1-hour is 2 ppb, and for the $PM_{2.5}$ annual average is approximately 0.3 $\mu g/m^3$. Note that these CARMMS 2.0 "high" scenario source apportionment results also include contributions from new Federal oil and gas outside of the local analysis area (i.e., includes contributions from all new Colorado-based Federal oil and gas).

2032 Regional Modeling Study

- Since Year 2019 (baseline year for the BLM 2032 Regional Modeling Study new oil and gas emissions inventory / modeling), there have been approximately 630 new (Federal and fee) oil and gas wells developed in the nine 12-km-by-12 km grid cell local analysis area (**Figure 2**). Applying the production (assuming all wells developed up

to this point would be in a production phase) representative per-well levels described earlier for these wells would equate to approximately 1,409 tons per year of VOCs, 517 tons per year of NO_x, and 32 tons per year of $PM_{2.5}$ of emissions from the existing 630 wells recently developed in the analysis area. For the 2032 Regional Modeling Study, there were approximately 5,094 tons per year of VOCs, 1,616 tons per year of NOx, and 54 tons per year of $PM_{2.5}$ modeled for new oil and gas development and operations (years 2020 to 2032) in the same nine (9) 12-km-by-12-km grid cell area. Using the project-level emissions rates, there are enough emissions left over in the "budget" (levels of the 2032 Regional Modeling Study) to develop 133 new wells annually or have 1,649 additional new wells put into operation through 2032. As described in **Section 3.1.1**, there could be as many as nine (9) new Federal wells developed from the subject lease parcel over the lease term period. Therefore, there was an adequate amount of NO_x, VOC, and $PM_{2.5}$ emissions modeled to account for recent oil and gas development as well as foreseeable oil and gas development / operations, including that which could occur on the subject lease parcels supporting the use of the modeling results to describe future air quality conditions for the RGFO area.

Arapahoe County Parcel

CARMMS 2.0

- For the CARMMS 2.0 "high" oil and gas emissions scenario, the levels of emissions modeled within the analysis area equates to approximately 2 new Federal wells being developed each year or 18 new wells in a production phase operating annually. These well counts were determined using the representative RGFO project previously described. As noted in **Section 3.1.1**, the hypothetical future oil and gas development scenario for the Arapahoe County parcel in the RGFO estimates as many as eight (8) new Federal wells developed from the subject lease parcel over the lease term.

- The CARMMS 2.0 "high" scenario source apportionment results for the analysis area show that the level of emissions modeled (i.e., number of wells developed or in a post-development phase production annually) would have minimal contribution to reasonably foreseeable ambient air pollutant concentrations for the analysis area. The modeled contribution for the ozone 8-hour average is approximately 0.9 ppb, for the NO_2 1-hour is 0.4 ppb, and for the $PM_{2.5}$ annual average is < 0.1 µg/m^3. Note that these CARMMS 2.0 "high" scenario source apportionment results also include contributions from new Federal oil and gas outside of the local analysis area (i.e., includes contributions from all new Colorado-based Federal oil and gas).

2032 Regional Modeling Study

- Since Year 2019 (baseline year for the BLM 2032 Regional Modeling Study new oil and gas emissions inventory / modeling), there have been approximately 190 new (Federal and fee) oil and gas wells developed in the six (6) 12-km-by-12-km grid cell local analysis area (**Figure 2**). Applying the production (assuming all wells developed up to this point would be in a production phase) representative per-well levels described earlier for these wells would equate to approximately 425 tons per year of VOCs, 156 tons per year of NO_x, and 10 tons per year of PM2.5 of emissions from the existing 190 wells recently developed in the analysis area. For the 2032 Regional Modeling Study, there were approximately 1,040 tons per year of VOCs, 937 tons per year of NO_x, and 32 tons per year of $PM_{2.5}$ modeled for new oil and gas development and operations (years 2020 to 2032) in the same six (6) 12-km-by-12-km grid cell area. Using the project-level emissions rates, there are enough emissions left over in the "budget" (levels modeled of the 2032 Regional Modeling Study) to develop 95 new wells annually or have 275 additional new wells put into operation through 2032. As described in **Section 3.1.1**, there could be as many as eight (8) new Federal wells developed from the subject lease parcel over the lease term. Therefore, there was an adequate amount of NO_x, VOC, and $PM_{2.5}$ emissions modeled to account for recent oil and gas development as well as foreseeable oil and gas development / operations, including that which could occur on the subject lease parcels supporting the use of the modeling results to describe future air quality conditions for the RGFO area.

Statewide

For the analysis area, the 2032 Regional Modeling Study predicted circa 2032 reasonably foreseeable $PM_{2.5}$ annual concentrations well below the current ambient standard. Similarly, the predicted reasonably foreseeable NO_2 and ozone concentrations are well below ambient standards for the analysis area. (**Figure 3** shows the predicted circa 2032 reasonably foreseeable concentrations for the ozone 8-hour average from the 2032 Regional Modeling Study.) Meaning that future AQI values would be "good" (no public health impacts) for all air pollutants at the local areas. These reasonably foreseeable concentration predictions are due to emissions associated with new oil and gas development and operations as well as other anthropogenic and natural emissions sources.

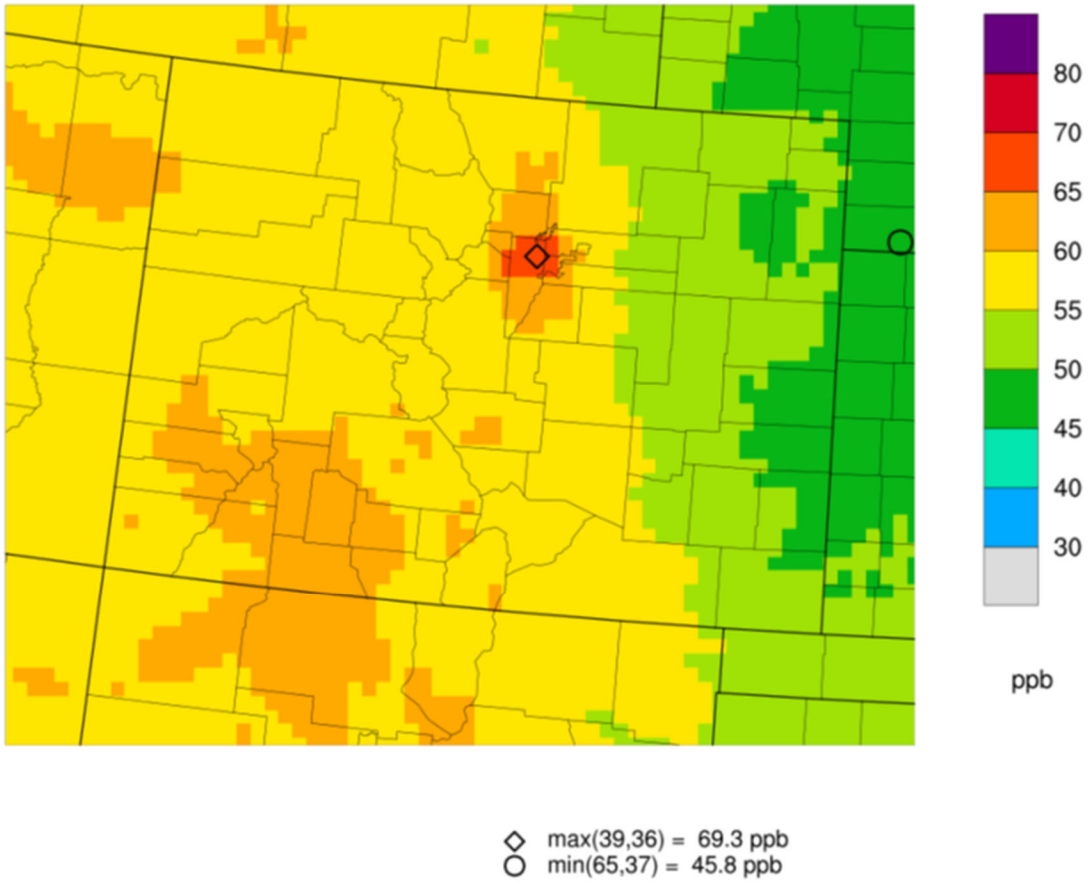

Figure 3. Reasonably Foreseeable 4th Highest Daily Maximum Ozone 8-Hour Average Colorado Ozone

In addition, for the 2032 Regional Modeling Study, an ozone sensitivity analysis was completed for five (5) sub-regions in the Rocky Mountain Region, including the DJ and Piceance Basins in Colorado. For this analysis, ozone source apportionment technology (OSAT) was used to determine whether the modeled 2032 ozone formation was more VOC- or NO_x-sensitive, and apportion the ozone formed to source groups based on the relative contribution of the limiting precursor to the total precursor. Within the DJ and Piceance Basins, analysis was completed for multiple air quality monitoring locations. For all monitors, for the top 10 modeled reasonably foreseeable ozone days (worst ozone days), the ozone formed (although low) from new Federal oil and gas sources is predominantly NO_x-sensitive (driven by NO_x emissions) for both basins. The following figure shows the top 10 modeled days for the Weld County monitor (plots for other monitors in the RGFO and northwest Colorado are similar).

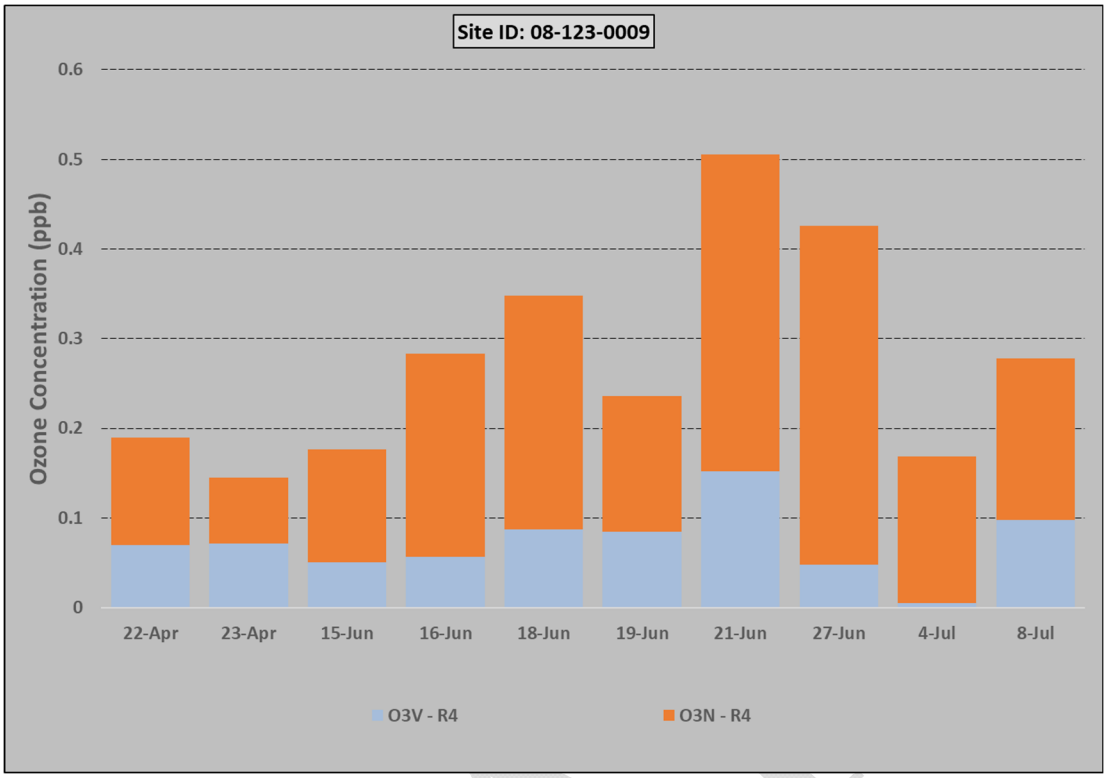

Figure 4. Highest 10 Modeled Days of Ozone Concentrations for the Weld County Monitor

For the 2032 Regional Modeling Study, future (about 2032) maximum modeled reasonably foreseeable nitrogen deposition is below the lowest critical load (3 kilograms of nitrogen per hectare annually [kg N/ha-year]) at all Class I areas in the analysis area (Colorado and parts of adjacent States) and modeled maximum reasonably foreseeable sulfur deposition is below the critical load threshold of 5 kilograms of sulfur per hectare annually [kg S/ha-year] at all Class I areas in the analysis area (Ramboll 2023). Modeled reasonably foreseeable visibility design values in Colorado for the most impaired days are projected to be below the uniform rate of progress toward Year 2064 visibility goals. Design value contributions from the oil and gas sector are modeled to be less than 2 percent of the total future visibility impacts.

In addition to criteria air pollutants and related values, reasonably foreseeable HAPs modeling was completed for BLM's 2032 Regional Modeling Study. As described above for the local area analyses, there were adequate levels of oil-and-gas-related VOC emissions modeled around the parcels to account for recently developed and foreseeable new oil and gas development / operations. This supports using the 2032 Regional Modeling Study results to describe projected HAPs concentrations / cancer risks since VOCs include HAPs. The following summarizes the predicted circa 2032 HAPs concentrations and cancer risks for each local analysis area. More data about HAPs modeling results and emissions inputs for the 2032 Study can be found following this link: https://www.blm.gov/content/iart/.

- WRFO Parcels: HAPs concentrations associated with reasonably foreseeable (Federal and non-Federal, new and existing) oil and gas development and operations in the Rocky Mountain Region through 2032 are expected to impose a maximum 2.1 in one million lifetime total (due to all HAPs modeled) cancer risk for the grid cells around and including the WRFO lease parcels. The contribution to that reasonably foreseeable risk level associated with projected new Federal oil and gas developed from 2020 to 2032 is approximately 0.8 in one million. These cancer risks were not adjusted lower using a residence factor (the residence factor for Rio Blanco County is about 14/70).

- Northern Weld County Parcel: HAPs concentrations associated with reasonably foreseeable (Federal and non-Federal, new and existing) oil and gas development and operations in the Rocky Mountain Region through 2032 are expected to impose a maximum 2.8 in one million lifetime total (due to all HAPs modeled) cancer risk for the grid cells around and including the northern Weld County lease parcel. The contribution to that reasonably foreseeable risk level associated with projected new Federal oil and gas developed from 2020 to 2032 is approximately 0.9 in one million. These cancer risks were not adjusted lower using a residence factor (the residence factor for this area of Weld County is about 11/70). Among the four (4) analysis areas, this area has the highest relative percentage of Federal oil and gas and accordingly, the highest contribution to reasonably foreseeable HAPs concentrations.

- Central Weld County Parcel: HAPs concentrations associated with reasonably foreseeable (Federal and non-Federal, new and existing) oil and gas development and operations in the Rocky Mountain Region through 2032 are expected to impose a maximum 4.7 in one million lifetime total (due to all HAPs modeled) cancer risk for the grid cells around and including the central Weld County lease parcel. The contribution to that reasonably foreseeable risk level associated with projected new Federal oil and gas developed from 2020 to 2032 is approximately 0.8 in one million. These cancer risks were not adjusted lower using a residence factor (the residence factor for this area of Weld County is about 11/70). Among the four (4) analysis areas, this area has the highest density of oil and gas, and therefore, the highest reasonably foreseeable HAPs concentrations but has a relatively lower Federal oil and gas percentage.

- Arapahoe County Parcel: HAPs concentrations associated with reasonably foreseeable (Federal and non-Federal, new and existing) oil and gas development and operations in the Rocky Mountain Region through 2032 are expected to impose a maximum 1.3 in one million lifetime total (due to all HAPs modeled) cancer risk for the grid cells around and including the Arapahoe County lease parcel. The contribution to that reasonably foreseeable risk level associated with projected new Federal oil and gas developed from 2020 to 2032 is approximately 0.3 in one million. These cancer risks were not adjusted lower using a residence factor (the residence factor for this area of Weld County is about 12/70). Among the four (4) analysis areas, this area has the lowest density of oil and gas, and therefore, the lowest reasonably foreseeable HAPs concentrations.

A Reference Concentration (RfC) is an estimate of the safe level of a HAP in the air that people can breathe continuously over a lifetime and is used by EPA in its noncancer health assessments for HAPs. For all the local analysis areas, the 2032 Regional Modeling Study predicts annual average reasonably foreseeable concentrations below the EPA's RfC thresholds for each modeled significant HAP associated with oil and gas, including benzene, n-hexane, and formaldehyde.

Future Project-Level Analyses and Potential Mitigation

For any future proposed project on the subject lease parcels, the BLM will develop a project-specific emissions inventory using operator-provided data, review the preliminary analysis conducted for this lease sale EA, and potentially conduct additional analysis and / or require additional mitigation. Based on the ozone sensitivity analysis described earlier, the BLM will work with operators to discuss the feasibility of going above and beyond current Colorado regulations to operate non-emitting (grid powered) or Tier 4 development phase non-road engines before they are fully required. Not only would this reduce potential NO_x / NO_2 impacts but, as the ozone sensitivity analysis suggests, employing engines with lower NO_x emissions would reduce Federal oil and gas ozone contributions and overall reasonably foreseeable ozone concentrations.

3.4.2 Issue 2: How would leasing and potential oil and gas development affect GHG emissions levels at multiple scales?

Future development of lease parcels under consideration could lead to emissions of carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O); the three most common GHGs associated with oil and gas development. These GHGs would be emitted from activities occurring on the leased parcels and from the consumption of any fluid minerals produced. However, the BLM cannot reasonably determine at the leasing stage whether, when, and in what manner a lease would be explored or developed. The uncertainty that exists at the time the BLM offers a lease for sale includes crucial factors that would affect actual GHG emissions and associated impacts, including but not limited to the future feasibility of developing the lease, well density, geological conditions, development type (vertical, directional, or horizontal), hydrocarbon characteristics, specific equipment used during construction, drilling, and production, abandonment operations, product transportation, and potential regulatory changes over the 10-year primary lease term. Actual development on a lease is likely to vary from what is analyzed in this EA and will be evaluated through a site-specific NEPA analysis when an operator submits an APD or plan of development to the BLM.

For the purposes of this analysis, the BLM has evaluated the potential impacts of the proposed leasing action by estimating and analyzing the projected potential GHG emissions from oil and gas development on the parcels. Projected emissions estimates are based on past actual oil and gas development analyses and any available information from existing development within the State.

Further discussion of climate science, as well as the reasonably foreseeable GHG emissions associated with BLM's oil and gas leasing actions and methodologies, are included in the 2023 BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends (hereinafter referred to as the Annual GHG Report) (BLM 2024f). 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/.

Affected Environment

The Earth's climate system is very complex as there are many factors that can influence atmospheric conditions around the world. In general, reasonably foreseeable GHG concentrations can influence the global climate by increasing the amount of solar energy retained by land, water bodies, and the atmosphere, and 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. A discussion of past, current, and projected future climate conditions is described in Chapters 4, 8, and 9 of the Annual GHG Report. These chapters describe currently observed conditions globally, nationally, and in each State, and present a range of projected scenarios depending on reasonably foreseeable GHG emission levels.

The incremental contribution from a single proposed land management action cannot be accurately translated into its potential effect on reasonably foreseeable GHG levels. In this EA, the BLM uses GHG emissions as a proxy for impacts and provides context with other proxies, such as GHG equivalents. The projected emissions from the Full Leasing Action can be compared to modeled emissions that have been shown to have a definitive or a quantifiable contribution to reasonably foreseeable GHG levels. **Table 3** shows the total estimated GHG emissions from fossil fuels at the global, national, and state scales over the last 6 years. Emissions are shown in megatonnes (Mt) per year of carbon dioxide equivalent (CO_2e). Chapter 3 of the Annual GHG Report contains additional information on GHGs and an explanation of CO_2e. State and national energy-related CO_2 emissions include emissions from fossil fuel use across all sectors (residential, commercial, industrial, transportation, and electricity generation) and are released at the location where the fossil fuels are consumed.

Table 3. Global, National, and State Fossil Fuel GHG Emissions, 2016 to 2021						
Scale	Annual GHG Emissions (Mt CO_2e per year)					
	2016	2017	2018	2019	2020	2021
Global	36,465.6	36,935.6	37,716.2	37,911.4	35,962.9	37,500
U.S.	4,909.9	4,852.5	4,989.8	4,855.9	4,344.9	4,639.1
Colorado	106.7	107.3	108.1	109.5	97.2	101.4
Source: Annual GHG Report, Chapter 5. Table 5-1 (Global and National) and Table 5-2 (State) (BLM, 2024f). Mt (megatonne) = 1 million metric tons						

Additional information on current state, national, and global GHG emissions, as well as the methodology and parameters for estimating emissions from BLM fossil fuel authorizations and reasonably foreseeable GHG emissions is included in the Annual GHG Report (see Chapters 5, 6, and 7) (BLM 2024f).

Environmental Consequences

No Action Alternative

Under the No Action Alternative, the BLM would not offer any of the nominated parcels in the lease sale. However, in the absence of a Land Use Plan Amendment closing the lands to leasing, they could be considered for inclusion in future lease sales. Although no new GHG emissions would result under the No Action Alternative, the national demand for energy is not expected to differ regardless of BLM decision-making.

The BLM does not have a model to estimate energy market substitutions at a spatial resolution needed for this onshore production scenario. Reductions in oil and natural gas produced from Federal leases may be partially offset by non-Federal production (State and private) in the U.S. (in which case the GHG emissions would be similar), or overseas, in which case the GHG emissions would likely be higher, to the extent environmental protection requirements for production are less vigorous, and the produced energy would need to be physically transported into the U.S. There may also be substitution of other energy resources to meet energy demand. These substitution patterns will be different for oil and gas because oil is primarily used for transportation, while natural gas is primarily used for electricity production and manufacturing, and to a lesser degree by residential and commercial users (AEO 2023). Coal and renewable energy sources are stronger substitutes for natural gas in electricity generation. The effect of substitution between different fuel sources on downstream GHG emissions depends on the replacement energy source. For example, coal is a relatively more carbon-intense fuel than natural gas, and hydroelectricity is the least carbon-intense energy source (see Table 10-3 of the Annual GHG Report (BLM 2024f). In the transportation sector, alternatives to oil are likely to be less carbon intensive.

In general, substitution across energy sources or oil and gas production from other locations may not fully meet the energy needs that would otherwise have been realized through production from these leases. Price effects may lower the market equilibrium quantity demanded for some fuel sources, which could lead to a reduction in midstream/downstream GHG emissions. These three effects (geographic substitution, fuel switch, and price effects) are likely to occur in some combination under the No Action Alternative, but the relative contribution of each is unknown. While GHG emissions under the No Action Alternative are unquantified, they are not expected to be zero.

Full Leasing Alternative

While the leasing action does not result in development that would generate GHG emissions, emissions from future potential development of the leased parcels can be estimated for the purposes of this analysis. There are four general phases of post-lease development processes that would generate GHG emissions: 1) well development (well site construction, well drilling, and well completion), 2) well production operations (extraction, separation, gathering), 3) mid-stream (refining, processing, storage, and transport/distribution), and 4) end-use (combustion or other uses) of the fuels produced. While well development and production operation emissions (phases 1 and 2) occur on-lease and the BLM has

authority over these activities, mid-stream and end-use emissions (phases 3 and 4) typically occur off-lease**,** where the BLM has little to no authority.

Emissions inventories at the leasing stage are generally imprecise due to uncertainties including the type of mineral development (oil, gas, or both), scale, and duration of potential development, types of equipment (drill rig engine tier rating, horsepower, fuel type), and the mitigation measures that a future operator may propose in their development plan. For estimating potential emissions for this assessment, the well types and numbers of foreseeable wells per parcel / group of parcels are consistent with the information provided in **Section 3.1.1**. Estimates for per-well oil and gas production levels (this assessment assumes that each new horizontal well will produce both oil and gas) and upstream activities (on-site development / construction and production phase equipment operations, etc.) are based on operator-provided input for nearby projects; there are two representative projects used for calculating potential emissions for the Full Leasing Alternative (one project for the WRFO parcels and one for the RGFO parcels). See details for the representative projects in the air-quality-related "issue" for this EA. 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 CO_2 in the short term) from pipeline and equipment leaks, storage, and maintenance activities. These sources of emissions are highly speculative at the leasing stage; therefore, the BLM has chosen to assume that mid-stream emissions associated with lease parcels for this analysis would be similar to the national level emissions identified by the Department of Energy's National Energy Technology Laboratory (NETL 2009 and NETL 2019). Section 6.5 of the Annual GHG Report (BLM 2024f) includes a more detailed discussion of the methodology for estimating midstream emissions. 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 emission estimates calculated for this analysis were generated using the assumptions previously described above in the BLM Lease Sale Emissions Tool and lease development analysis. Emissions are presented for each of the four phases of post-lease development processes described above.

- Well development emissions occur over a short period and may include emissions from heavy equipment and vehicle exhaust, drill rig engines, completion equipment, pipe venting, and well treatments such as hydraulic fracturing. For this assessment, these emissions are calculated using operator-provided input for a nearby project.

- Well 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. For this assessment, these emissions are calculated using operator-provided input for a nearby project.

- Production operation emissions may result from storage tank breathing and flashing, truck loading, pump engines, heaters and dehydrators, pneumatic instruments or controls, flaring, fugitives, and vehicle exhaust. For this assessment, these emissions are calculated using operator-provided input for a nearby project.

- 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, Table 6-8 and 6-10) (BLM 2024f).

- 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 C.F.R. Part 98). Additional information on emission factors and EUR factors can be found in the Annual GHG Report (Chapter 6).

Table 4 shows the estimated maximum-year and average-year GHG emissions over the life of the lease for both 100-yr and 20-yr global warming potentials (GWPs). Section 3.4 of the Annual GHG Report provides a detailed explanation of GWP (BLM 2024f).

Table 4. Estimated Upstream and Midstream/Downstream Emissions from the Lease Parcels on an Annual and Life-of-Lease Basis

Duration	Emissions (metric tonnes)				
	CO_2	CH_4	N_2O	CO_2e (100-yr)	CO_2e (20-yr)
Max Year	3,180,873	2,084.56	24.947	3,249,804	3,359,660
Average Year	537,130	511.32	3.819	553,410	580,356
Life of Lease	19,540,275	18,857.07	138.661	20,140,070	21,133,838

Source: BLM Lease Sale Emissions Tool.

Table 5 lists the estimated upstream (well development and production operations) and downstream (mid-stream and end-use) GHG emissions in metric tonnes (t) for the subject leases over the average 30-year production life of the lease. In summary, potential GHG emissions from the Full Leasing Alternative could result in GHG emissions of approximately 21 Mt CO_2e over the life of the leases calculated using 20-yr GWPs.

Table 5. Estimated Life-of-Lease Emissions from Well Development, Well Production Operations, Mid-stream, and End-use

Activity	Emissions (metric tonnes)				
	CO_2	CH_4	N_2O	CO_2e (100-yr)	CO_2e (20-yr)
Well Development	134,295	23.86	2.405	135,663	136,920
Well Production Operations	2,021,822	6,929.70	1.004	2,228,601	2,593,796
Mid-Stream	2,143,221	11,365.48	34.283	2,491,272	3,090,233
End-Use	15,240,936	538.03	100.970	15,284,535	15,312,889
Total (Life of Lease)	**19,540,275**	**18,857.07**	**138.661**	**20,140,070**	**21,133,838**

Source: BLM Lease Sale Emissions Tool.

GHG emissions vary annually over the production life of a well due to declining production rates over time. **Figure 5** shows the estimated GHG emissions profile over the production life of a typical lease including the four phases of lease development processes (well development, well production operations, mid-stream, end-use), and gross emissions (total of well development, well production, mid-stream, and end-use).

To put the estimated GHG emissions for this lease sale in a relatable context, potential emissions that could result from development of the lease parcels for this sale can be compared to other common activities that generate GHG emissions. The EPA GHG equivalency calculator (EPA 2024) can be used to express the potential average-year GHG emissions on a scale relatable to everyday life (https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator). For instance, the projected average annual GHG emissions associated with development of the subject leases and minerals produced are equivalent to 156,593 gasoline-fueled passenger vehicles driven for 1 year, or 90,158 homes' annual energy use, or over 30 million barbeque propane tanks, or offset by the carbon sequestration of 673 thousand acres of forest land. Since over 75 percent of the total emissions would be associated with end-use activities, the everyday life activities as described here could be how 75 percent of the total emissions associated with the Full Leasing Alternative are eventually emitted.

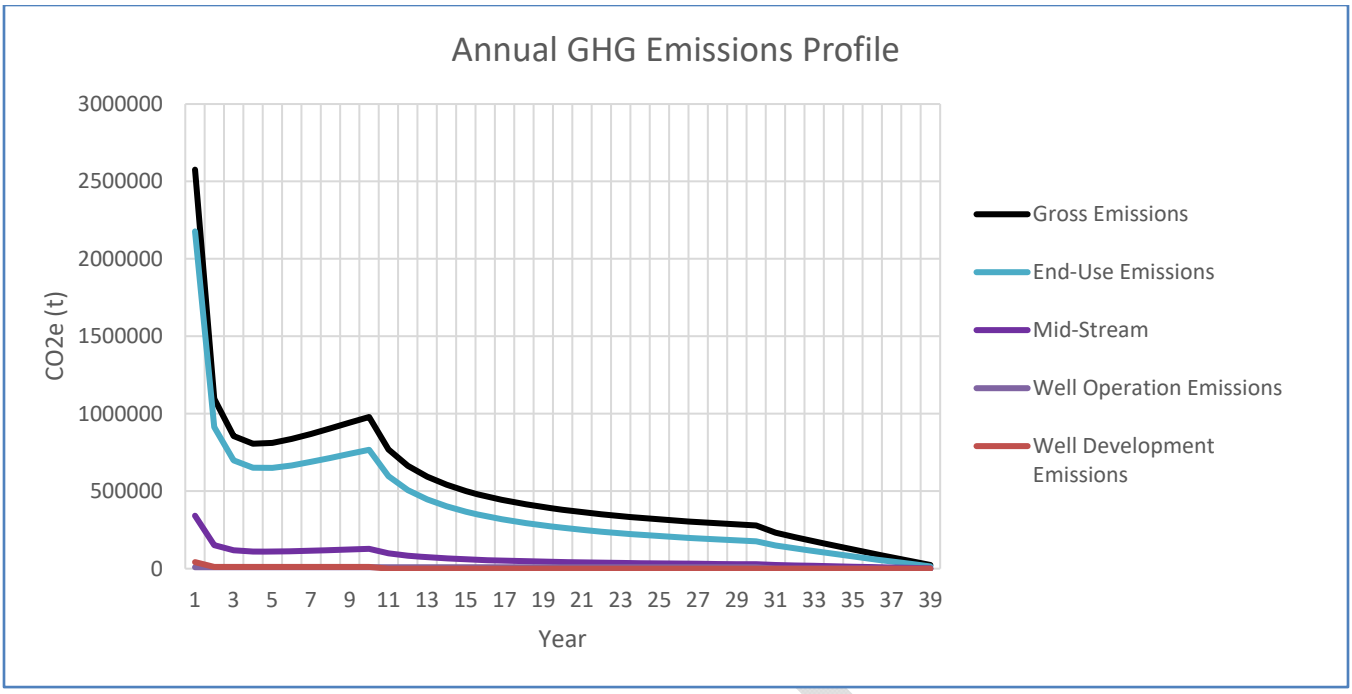

Figure 5. Estimated GHG Emissions Profile over the Life of a Lease

Table 6 compares the estimated annual lease sale emissions to existing Federal fossil fuel (oil, gas, and coal) emissions, State, and U.S. total GHG emissions.

Table 6. Comparison of Lease Sale / Project Total Emissions to Other Sources

Reference	Emissions (Mt CO_2e per year)[1]
Lease Sale and Subsequent Potential Development Emissions (Maximum Year)	20.14
Colorado Onshore Federal (Oil & Gas)[2]	44.72
U.S. Onshore Federal (Oil & Gas)[2]	611.55
U.S. Offshore and Onshore Federal (Oil & Gas)[2]	1,462.29
U.S. Onshore Federal (Oil, Gas, & Coal)[2]	1,046.33
Colorado Total (all sectors)[3]	101.35
U.S. Total (all sectors)	7,260.36

[1] Mt (megatonne) = 1 million metric tons. Estimates are based on 100-yr GWP values.
[2] Federal values come from the BLM Specialist Report on Annual Greenhouse Gas Emissions, Tables ES-1 and ES-2 and Figure ES-1; State values come from Table 6-12.
[3] Total State emissions from all sectors are found in Table 5-2 of the Annual GHG Report (BLM 2024f).

Reasonably Foreseeable Effects

The analysis of GHGs contained in this EA includes estimated emissions from the lease as described above. 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 Annual GHG Report in Chapter 7 (BLM 2024f). The Annual GHG 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 reasonably foreseeable GHG emissions from the BLM fossil fuel leasing program based on actual production and statistical trends as they are presently known.

The methodologies used in the Annual GHG Report provide estimates of foreseeable short-term and projected long-term GHG emissions from activities across the BLM's oil and gas program (BLM 2024f). The foreseeable short-term methodology includes a trends analysis of (1) leased Federal lands that are held-by-production[2]; (2) approved APDs; and (3) leased lands from competitive lease sales projected to occur over the next annual reporting cycle (12 months). The data are used to provide a 30-year life-of-lease projection of potential emissions from all Federal oil and gas activities and potential lease actions over the next 12 months. The projected 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 minerals. For both methodologies, the emissions are calculated using life-cycle-assessment data and emission 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 GHG Report and represent both a hard look at GHG emissions from oil and gas leasing and the best available estimate of reasonably foreseeable emissions related to any one lease sale or set of quarterly lease sales that could occur annually across the entire Federal onshore mineral estate.

Table 7 presents the summation of the 30-year life-of-project emissions estimates for both the short and long-term as previously described for each state where Federal mineral actions have been authorized. The differences between the short- and long-term emissions estimates can be thought of as an approximation of additional leasing that could occur on Federal lands and does not take into consideration additional policies, technological advancements in production or end-use efficiency standards, or an accelerated economy-wide transition away from fossil-fuel-derived energy production.

A detailed explanation of the short-term and long-term emissions estimate methodologies are provided in Sections 6.6 and 6.7 of the Annual GHG Report (BLM 2024f).

Table 7. GHG Emissions from Past, Present, and Reasonably Foreseeable Federal Onshore Lease Development

State	GHG Emissions (Mt CO_2e)					
	Existing Wells (Report Year)	Existing Wells (Projected)	Approved APDs	New Leasing	Short-Term Foreseeable Totals	Long-Term Projected Totals
Alabama	0.57	8.52	0.00	0.18	8.70	16.62
Alaska	1.27	18.90	20.82	43.96	83.67	36.10
Arizona	0.00	0.00	0.00	0.00	0.00	0.00
Arkansas	0.60	9.52	0.24	0.24	9.99	17.56
California	5.10	70.48	4.75	2.17	77.41	140.49
Colorado	44.72	387.63	16.46	16.29	420.39	1,293.28
Idaho	0.00	0.00	0.00	0.29	0.30	0.00
Illinois	0.01	0.10	0.00	0.02	0.12	0.21
Indiana	0.00	0.00	0.00	0.02	0.02	0.00
Kansas	0.23	3.43	0.00	0.22	3.65	6.70
Kentucky	0.01	0.07	0.00	0.03	0.10	0.22
Louisiana	5.20	64.56	31.84	14.98	111.38	151.44
Maryland	0.00	0.00	0.00	0.00	0.00	0.00
Michigan	0.06	1.17	0.00	0.29	1.46	1.74

[2] held-by-production - A provision in an oil or natural gas property lease that allows the lessee to continue drilling activities on the property as long as it is economically producing a minimum amount of oil or gas. The held-by-production provision thereby extends the lessee's right to operate on the property beyond the initial lease term.

Table 7. GHG Emissions from Past, Present, and Reasonably Foreseeable Federal Onshore Lease Development						
State	GHG Emissions (Mt CO_2e)					
	Existing Wells (Report Year)	Existing Wells (Projected)	Approved APDs	New Leasing	Short-Term Foreseeable Totals	Long-Term Projected Totals
Mississippi	0.11	1.50	0.38	0.38	2.25	3.06
Montana	2.02	20.63	1.53	5.41	27.57	56.36
Nebraska	0.01	0.21	0.00	0.03	0.24	0.39
Nevada	0.13	0.99	0.03	0.10	1.12	3.53
New Mexico	399.96	2,844.84	729.98	113.24	3,688.06	11,218.30
New York	0.00	0.01	0.00	0.00	0.01	0.01
North Dakota	33.50	280.74	29.58	6.63	316.95	933.79
Ohio	0.24	2.29	0.00	2.65	4.94	7.04
Oklahoma	1.34	13.21	1.42	1.18	15.81	38.41
Oregon	0.00	0.00	0.00	0.12	0.12	0.00
Pennsylvania	0.00	0.05	0.00	0.67	0.72	0.11
South Dakota	0.10	1.61	0.11	0.11	1.82	2.70
Tennessee	0.00	0.00	0.00	0.00	0.00	0.00
Texas	3.20	35.25	15.07	1.31	51.62	93.23
Utah	12.93	161.65	14.42	29.97	206.04	369.79
Virginia	0.01	0.13	0.00	0.03	0.16	0.25
West Virginia	0.00	0.06	0.00	0.59	0.64	0.12
Wyoming	100.22	892.55	100.35	253.66	1,246.56	2,872.25
Total Onshore Federal	612	4,820	967	495	6,282	17,264
Source: BLM Annual GHG Report, Section 7 (BLM 2024f)						

As detailed in the Annual GHG Report (BLM 2024f), which is incorporated by reference, the BLM also looked at other tools to inform its analysis, including the Model for the Assessment of Greenhouse Gas Induced Climate Change (MAGICC) (see Section 9.0 of the Annual GHG Report). BLM conducted MAGICC runs evaluating potential contributions to global climate and related values for two GHG emissions projection scenarios. These two scenarios were chosen because they reflect the lower total global projected GHG emissions and will therefore reflect the greatest emissions contribution by the BLM relative to global emissions levels resulting in a conservative contribution analysis. Of the two Intergovernmental Panel on Climate Change (IPCC) scenarios chosen, the most optimistic evaluates global CO_2 emissions cut to net zero around 2050. This scenario keeps global warming to around 1.5 degrees Celsius (°C) above pre-industrial temperatures. The second "middle of the road" scenario leaves global CO_2 emissions around current levels before starting to fall by 2050 but does not reach net-zero until 2100. In this scenario, temperatures rise 2.7 degrees C by the end of the century. The MAGICC model results show that regardless of the global climate projection scenario and the pathway that Federal fossil fuels emissions follow, Federal BLM minerals emissions are predicted to have minimal impacts to future global climate through the end of the century. Because the projected Federal mineral CO_2 emissions constitute a larger portion of the global levels in the most optimistic scenario, the modeled impacts are generally higher than those of the "middle of the road" scenario. The maximum BLM fossil fuel (oil, gas and coal) contribution to global temperature increases under these two scenarios is 0.015 °C and 0.013 °C, respectively.

Recent short-term energy outlook reports (STEO) published by the EIA (https://www.eia.gov/outlooks/steo/) (EIA 2024) predict that the world's oil and gas supply and consumption will increase over the next 18 to 24 months. The STEO projections are useful for providing context for the reasonably foreseeable 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. Recent STEOs include the following projections for the next 2 years:

- U.S. liquid fuels consumption is projected to increase to 20.55 million barrels per day (b/d) in 2025 up from 20.30 million b/d in 2024.
- U.S. crude oil production is expected to average 13.59 million b/d in 2025 and rise to 13.73 million b/d in 2026.
- U.S. natural gas consumption is expected to average 90.74 billion cubic feet per day (Bcf/d) in 2025, decreasing slightly to 90.24 Bcf/d in 2026.
- U.S. liquified natural gas (LNG) exports are expected to increase from 12 billion cubic feet/day (Bcf/d) in 2024 to 14 Bcf/d in 2025.
- U.S. coal production is expected to total 478 million short tons (MMst) in 2025 and 476 MMst in 2026.
- Generation from renewable sources is forecast to increase from 1,057.25 billion kilowatts per hour (kW/h) in 2024 to 1,142.70 billion kW/h in 2025.

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 U.S. (EIA 2023). Recent global supply disruptions have also led to multiple releases from the U.S. Strategic Petroleum Reserve 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 percent from 2022 to 2050. The EIA further predicts that 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 CO_2 emissions are expected to fall between 25 percent and 38 percent below the 2005 level, depending on economic growth factors. Further discussion of past, present, and projected global and state GHG emissions can be found in Chapter 5 of the Annual GHG Report (BLM 2024f).

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 (see Section 9.1 of the Annual GHG Report [BLM 2024f]). The IPCC Special Report on Global Warming of 1.5ºC is the most widely accepted authority on the development of a global carbon budget (IPCC 2018). At present, no national or Federal agency carbon budgets have been established and, as such, the global budgets that limit warming to 1.5ºC or 2.0ºC are not useful for BLM decision-making, particularly at the leasing stage, as it is unclear what portion of the budget applies to emissions occurring in the U.S. Stakeholders and members of the public have requested that the BLM consider comparing the estimated Federal oil and gas emissions in the context of global carbon budgets. In the interest of public disclosure, Table 9-1 in the Annual GHG Report provides an estimate of the potential emissions associated with Federal fossil fuel authorizations in relation to IPCC carbon budgets. Total Federal fossil fuel authorizations including coal, natural gas, and oil represent approximately 1.95 percent of the remaining global carbon budget of 275 gigatonnes of CO_2 needed to limit global warming to 1.5ºC.

Emission Control Measures Considered in the Analysis

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 GHG Report provides a more detailed discussion of GHG mitigation strategies (BLM 2024f).

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 Full Leasing Alternative. These regulations include the New Source Performance Standard for Crude Oil and Natural Gas Facilities for Which Construction, Modification or Reconstruction Commenced After September 18, 2015, and On or Before December 6, 2022 (40 C.F.R. Part 60, Subpart OOOOa), Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After December 6, 2022 (40 C.F.R. Part 60, Subpart OOOOb), Emissions Guidelines for Greenhouse Gas Emissions from Existing Crude Oil and Natural Gas Facilities (40 C.F.R. Part 60, Subpart OOOOc), and Waste Emissions Charge for Petroleum and Natural Gas Systems (40 C.F.R. Part 99). These regulations impose emission limits, equipment design standards, and monitoring requirements on oil and gas facilities and a waste emissions charge on methane emissions that exceed 25,000 metric tonnes of CO_2e for applicable petroleum and natural gas facilities currently required to report under the Greenhouse Gas Reporting Rule.

Colorado has strict oil and gas regulations. CDPHE Regulations 3 and 7 for oil and gas have been updated numerous times over the past 10 years to enhance emissions control and reporting requirements for upstream and midstream operational emissions sources, including storage tanks, pneumatics, well completion practices, natural gas venting and flaring, and monitoring with additional requirements for sources located in the Denver – Front Range ozone non-attainment area, where some of the subject parcels are located (CDPHE 2023 and 2024). These comprehensive requirements for upstream and midstream oil and gas are needed given the meteorological conditions, topography, and human population and emissions source distribution in Colorado to achieve compliance with standards and State-mandated goals. Colorado's oil and gas regulations leave little room for additional feasible emissions controls to be required by the BLM.

Future rules and regulations may further affect oil and gas development and operations on Federal mineral estate in Colorado. In January 2021, Colorado published its GHG Pollution Reduction Roadmap report to describe pathways and strategies for achieving goals described in House Bill 1261 (Colorado Governor Jared Polis 2021). Specifically, the Roadmap included near-term actions to reduce GHG emissions that progress towards Colorado's 2025 and 2030 GHG emissions reduction goals. Since it was published, Colorado has tracked the implementation of an identified list of the near-term actions, and by December 2022 had begun work or completed over 90 percent of the identified actions. In February 2024, Colorado published an update to the Roadmap referred to as Roadmap 2.0 (Colorado Governor Jared Polis 2024). Roadmap 2.0 includes an updated inventory of GHG emissions and a new set of near-term actions to guide implementation in the State through 2026. Roadmap 2.0 shows that without any new rules or laws beyond what is already underway as of the fall 2023, Colorado is projected to be more than 80 percent of the way to meeting its statutory goal of a 50 percent emissions reduction in 2030 from 2005 levels. Roadmap 2.0 describes that the oil and gas sector in Colorado is exceeding its GHG reduction targets compared to other sectors. As a part of this Roadmap update, Colorado has committed to 49 additional near-term actions to drive emissions reductions in every sector, including oil and gas. The additional oil and gas actions include enforcing intensity requirements for operations, developing strategies for net GHG neutral oil and gas development and operations, well plugging, reducing truck emissions associated with oil and gas operations, and studying alternative uses for oil and gas wells.

The majority of GHG emissions resulting from Federal fossil fuel authorizations occur outside of the BLM's authority and control. These emissions are referred to as downstream emissions and generally occur off-lease during the transport, distribution, refining, and end-use of the produced Federal minerals. The BLM's regulatory authority is limited to those activities authorized under the terms of the lease, which primarily occur in the "upstream" portions of natural gas and petroleum systems (i.e., the well-development and well-production phases). This decision authority is applicable when development is proposed on public lands and the BLM assesses the specific location, design, and plan of development. In carrying out its responsibilities under the NEPA, the BLM has developed best management practices (BMPs) designed to reduce emissions from field production and operations. BMPs may include limiting emissions from stationary combustion

sources, mobile combustion sources, fugitive sources, and process emissions that may occur during development of lease parcels. Analysis and approval of future development may include the application of BMPs within BLM's authority, included as Conditions of Approval, to reduce or mitigate GHG emissions. Additional measures proposed at the project development phase may be incorporated as applicant-committed measures by the project proponent or added to requisite air quality permits. Additional information on mitigation strategies, including emissions controls and offset options, are provided in Chapter 10 of the Annual GHG Report (BLM 2024f).

Section 2.5 of the Annual GHG Report, *Executive Orders (EOs*), has not been incorporated by reference for this assessment as the EOs discussed therein have been rescinded in accordance with Executive Order 14154, *Unleashing American Energy* (January 20, 2025).

3.4.3 Issue 3: How would oil and gas leasing and potential development affect the socioeconomic conditions of the surrounding areas?

Affected Environment

The September 2025 lease sale includes 13 parcels covering 12,115 acres in Arapahoe, Moffat, Rio Blanco, and Weld counties, Colorado. Accordingly, the socioeconomic analysis includes these counties and the State of Colorado, as the effects of the economic activity generated by the lease sale may impact the conditions in these areas. The local customs, culture, and history of communities in Colorado are entwined with the lands and mineral estates administered by the BLM. People derive a wide range of values from their access, use, development, and enjoyment of natural landscapes administered by each field office. These values contribute to the unique sense of place indicative to the area, as well as the social and economic well-being of households and communities across the analysis area. Just as BLM management actions can affect future access, use, development, and enjoyment of these natural landscapes, field office land use and leasing decisions can affect the social, cultural, and economic well-being of surrounding towns, cities, and areas. At the lease sale stage, it is unknown where, or if, development would occur in the nominated lease parcels; as specific types and locations of development are proposed, their specific potential effects would be analyzed, and addressed in detail at the time of proposed site-specific development. However, in general, acquisition and development of new leases provide short-term local and regional jobs, and long-term revenue on a sustained basis. These may include employment opportunities related to the oil and gas service support industries in the region, as well as Federal, State, and local government revenues related to taxes, royalty payments, and other revenue streams.

As shown in **Table 8**, the four-county study area covers 8,153,448 acres, comprising 42 percent Federally administered lands (the majority [77 percent] of which are BLM-administered), 5.7 percent State/local/Tribal lands, and 52 percent private lands.

Table 8. Socioeconomic Study Area Land Ownership

County	Total Area		Federal		BLM-Administered		State, Local, & Tribal		Private	
	acres	%	acres	%	acres	%	acres	%	acres	%
Arapahoe	512,844	6.3	7,823	0.23	0	0	59,641	13	445,380	10
Moffat	3,032,013	37	1,717,082	50	1,515,541	57	202,511	44	1,112,420	26
Rio Blanco	2,059,970	25	1,512,158	44	1,153,766	43	43,712	9.4	504,100	12
Weld	2,548,621	31	207,857	6.0	275	0.01	156,822	34	2,183,942	51
Study Area	8,153,448	100	3,444,920	100	2,669,582	100	462,686	100	4,245,842	100
Source: U.S. Geological Survey Gap Analysis Program, Protected Areas Database of the U.S. Version 3.0, 2022.										

As shown in **Table 9**, the study area had a total population of 1,035,183 residents in 2023, the latest estimates available, which represents approximately 18 percent of the total State population of over 5.8 million. Arapahoe and Weld Counties

represented 98 percent of the total study area population. Since 2000, the study area's population increased 49 percent, while the State of Colorado grew by 35 percent. Most of that growth occurred in Weld County, with much of the population growth associated with increased oil and gas production (Colorado Department of Local Affairs, State Demography Office 2024).

Table 9. Socioeconomic Study Area Population 2000 to 2023

County	Population 2000	Population 2023	Percent Change	2023 Percent of Total Study Area Population
Arapahoe	490,722	655,760	+34%	63%
Moffat	13,182	13,317	+1.0%	1.3%
Rio Blanco	5,967	6,576	+10%	0.60%
Weld	183,074	359,530	+96%	35%
Study Area	692,945	1,035,183	+49%	100%
Source: Colorado Department of Local Affairs, State Demography Office 2024				

Table 10 provides a demographic breakdown of the population. Arapahoe County has the highest percentage of minorities among the study area, totaling 44 percent, which is slightly above the country (42 percent) and about 10 percent above the State (34 percent). Arapahoe County's demographics are categorized as 56 percent Caucasian, 1 percent Native American, and 21 percent Hispanic or Latino. Weld County also has a higher percentage of minorities (37 percent) compared with Colorado. Weld County's demographics are categorized as 63 percent Caucasian, 1 percent Native American, and 31 percent Hispanic or Latino. Among the socioeconomic study area, Moffat and Rio Blanco counties have minority populations below the statewide and U.S. averages (U.S. Census Bureau 2023a).

Table 10. Socioeconomic Study Area Population Demographics

Geographic Area	Black or African-American Alone	American Indian or Alaska Native Alone	Asian Alone	Native Hawaiian or Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino (of any race)	White Alone	Total Minority Population[1]
U.S.	12%	0.90%	5.8%	0.20%	6.6%	11%	19%	58%	42%
Colorado	4.0%	1.0%	3.2%	0.10%	5.4%	13%	22%	66%	34%
Arapahoe County	11%	1.0%	6.0%	0.30%	6.9%	13%	21%	56%	44%
Moffat County	0.10%	0.80%	0.30%	0.30%	3.7%	9.8%	16%	77%	23%
Rio Blanco County	0.10%	0.80%	0.40%	0%	2.1%	11%	11%	82%	18%
Weld County	1.4%	1.0%	1.7%	0.10%	7.4%	12%	31%	63%	37%
Source: American Community Survey 2023 5-year estimates Table DP05 (U.S. Census Bureau 2023a) [1] Defined as the total population minus the white alone (non-Hispanic) population.									

Table 11 displays per capita income, median household income, and poverty rates for the counties in the study area. The per capita income in 2023 was highest in Arapahoe County ($81,414) and lowest in Moffat County ($52,090) (BEA 2023a). The median household income was also highest in Arapahoe County ($97,215) and lowest in Moffat County ($70,975) (U.S. Census Bureau 2023b). The percentage of people below poverty ranged from 8.5 percent in Arapahoe County to 12 percent in Moffat County. Among the study area counties, Arapahoe, Rio Blanco, and Weld counties'

percentages of people below poverty approximated but were less than the statewide average (9.4 percent); all counties were equal to or less than the country's average (12 percent). Moffat, Rio Blanco, and Weld counties had higher percentages of low-income people compared with the statewide average of 23 percent. Only Moffat County had a percentage of low-income people higher than the country's average (29 percent). Since 1990, historical annual average unemployment rates have generally followed the same trend in the study area. In 2023, all counties in the study area had an unemployment rate between 3.1 percent (Arapahoe County) and 3.3 percent (Rio Blanco and Weld counties) (BLS 2024a).

Table 11. Socioeconomic Study Area Income and Poverty

Geographic Area	Per Capita Income ($)	Median Household Income ($)	People Below Poverty	Families Below Poverty	Low-Income
U.S.	69,810	78,538	12%	8.7%	29%
Colorado	80,068	92,470	9.4%	5.9%	23%
Arapahoe County	81,414	97,215	8.5%	5.7%	20%
Moffat County	52,090	70,975	12%	11%	34%
Rio Blanco County	72,620	72,620	9.0%	7.2%	27%
Weld County	62,532	93,287	9.0%	6.0%	24%
Source: BEA 2023a, U.S. Census Bureau 2023b, U.S. Census Bureau 2023c					

Forty-five percent of the study area's total employment is concentrated in five sectors, including healthcare and social assistance, government, professional and business services, finance and insurance, and retail trade. Since 2001, many of the study area's employment sectors have experienced increased growth ranging from a 6.7-percent increase in manufacturing to over a 275-percent increase in transportation and warehousing employment. The only sectors to record job losses were in the information (-24.1 percent) and wholesale trade (-1.1 percent) sectors (BEA 2023b). The mining sector was also among the fastest growing employment sectors in the study area. Between 2001 and 2022, mining sector employment rose nearly 130 percent, adding over 6,600 jobs over the period.

The natural resources and mining industries (including quarrying and oil and gas extraction) have one of the highest average annual wages in the study area. The wages in those industries are 42 percent higher than the average annual wages across all industries in the study area. Average wage per job numbers are typically lower in agriculture and farming, and leisure and hospitality (BLS 2024b).

Revenues from oil, gas, and coal extraction come from bonus bids, royalties, and rents paid by producers on public lands. These funds are collected and subsequently distributed to the Federal and State governments. The Department of the Interior, through the Office of Natural Resources Revenue (ONRR), collects a set percentage of the sales value of Federal oil, natural gas, and coal; this is known as a royalty. In April 2024, the BLM finalized the Fluid Mineral Leases and Leasing Process Rule that reformed and updated regulations for oil and gas leasing on public lands stewarded by the BLM. The Rule codified Federal oil and gas leasing terms, including the royalty rate, rental rate, and minimum bonus bid rate. The Federal royalty rate for new oil and natural gas leases changed from 12.5 percent to 16.67 percent (H.R. 5376 (2022)).

Leasing mineral rights for the development of Federal minerals generates public revenue. Leaseholders can competitively bid, pay an initial bonus (the minimum bonus bid or more), and subsequently pay rent (until production is established) for the right to develop the resources on public lands. The Fluid Mineral Leases and Leasing Process Rule also increased the annual rental rates for new competitive oil and gas leases to $3.00 per acre for the first 2 years, $5 per acre for years 3 to 8, and $15 per acre thereafter.

Other revenues not included in the royalty, rent, or bonus categories are minimum royalties, estimated royalties, and expression of interest fees. Approximately 50 percent of revenues go to the U.S. Treasury and 49 percent of Federal

mineral revenues for oil and gas development in Colorado are transferred to the Colorado State Treasurer. The portion of revenue allocated to the State, in turn, is distributed to counties, cities, and school districts based on Senate Bill 08-218. Lease revenues and royalties thus provide an additional economic contribution to the State and counties from mineral resource extraction.

Table 12 provides information on revenues, including rental and bonus bid revenue, from existing oil and gas leases for the study area counties. Existing Federal oil and gas leases on properties located in these counties produced over $600,000 in rental income and $16,800 in bonus bids in fiscal year 2023. Royalties from oil and gas leases in Weld County, which totaled approximately $80.8 million, were notably the highest among all counties in the study area.

Table 12. Rents, Royalty, and Bonus Revenue Collected for Colorado and Study Area Counties (Fiscal Year 2023)

County	Commodity	Revenue ($)			
		Rentals	Royalties	Bonus Bids	Other Revenues
Colorado	Oil & Gas	1,225,971	339,555,287	8,646	-13,964,464
	Coal	204,673	25,014,992	686,880	88,455
Arapahoe	Oil & Gas	226	275,744	0	297
Moffat	Oil & Gas	108,692	7,451,716	0	-270,586
Rio Blanco	Oil & Gas	311,799	51,099,373	0	-3,238,768
Weld	Oil & Gas	182,249	80,799,043	16,800	643,627
Study Area Counties Total	Oil & Gas	602,966	139,625,876	16,800	-2,865,430

Source: ONRR 2025
Negative Bonus Bid values may be due to companies correcting errors in royalty, rental and bonus bid payments. If the correction takes place in a different year than the original payment, it appears as a negative entry in the total.

The leasing of these minerals supports local employment and income and generates public revenue for surrounding communities. The economic contributions of Federal fluid mineral leasing actions are largely influenced by the number of acres leased, and can be measured in terms of jobs, income, economic output, and public revenue generated. Additional details on the economic contribution of Federal fluid minerals are discussed in the RMPs identified in **Section 1.4**.

Environmental Consequences

No Action Alternative

Under the No Action Alternative, where the proposed parcels would not be offered and subsequently sold, the employment, revenue, and purchasing opportunities associated with developing and producing wells on these parcels would be foregone, as would the opportunity to provide oil and gas resources from the lease parcels to aid in meeting associated energy demands. The proposed parcels would not be offered for lease, resulting in reduced bonus bid revenues and rentals. Since not leasing these minerals would prevent private entities from exploring and developing these minerals, subsequent associated oil and gas production and generation of royalty revenues would not occur. The State of Colorado, as well as many counties and communities within, rely on oil and gas development as an important part of their economic base. There would be no anticipated impacts from oil and gas development to socioeconomics beyond existing impacts. Existing Federal leases for oil and gas properties would continue to generate rental income.

Full Leasing Alternative

The effect of leasing and development would be the payments received by the Federal and State governments from leasing the offered acres of Federal mineral estate. Other effects that might result, should exploration or development of the leases occur, could include increased employment opportunities related to the oil and gas and service support industry in the

region, labor income, and economic output as well as the economic contributions to Federal, State, and county governments related to lease payments, royalty payments, severance taxes, and property taxes.

Under the Full Leasing Alternative, the complete set of proposed parcels would be offered for sale. The successfully leased parcels would generate Federal bonus bid revenue and annual rents, which would be collected on leased parcels not held by production. As previously noted, these revenues are collected by the Federal government, which then distributes a portion of the collected revenues to the State and counties. The distributed amount is determined by the Federal authority under which the Federal minerals are managed. The bidding process for the September 2025 lease sale is modeled to follow the minimum bonus bids ($10 per acre) and rental prices ($3.00 per acre for the first 2 years, $5 per acre for years 3 to 8, and $15 per acre thereafter). It is assumed that all the offered parcels successfully sell for these minimum values, which are conservative estimates. It is also assumed that the winning bidder for a lease parcel will pay the first-year rental fees and the bonus bid, and continue to pay all rental fees for the full 10-year lease term.

In this analysis, Federal leasing revenue estimates (10-year rentals and bonus bids) are based upon the number of acres offered. There are no guarantees that any of the parcels offered for lease would receive bids. Until the lease sale is conducted, it is unknown which and how many of the offered parcels will be leased.

Due to energy market volatility and the dynamics of the oil and gas industry, the BLM cannot predict the exact economic effects of this leasing action. These effects are specific to which successfully leased parcels will be developed and which developed parcels will produce paying quantities of Federal fluid minerals.

Given this uncertainty, revenue estimates are limited to the effects of leasing and are calculated under the following assumptions:

1. All proposed parcels will be sold.
2. Federal rental income will be collected during the full 10-year term of the leases.
3. All parcels will be leased at the regulatory minimum bonus bid and rental rates.

The estimates based upon these assumptions are provided in (**Table 13**). The Full Leasing Alternative would generate bonus bids totaling $121,150 and annual rental income totaling $799,590. The total value of all rentals and bonus bids received over the 10-year term of the leases would be $920,740.

Table 13. Estimated Federal Revenue from the Full Leasing Alternative

County	Parcel Quantity	Area (acres)	10-Year Rental	Bonus Bid (Minimum $10/acre)	Federal Revenue	State Revenue (including County/Local)	Total Revenue
Arapahoe	1	1,124	$74,184	$11,240	$43,566	$41,858	$85,424
Moffat/Rio Blanco	10	10,391	$685,806	$103,910	$402,755	$386,961	$789,716
Weld	2	600	$39,600	$6,000	$23,256	$22,344	$45,600
Total	13	12,115	$799,590	$121,150	$469,577	$451,163	$920,740

As noted above, Federal rental income and bonus bids from the lease sale described in the Full Leasing Alternative would be shared with the State and pertinent county. During the term of the leases, the Federal government would collect approximately $469,580 in revenue while the State would collect approximately $451,160, a portion of which would be distributed to pertinent counties, cities, and school districts based on Senate Bill 08-218. The amounts distributed to local governments fluctuates, which make it difficult to estimate.

Past research on social impacts associated with energy development shows that social well-being often decreased during a boom, but then tended to increase once the boom is over. A comparative and longitudinal study conducted in Delta,

Vernal, and Tremonton, Utah, and Evanston, Wyoming, addressed issues of social well-being in boomtowns (Brown et al. 1989, Brown et al. 2005, Greider et al. 1991, Hunter et al. 2002, Smith et al. 2001). With the exception of Tremonton, each of these communities experienced a boom during the late 1970s and early 1980s. Delta's boom resulted after the construction of a power plant, while the booms in Evanston and Vernal were primarily related to oil and gas development. At least four surveys were conducted in these communities from 1975 to 1995. Several indicators of social well-being were examined, including perceived social integration, relationships with neighbors, trust of community residents, and community satisfaction. Delta and Evanston showed similar patterns associated with these indicators. During the peak boom years, residents experienced diminished perceived social integration, relationships with neighbors, trust of residents, and community satisfaction. Interestingly, Brown and others (2005) pointed out that the greatest declines in community satisfaction in Delta occurred just before the largest population increase of the 20-year study period, indicating that changes in population cannot alone account for shifts in community satisfaction and social integration. Nonetheless, by 1995, the levels of these indicators had returned to or exceeded pre-boom levels.

Another 2011 study highlights several of the changes seen across the Bakken oil counties and the impacts to quality of life (Bohnenkamp et al. 2011). For example, the study highlights that the familiarity of residents with other residents and the safety often felt in small rural communities has shifted to in-migration of new people and safety concerns resulting from not knowing the new people. The study also highlights concerns over housing prices and values increasing and the changing population. While there is an in-migration of people for oil field jobs, there has also been an out-migration of longtime residents due to not being able to afford the rising housing costs (Bohnenkamp et al. 2011).

A study from 2018 examines five dimensions of social well-being of residents living in an oil boomtown in western North Dakota (Archbold, et al. 2018). Research findings showed that people who reported that they interact with new residents moving into their community felt safe from crime and violence in their community; felt more socially integrated in their community; had high levels of community trust and community satisfaction, and believed that they could count on their neighbors. These findings are important because they highlight the significance of social interaction in communities that experience rapid population growth resulting from increased energy production. Findings from this study are important as they suggest that interactions among old and new residents can improve the lives of all people who live and work in boomtown communities.

The proximity of oil and gas wells and related facilities can influence nearby residential property sales. Several studies have attempted to estimate how property values are impacted by nearby oil or gas exploration, drilling, and production. See Krupnick and Echarte (2017) for a summary of recent studies. In general, these studies find that, at the time of sale, the presence of oil and gas wells near the property reduces the property value relative to what it would have sold for without a nearby well. Unfortunately, the explicit and implicit assumptions used in these estimates (such as the maximum distance to a 'nearby well') vary a great deal from study to study, as does the size of the price impacts, which range from zero to negative 37 percent (Krupnick and Echarte 2017).

Other studies report that the density of pipelines and proximity to pipelines have significant negative impacts on property values in residential neighborhoods (Pan and Daniel 2015). More recently, a study analyzed housing sales from 2006 to 2014 in the Front Range region and found that oil and gas exploration in Colorado's Front Range negatively impacts home prices (Stephens and Weinstein 2019). The study analyzed housing sales from 2006 to 2014 in the Front Range and found that drilling negatively affected the value of proximity to the mountains and mountain views. The study also found that shale development activity lowers housing prices. Further, the study found an expansion of oil and gas production in an amenity-rich area will affect the natural capital of the area; thus, there is a substitution effect between increased growth from shale oil and gas development and a reduction in the value of amenities. Investing the immediate gains, through severance taxes or other fees, from oil and gas extraction into the natural capital of these areas may help ensure these amenity-rich areas maintain their quality of life and continue to experience growth in the long term.

Several studies have found who owns the mineral rights is a possible source of property value differences. Split estates (where the surface estate owner differs from the mineral estate owner) may subject non-Federal surface landowners to Federal mineral development on their lands. In one study (Boslett et al. 2016), property value estimates tended to be

significantly lower in a Colorado region where the minerals were owned by the Federal government compared to other areas where a comparable property was located above a non-Federal mineral estate. Usually, split estate landowners enter into a surface use agreement with the developer and receive compensation, i.e., income, for the use of their land. Estimates of how individual properties are affected by nearby oil and gas development vary from case to case depending on specific location and the exact character and features of a property.

Multiple studies identify concerns about the possible environmental impacts associated with oil and gas exploration and development as one reason for property value differences. But these concerns (and their influence on prices) can be tempered. Roddewig and Cole (2014) state that "(p)ast real estate market studies indicate that investigation and remediation can limit price and value impacts from oil and gas contamination." Note that the BLM actively investigates and seeks remediation of oil and gas contamination resulting from production activities on Federal land or involving Federal minerals.

Current research provides little information on how long these price impacts persist. In a study from Bennett and Loomis (2015), researchers estimated a one percent decrease in urban house prices for every well being drilled within one-half mile "during the time the buyer is deciding upon buying the house," but "(o)nce the well moves out of active drilling and into becoming a producing well, all our models show there is no statistically significant negative effect on house prices."

Similar to the studies cited above, counties in the study area have all experienced significant growth over the last several decades with several communities in these counties considered boomtowns. Between 2000 and 2022, the study area counties' population increased nearly 50 percent and added 342,240 residents. Growth was particularly notable between 2010 to 2022 with an addition of 105,300 residents in Weld County, which was the State's fastest growing county during the period and one of the fastest growing in the nation.

Between 2000 and 2022, employment in the study area grew 38 percent, adding 188,900 workers. During this period, oil and gas-related employment doubled, adding over 6,280 workers, and was one of the fastest growing employment sectors. In several counties across the study area, growth has been largely attributable to oil and gas exploration. Counties across the study area have experienced several boom-and-bust cycles, with periods of rapid growth followed by economic downturns driven by regulatory change, fluctuating oil prices, and technological advancements.

Oil and gas exploration, development, and production may increase traffic and traffic delays, noise, air, and visual impacts. Short-term increases in truck traffic hauling heavy equipment, hydraulic fracturing fluids, and water, as well as increased traffic associated with workers and increased populations, could cause more traffic congestion, increase commuting times, and affect public safety during drilling and completion phases of well development. Traffic levels and their impacts would decrease once wells are in long-term production. Areas with higher development potential, such as in Arapahoe and Weld counties, are more likely to experience these impacts. However, it is unknown at the leasing stage when, where, how, or if future surface disturbance activities associated with oil and gas exploration and development, such as access roads, well pads, pipelines, facilities, and associated infrastructure, would be proposed. Potential future exploration and development of the leases would involve new surface disturbance and additional infrastructure (e.g., roads, pipelines, equipment, facilities).

Subsequent development of a lease may also generate other effects to people living near or using the area in vicinity of the lease. As it is unknown where or even if development would occur at this time, these effects would be analyzed and addressed during the APD stage of development. Other effects could include an increase in overall employment opportunities related to the oil and gas and service support industry in the region, as well as the economic benefits to State and county governments related to royalty payments and severance taxes. Furthermore, other effects could include a small increase in activity and noise disturbance in areas used for agriculture and recreational activities. However, these effects would apply to all land users in the area.

Populations exist within the study area counties that may be adversely affected by leasing and potential future oil and gas exploration and development. The percentage of low-income people in Moffat, Rio Blanco, and Weld counties exceeds

the statewide average of 22.5 percent. Additionally, Arapahoe and Weld Counties have higher proportions of minority populations compared with the statewide average. Impacts from potential new oil and gas development on these lease parcels may adversely affect neighboring communities. These populations may experience adverse impacts including quality of life, visual and noise effects from well drilling and operations, human health and air quality effects, and access to cultural, historical, and subsistence resources.

The BLM realizes that additional adverse impacts may be identified by local communities as specific development locations and types are proposed. Additional site-specific analysis would occur during the APD stage, when COAs are developed to minimize impacts to nearby populations during development and operations. As a result, this discussion assesses only the effects for the issues identified by the BLM during scoping and public comment for the lease sale (**Section 1.5**).

Reasonably Foreseeable Trends and Planned Actions

Any possible future development of fluid mineral resources resulting from this lease sale, together with current oil and gas development, could generate the socioeconomic impacts described in the Full Leasing Alternative. The magnitude of these types of socioeconomic effects would depend on the level and pace of development of the parcels. The parcels have a higher likelihood of development due to proximity to other existing development and high development in the area.

Mitigation Strategies

The type, magnitude, and duration of potential impacts cannot be precisely quantified at this time. Any future drilling activity requires an APD and requisite environmental review, which would include consideration of potential socioeconomic impacts associated with the disturbance and development of specific parcels. Mitigation, if any, would be determined if and when the leased parcels are proposed for development.

3.4.4 Issue 4: How would leasing and potential future oil and gas development affect Native American religious concerns or places of traditional cultural importance in the WRFO?

Affected Environment

Native American Cultural concerns are known in five parcels (CO-2025-09-0295, CO-2025-09-0296, CO-2025-09-0371, CO-2025-09-0377, and CO-2025-09-0383), which overlap with a proposed Area of Critical Environmental Concern for cultural and landscape values formally requested by the Ute Tribes in March 2024.

Environmental Consequences

No Action Alternative

Under the No Action Alternative, potential impacts to Native American religious concerns or places of traditional cultural importance in the WRFO would not occur from potential future oil and gas development associated with the September 2025 Competitive Oil and Gas Lease Sale. However, unless designated otherwise, the areas would remain open to future oil and gas leasing (and subsequent potential future oil and gas development).

Full Leasing Alternative

Leasing and potential future oil and gas development have the potential to impact traditional cultural and religious properties. Discussions with the Tribes on potential impacts and measures to avoid or minimize them are ongoing.

CHAPTER 4. CONSULTATION AND COORDINATION

4.1 AGENCIES AND PERSONS CONSULTED

On November 12, 2024, courtesy letters were mailed to pertinent private surface landowners and nominators of the lease parcels.

The RGFO submitted an informational letter to the State Historic Preservation Office (SHPO) on December 6, 2024. With the use of COAs designed to protect cultural resources on all lands associated with the proposed September 2025 lease sale, the RGFO proposed a finding of no historic properties affected as defined in 36 C.F.R. § 800.5(b).

The WRFO submitted an informational letter to the SHPO on February 4, 2025. With the use of COAs designed to protect cultural resources on all lands associated with the proposed September 2025 lease sale, the WRFO proposed a finding of no adverse effect as defined in 36 C.F.R. § 800.5(b).

4.2 NATIVE AMERICAN TRIBES CONSULTED

At the biannual consultation meeting held with the Ute tribes in October 2018, all three tribes requested a meeting to develop a consultation process specific to the 2018 leasing reform (Instruction Memorandum WO-2018-034). This resulted in the development of the Tribal Consultations for Oil and Gas Leasing Handbook, revised 2022: https://www.blm.gov/colorado/public-room/handbook/tribal-consultations-oil-and-gas-leasing-handbook

Tribal consultation for the leasing actions is done on a government-to-government basis. The RGFO has initiated consultation with the following potentially interested Native American tribes: Apache Tribe of Oklahoma, Cheyenne and Arapaho Tribes of Oklahoma, Cheyenne River Sioux Tribe, Comanche Tribe of Oklahoma, Crow Creek Sioux, Eastern Shoshone, Jicarilla Apache Nation, Kiowa Tribe of Oklahoma, Northern Arapaho Tribe, Northern Cheyenne Tribe, Oglala Sioux Tribe, Pawnee Tribe, Rosebud Sioux Tribe, Southern Ute Tribe, Standing Rock Sioux Tribe, the Ute Indian Tribe of Uintah and Ouray, and the Ute Mountain Ute Tribe. Letters were sent by certified mail on December 6, 2024. To date, the BLM has not received any substantive comments from the tribes.

The WRFO has initiated consultation with the following potentially interested Native American tribes: Eastern Shoshone Tribe of the Wind River Reservation, Southern Ute Indian Tribe, Ute Indian Tribe of Uintah and Ouray, and Ute Mountain Ute Tribe. Letters were sent by certified mail on February 4, 2025. To date, the BLM has not received any responses from the tribes.

The BLM is continuing to engage with the tribes on this consultation. The BLM will consider all communications received from tribes throughout the NEPA analysis of the proposed lease sale and will continue efforts to consult with the tribes and understand potential concerns prior to issuing a leasing decision.

Note that if the parcels were leased, the BLM would initiate Tribal consultation on any proposed oil and gas development of the leases. All tribes have routinely requested additional information for any future site-specific development proposals should any oil and gas leases be sold and later proposed for development for each quarterly sale.

4.3 LIST OF PREPARERS

Table 14. Interdisciplinary Review

Name	Office	Title	Resource(s)
Anderson, Chase	COSO	Geographic Information System (GIS) Specialist	Mapping

Table 14. Interdisciplinary Review			
Name	Office	Title	Resource(s)
Brotherton, John	RGFO	Geologist	Ground Water Resources, Minerals, Paleontological Resources
Cook, Forrest	COSO	Air Quality Scientist	Air Resources
Elowe, Kristin	COSO	Planning & Environmental Coordinator	NEPA Compliance
Geertsen, Justin	WRFO	Hydrologist	Surface Water Resources
Hampton, Stephen	NWD	Aquatic Biologist	Riparian, Fish and Aquatic Wildlife, Special Status Aquatic Species
Landahl, Apostolos	RGFO	Hydrologist	Soil, Surface Water Resources
McNitt, David	RGFO	Wildlife Biologist	Migratory Birds, Special Status Plant Species, Special Status Wildlife Species, Terrestrial Plants, Terrestrial Wildlife
McClernan, Sarah	RGFO	Rangeland Management Specialist	Prime and Unique Farmlands, Range Management
Moore, Jeremiah	RGFO	Forester	Forest Management
Richter, Aaron	RGFO	Aquatic Biologist	Invasive Plants, Riparian, Fish and Aquatic Wildlife, Special Status Aquatic Species
Riebold, San	WRFO	Outdoor Recreation Planner	Lands with Wilderness Characteristics, Recreation, Visual Resources
Schell, Erica	RGFO	Archaeologist	Cultural Resources, Native American Religious Concerns
Skinner, Linda	RGFO	Outdoor Recreation Planner	Lands with Wilderness Characteristics, Recreation, Special Designations, Visual Resources
Sosebee, Chris	WRFO	Park Ranger	Lands with Wilderness Characteristics, Recreation, Visual Resources
Strunk, Lisa	COSO	Economist	Socioeconomics
Trout, Lukas	WRFO	Archaeologist	Cultural Resources, Native American Religious Concerns
Wiser, Shawn	WRFO	Wildlife Biologist	Migratory Birds, Special Status Wildlife Species, Terrestrial Wildlife
Woodruff, Heather	WRFO	Ecologist	Special Status Plant Species, Terrestrial Plants, Wild Horses, Prime and Unique Farmlands, Range Management, Forest Management, Invasive Plants, Soil, Special Designations
Woolley, Carmia	COSO	Natural Resource Specialist	NEPA Compliance

CHAPTER 5. REFERENCES

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Appendix A. Parcels Available for Lease

September 2025 Oil & Gas Preliminary Parcel List
Total Parcel Count: 13 Total Acres: 12114.89

CO-2025-09-0293
CO, White River Field Office, Bureau of Land Management, PD
T. 2 N., R. 97 W., SIXTH PRINCIPAL
Sec. 12 SE1/4SE1/4.
Rio Blanco County
40 Acres
16.670% Royalty Rate
EOI# CO00018366

CO-2025-09-0294 Split Estate
CO, White River Field Office, Bureau of Land Management, PD
Private: BUREAU OF LAND MANAGEMENT
T. 2 N., R. 96 W., SIXTH PRINCIPAL
Sec. 6 LOTS 9 thru 14;
Sec. 6 LOTS 8;
Sec. 6 SW1/4NE1/4, SE1/4NW1/4, E1/2SW1/4, W1/2SE1/4, SE1/4SE1/4;
Sec. 6 SE1/4NE1/4, NE1/4SE1/4.
Rio Blanco County
640.12 Acres
16.670% Royalty Rate
EOI# CO00018382

CO-2025-09-0295
CO, White River Field Office, Bureau of Land Management, PD
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 2 LOTS 5, 6, 9, 21, 22, 38.
Rio Blanco County
75.56 Acres
16.670% Royalty Rate
EOI# CO00018383

CO-2025-09-0296
CO, White River Field Office, Bureau of Land Management, PD
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 4 LOTS 5, 6, 23, 24, 30, 31, 34, 37, 38;
Sec. 4 SE1/4NE1/4, NE1/4SE1/4;
Sec. 5 LOTS 16, 25, 27, 29, 31;
Sec. 5 S1/2S1/2;
Sec. 8 ALL;
Sec. 9 LOTS 1, 4, 6;

Sec. 9 S1/2NE1/4, W1/2NW1/4, SE1/4NW1/4, S1/2;
Sec. 16 ALL.
Rio Blanco County
2401 Acres
16.670% Royalty Rate
EOI# CO00018367

CO-2025-09-0362 Split Estate
CO, Royal Gorge Field Office, Bureau of Land Management, PD
T. 2 N., R. 63 W., SIXTH PRINCIPAL
Sec. 8 NW1/4, W1/2NE1/4, NE1/4NE1/4.
Weld County
280 Acres
16.670% Royalty Rate
EOI# CO00018544

CO-2025-09-0363 Split Estate
CO, White River Field Office, Bureau of Land Management, PD
T. 1 N., R. 96 W., SIXTH PRINCIPAL
Sec. 5 LOTS 7, 8, 10, 16, 18, 20;
Sec. 5 S1/2NE1/4, N1/2SE1/4;
Sec. 6 LOTS 9, 10, 11, 24, 36, 37, 40, 42.
T. 1 N., R. 97 W., SIXTH PRINCIPAL
Sec. 2 LOTS 17, 35.
Rio Blanco County
511.93 Acres
16.670% Royalty Rate
EOI# CO00018678

CO-2025-09-0371
CO, White River Field Office, Bureau of Land Management, PD
T. 2 N., R. 97 W., SIXTH PRINCIPAL
Sec. 2 LOTS 7, 8;
Sec. 2 S1/2NW1/4, W1/2SW1/4;
Sec. 3 LOTS 5 thru 8;
Sec. 3 S1/2N1/2, S1/2;
Sec. 4 LOTS 5 thru 8;
Sec. 4 S1/2N1/2,S1/2;
Sec. 6 LOTS 8 thru 14;
Sec. 6 S1/2NE1/4,SE1/4NW1/4,E1/2SW1/4,SE1/4;
Sec. 7 SE1/4NE1/4.
Rio Blanco County
2195.48 Acres
16.670% Royalty Rate
EOI# CO00018678

CO-2025-09-0373 Split Estate
CO, Royal Gorge Field Office, Bureau of Land Management, PD
T. 10 N., R. 59 W., SIXTH PRINCIPAL
Sec. 25 W1/2.
Weld County
320 Acres
18.750% Royalty Rate
EOI# CO00018313

CO-2025-09-0377
CO, White River Field Office, Bureau of Land Management, PD
T. 2 N., R. 97 W., SIXTH PRINCIPAL
Sec. 9 N1/2, NE1/4SW1/4, N1/2SE1/4, SE1/4SE1/4;
Sec. 10 SW1/4;
Sec. 11 W1/2;
Sec. 14 W1/2;
Sec. 15 NE1/4, SW1/4;
Sec. 22 N1/2NE1/4, SW1/4NE1/4;
Sec. 24 NE1/4NW1/4.
Rio Blanco County
1760 Acres
16.670% Royalty Rate
EOI# CO00018678

CO-2025-09-0383
CO, White River Field Office, Bureau of Land Management, PD
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 11 LOTS 7 thru 9, 11 thru 20;
Sec. 11 NE1/4SW1/4;
Sec. 12 LOTS 1 thru 3, 9 thru 11, 15, 17, 18, 20, 27, 28, 30, 36;
Sec. 12 E1/2NE1/4.
Rio Blanco County
608.96 Acres
16.670% Royalty Rate
EOI# CO00018678

CO-2025-09-6031
CO, White River Field Office, Bureau of Land Management, PD
T. 3 N., R. 96 W., SIXTH PRINCIPAL
Sec. 18 SE1/4;
Sec. 19 LOTS 5 thru 8;
Sec. 19 E1/2, E1/2W1/2;
Sec. 20 W1/2NW1/4, NW1/4SW1/4;
Sec. 30 LOTS 5;
Sec. 30 NE1/4NW1/4.
Moffat, Rio Blanco County
998.2 Acres
16.670% Royalty Rate

EOI# CO00015230

CO-2025-09-6251 Split Estate
CO, White River Field Office, Bureau of Land Management, PD
T. 2 N., R. 96 W., SIXTH PRINCIPAL
Sec. 15 S1/2;
Sec. 16 NE1/4, N1/2NW1/4, S1/2SW1/4;
Sec. 17 NE1/4;
Sec. 22 NE1/4, E1/2NW1/4, NW1/4NW1/4, N1/2SE1/4.
Rio Blanco County
1160 Acres
16.670% Royalty Rate
EOI# CO00018678

CO-2025-09-6253 Split Estate
CO, Royal Gorge Field Office, Bureau of Land Management, ACQ
T. 4 S., R. 65 W., SIXTH PRINCIPAL
Sec. 31 ALL;
Sec. 32 N1/2, N1/2S1/2;
Arapahoe County
1123.64 Acres
16.670% Royalty Rate
EOI# CO00018399

Appendix B. Parcels Available for Lease with Applied Stipulations

CO-2025-09-0293
CO, White River Field Office, Bureau of Land Management, PD
T. 2 N., R. 97 W., SIXTH PRINCIPAL
Sec. 12 SE1/4SE1/4.
Rio Blanco County
40 Acres
16.670% Royalty Rate
EOI# CO00018366

All lands are subject to Exhibit HQ-CR-1 for cultural resource protection.

All lands are subject to Exhibit HQ-MLA-1 concerning Mineral Leasing Act Section 2(a)(2)(A).

All lands are subject to Exhibit HQ-TES-1 for threatened and endangered species.

All lands are subject to Exhibit CO-29 to alert lessee of potential paleontological resource inventory and mitigation.

All lands are subject to Exhibit CO-34 to alert lessee of potential habitat for a threatened, endangered, candidate, or other special status plant or animal.

All lands are subject to Exhibit CO-39 to protect cultural resources.

All lands are subject to Exhibit CO-CSU-BG-1 to maintain, conserve, and protect big game high priority habitat.

All lands are subject to Exhibit CO-TL-BG-1 to reduce disruption of big game during the winter season in crucial big game winter habitat.

All lands are subject to Exhibit CO-LN-BG-1 to alert the lessee that the lease overlaps with CPW-mapped big game HPH and requires a WMP; and CPW recommends a surface density limitation of less than one linear mile of routes per square mile (640 acres).

All lands are subject to Exhibit CO-LN-BG-2 to alert the lessee that the lease area is located within big game habitat or currently under big game HPH review by the State of Colorado and requires a WMP.

CO-2025-09-0294 Split Estate
CO, White River Field Office, Bureau of Land Management, PD
Private: BUREAU OF LAND MANAGEMENT
T. 2 N., R. 96 W., SIXTH PRINCIPAL
Sec. 6 LOTS 9 thru 14;
Sec. 6 LOTS 8;
Sec. 6 SW1/4NE1/4, SE1/4NW1/4, E1/2SW1/4, W1/2SE1/4, SE1/4SE1/4;
Sec. 6 SE1/4NE1/4, NE1/4SE1/4.
Rio Blanco County
640.12 Acres

16.670% Royalty Rate
EOI# CO00018382

All lands are subject to Exhibit HQ-CR-1 for cultural resource protection.

All lands are subject to Exhibit HQ-MLA-1 concerning Mineral Leasing Act Section 2(a)(2)(A).

All lands are subject to Exhibit HQ-TES-1 for threatened and endangered species.

All lands are subject to Exhibit CO-29 to alert lessee of potential paleontological resource inventory and mitigation.

All lands are subject to Exhibit CO-34 to alert lessee of potential habitat for a threatened, endangered, candidate, or other special status plant or animal.

All lands are subject to Exhibit CO-39 to protect cultural resources.

The following lands are subject to Exhibit WR-NSO-12 BLM to protect soils on natural slopes greater than or equal to 50 percent:
T. 2 N., R. 96 W., SIXTH PRINCIPAL
Sec. 6 SE1/4SW1/4, W1/2SE1/4, SE1/4SE1/4.

The following lands are subject to Exhibit WR-NSO-35 to protect wilderness characteristics (Tier 1) as a priority over other multiple uses:
T. 2 N., R. 96 W., SIXTH PRINCIPAL
Sec.6 Lots 9-12.

All lands are subject to Exhibit CO-CSU-BG-1 to maintain, conserve, and protect big game high priority habitat.

The following lands are subject to Exhibit WR-CSU-10 to protect soils on natural slopes greater than or equal to 35 percent but less than 50 percent:
T. 2 N., R. 96 W., SIXTH PRINCIPAL
Sec. 6 LOTS 9-11, 14;
Sec. 6 SW1/4NE1/4, SE1/4NW1/4, E1/2SW1/4, W1/2SE1/4, SE1/4SE1/4.

The following lands are also subject to Exhibit WR-CSU-12 to protect water resources:
T. 2 N., R. 96 W., SIXTH PRINCIPAL
Sec. 6 LOTS 8, 9, 10, 13
Sec. 6 SW1/4NE1/4, SE1/4NW1/4, W1/2SE1/4

All lands are subject to Exhibit CO-TL-BG-1 to reduce disruption of big game during the winter season in crucial big game winter habitat.

All lands are subject to Exhibit CO-TL-BG-2 to reduce behavioral disruption during big game parturition and early young rearing periods.

All lands are subject to Exhibit CO-LN-BG-1 to alert the lessee that the lease overlaps with CPW-mapped big game HPH and requires a WMP; and CPW recommends a surface density limitation of less than one linear mile of routes per square mile (640 acres).

All lands are subject to Exhibit CO-LN-BG-2 to alert the lessee that the lease area is located within big game habitat or currently under big game HPH review by the State of Colorado and requires a WMP.

The following lands are subject to Exhibit WR-LN-10 to alert lessee of an overlapping wild horse herd management area (HMA):
T. 1 N., R. 97 W., SIXTH PRINCIPAL
Sec. 2 LOTS 17, 35.

CO-2025-09-0295
CO, White River Field Office, Bureau of Land Management, PD
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 2 LOTS 5, 6, 9, 21, 22, 38.
Rio Blanco County
75.56 Acres
16.670% Royalty Rate
EOI# CO00018383

All lands are subject to Exhibit HQ-CR-1 for cultural resource protection.

All lands are subject to Exhibit HQ-MLA-1 concerning Mineral Leasing Act Section 2(a)(2)(A).

All lands are subject to Exhibit HQ-TES-1 for threatened and endangered species.

All lands are subject to Exhibit CO-29 to alert lessee of potential paleontological resource inventory and mitigation.

All lands are subject to Exhibit CO-34 to alert lessee of potential habitat for a threatened, endangered, candidate, or other special status plant or animal.

All lands are subject to Exhibit CO-39 to protect cultural resources.

The following lands are subject to Exhibit WR-NSO-17 to protect endangered Colorado River Fish:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 2 LOTS 6, 22.

The following lands are subject to Exhibit WR-NSO-18 to protect raptor nests other than special status raptors (except golden eagles and prairie falcons):
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 2 LOTS 6, 9, 21, 22.

The following lands are subject to Exhibit WR-NSO-19 to protect special status raptor, golden eagle, and prairie falcon nests:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 2 LOTS 6, 9, 21, 22.

The following lands are subject to Exhibit WR-NSO-34 to protect Areas of Critical Environmental Concern and the natural resources for which they were designated:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 2 LOTS 6, 22.

All lands are subject to Exhibit CO-CSU-BG-1 to maintain, conserve, and protect big game high priority habitat.

The following lands are subject to Exhibit WR-CSU-10 to protect soils on natural slopes greater than or equal to 35 percent but less than 50 percent:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 2 LOT 9.

The following lands are subject to Exhibit WR-CSU-12 to protect water resources:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 2 LOTS 5, 6, 9, 21, 22.

The following lands are subject to Exhibit WR-CSU-14 to protect bald eagle nest, roost, and perch habitat:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 2 LOTS 6, 22.

All lands are subject to Exhibit CO-TL-BG-1 to reduce disruption of big game during the winter season in crucial big game winter habitat.

The following lands are subject to Exhibit WR-TL-19 to protect bald eagle nests:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 2 LOTS 6, 21, 22.

The following lands are subject to Exhibit WR-TL-21 to protect bald eagle winter hunting perches:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 2 LOT 6.

All lands are subject to Exhibit CO-LN-BG-1 to alert the lessee that the lease overlaps with CPW-mapped big game HPH and requires a WMP; and CPW recommends a surface density limitation of less than one linear mile of routes per square mile (640 acres).

All lands are subject to Exhibit CO-LN-BG-2 to alert the lessee that the lease area is located within big game habitat or currently under big game HPH review by the State of Colorado and requires a WMP.

All lands are subject to Exhibit WR-LN-10 to alert lessee of an overlapping wild horse herd management area (HMA).

CO-2025-09-0296
CO, White River Field Office, Bureau of Land Management, PD
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 4 LOTS 5, 6, 23, 24, 30, 31, 34, 37, 38;
Sec. 4 SE1/4NE1/4, NE1/4SE1/4;
Sec. 5 LOTS 16, 25, 27, 29, 31;
Sec. 5 S1/2S1/2;
Sec. 8 ALL;
Sec. 9 LOTS 1, 4, 6;
Sec. 9 S1/2NE1/4, W1/2NW1/4, SE1/4NW1/4, S1/2;
Sec. 16 ALL.
Rio Blanco County
2401 Acres

16.670% Royalty Rate
EOI# CO00018367

All lands are subject to Exhibit HQ-CR-1 for cultural resource protection.

All lands are subject to Exhibit HQ-MLA-1 concerning Mineral Leasing Act Section 2(a)(2)(A).

All lands are subject to Exhibit HQ-TES-1 for threatened and endangered species.

All lands are subject to Exhibit CO-29 to alert lessee of potential paleontological resource inventory and mitigation.

All lands are subject to Exhibit CO-34 to alert lessee of potential habitat for a threatened, endangered, candidate, or other special status plant or animal.

All lands are subject to Exhibit CO-39 to protect cultural resources.

The following lands are subject to Exhibit WR-NSO-12 to protect soils on natural slopes greater than or equal to 50 percent:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 4 LOT 31
Sec. 5 LOTS 16, 29, 31;
Sec. 5 S1/2S1/2;
Sec.8 NE1/4NE1/4, W1/2NW1/4, SE1/4NW1/4, SW1/4SW1/4, E1/2SW1/4, NW1/4SE1/4, E1/2SE1/4;
Sec.9 LOT 1, 6;
Sec. 9 NW1/4NW1/4, S1/2SW1/4;
Sec.16 N1/2NE1/4, NW1/4, W1/2SW1/4, NE1/4SW1/4, W1/2SE1/4, SE1/4SE1/4.

The following lands are subject to Exhibit WR-NSO-13 to protect and allow for the improvement of water quality in designated impaired stream segments:
T. 2 N, R. 98 W., SIXTH PRINCIPAL
Sec. 16 SE1/4NE, E1/2SE

The following lands are subject to Exhibit WR-NSO-17 to protect endangered Colorado River Fish:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 4 LOTS 6, 23;
Sec. 5 LOTS 25, 27.

The following lands are subject to Exhibit WR-NSO-18 to protect raptor nests other than special status raptors (except golden eagles and prairie falcons):
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 4 LOTS 5, 6, 23;
Sec. 4 SE1/4NE1/4, NE1/4SE1/4;

The following lands are subject to Exhibit WR-NSO-19 to protect special status raptor, golden eagle, and prairie falcon nests:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 4 LOTS 5, 6, 23;
Sec. 4 SE1/4NE1/4, NE1/4SE1/4;
Sec. 16 E1/2SE1/4.

The following lands are subject to Exhibit WR-NSO-21 to protect bald eagle critical night roosts:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 4 LOT 5;
Sec. 4 SE1/4NE1/;

The following lands are subject to Exhibit WR-NSO-25 to protect Federally listed and candidate plant species:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 16 SW1/4SW1/4.

The following lands are subject to Exhibit WR-NSO-26 to protect occupied and/or suitable habitat for BLM sensitive plants:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 16 W1/2NW1/4, SE1/4NW1/4, SW1/4.

The following lands are subject to Exhibit WR-NSO-34 to protect Areas of Critical Environmental Concern and the natural resources for which they were designated:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 4 LOT 6, 23, 30;
Sec. 5 LOTS 25, 27;
Sec. 16 SW1/4NE1/4, S1/2NW1/4, SW1/4.

All lands are subject to Exhibit CO-CSU-BG-1 to maintain, conserve, and protect big game high priority habitat.

The following lands are subject to Exhibit WR-CSU-10 to protect soils on natural slopes greater than or equal to 35 percent but less than 50 percent:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 4 LOTS 23, 24, 31, 38;
Sec. 4 SE1/4NE1/4, NE1/4SE1/4;
Sec. 5 LOTS 16, 29, 31;
Sec. 5 S1/2S1/2;
Sec. 8 NE1/4NE1/4, SW1/4NE1/4, NW1/4, S1/2;
Sec. 9 LOTS 1, 4, 6,
Sec. 9 NW1/4NW1/4, W1/2SW1/4, SE1/4SW1/4, SE1/4SE1/4;
Sec. 16 NE1/4NE1/4, W1/2NE1/4, NW1/4, SW1/4, SE1/4.

The following lands are subject to Exhibit WR-CSU-11 to protect the productivity of saline soils and to reduce salt and selenium loading of surface waters:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 4 LOTS 31, 34, 37, 38;
Sec. 5 LOTS 16,25, 27, 29, 31;
Sec. 5 S1/2SE1/4;
Sec. 9 LOTS 1,4, 6;
Sec. 9 S1/2NE1/4.

The following lands are subject to Exhibit WR-CSU-12 to protect water resources:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 4 LOTS 5, 6, 23, 24, 31, 34, 37, 38;
Sec. 4 SE1/4NE1/4, NE1/4SE1/4;
Sec. 5 LOTS 16, 25, 29, 31;
Sec. 5 S1/2SW1/4, S1/2SE1/4;
Sec. 8 N1/2NE1/4, SE1/4NE1/4, N1/2NW1/4, NE1/4NW1/4, SW1/4NW1/4, SW1/4, S1/2SE1/4;

Sec. 9 LOTS 1, 4, 6;
Sec. 9 S1/2N1/2, S1/2;
Sec. 16 N1/2, SW1/4, E1/2SE1/4.

The following lands are subject to Exhibit WR-CSU-14 to protect bald eagle nest, roost, and perch habitat:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 4 LOTS 6;
Sec. 5 LOTS 25, 27.

The following lands are subject to Exhibit WR-CSU-15 to protect rock art and standing architecture:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 5;
Sec. 16.

All lands are subject to Exhibit CO-TL-BG-1 to reduce disruption of big game during the winter season in crucial big game winter habitat.

The following lands are subject to Exhibit WR-TL-17 to protect golden eagle and prairie falcon nests:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 9 E1/2SE1/4;
Sec. 16 E1/2NE1/4,SE1/4.

The following lands are subject to Exhibit WR-TL-19 to protect bald eagle nests:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 4 LOTS 5, 6, 23;
Sec. 4 SE1/4NE1/4, NE1/4SE1/4.

The following lands are subject to Exhibit WR-TL-20 to protect bald eagle critical night roosts:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 4 LOT 5;
Sec. 4 SE1/4NE1/4.

All lands are subject to Exhibit CO-LN-BG-1 to alert the lessee that the lease overlaps with CPW-mapped big game HPH and requires a WMP; and CPW recommends a surface density limitation of less than one linear mile of routes per square mile (640 acres).

All lands are subject to Exhibit CO-LN-BG-2 to alert the lessee that the lease area is located within big game habitat or currently under big game HPH review by the State of Colorado and requires a WMP.

All lands are subject to Exhibit WR-LN-07 to alert the lessee of potential and/or critical habitat for federally listed, proposed, and candidate plant species.

The following lands are subject to Exhibit WR-LN-09 to maintain the occupancy, integrity, and extent of white-tailed prairie dog habitat:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 5 LOTS 16, 31.

The following lands are subject to Exhibit WR-LN-10 to alert lessee of an overlapping wild horse herd management area (HMA):
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 4 LOTS 5, 23, 24, 30, 31, 34, 37, 38;

Sec. 4 SE1/4NE1/4, NE1/4SE1/4;
Sec. 5 LOTS 16, 25, 27, 29, 31;
Sec. 5 S1/2S1/2;
Sec. 8 ALL;
Sec. 9 LOTS 1, 4, 6;
Sec. 9 S1/2NE1/4, W1/2NW1/4, SE1/4NW1/4, S1/2;
Sec. 16 ALL.

CO-2025-09-0362 Split Estate
CO, Royal Gorge Field Office, Bureau of Land Management, PD
T. 2 N., R. 63 W., SIXTH PRINCIPAL
Sec. 8 NW1/4, W1/2NE1/4, NE1/4NE1/4.
Weld County
280 Acres
16.670% Royalty Rate
EOI# CO00018544

All lands are subject to Exhibit HQ-CR-1 for cultural resource protection.

All lands are subject to Exhibit HQ-MLA-1 concerning Mineral Leasing Act Section 2(a)(2)(A).

All lands are subject to Exhibit HQ-TES-1 for threatened and endangered species.

All lands are subject to Exhibit RGFO-NSO-Water-5 to protect water resources.

All lands are subject to Exhibit RGFO-CSU-Water-2 to protect perennial, intermittent and ephemeral streams; riparian areas, fens and/or wetlands; and water impoundments.

All lands are subject to Exhibit RGFO-SSR-Wlife-4 to protect the integrity of raptor nest sites.

All lands are subject to Exhibit RGFO-TL-Wlife-12 to reduce disruption of raptor nesting and fledgling habitat.

All lands are subject to Exhibit RGFO-LN-Air-1 to alert lessee of potential supplementary air analysis.

All lands are subject to Exhibit RGFO-LN-Cultural-1 to protect culturally sensitive locations and comply with laws and regulations.

All lands are subject to Exhibit RGFO-LN-SSSpecies-1 to further species conservation and management objectives.

All lands are subject to Exhibit RGFO-LN-SSSpecies-2 for biological inventories.

All lands are subject to Exhibit RGFO-LN-SSSpecies-3 to mitigate effects on Federally listed species that are likely to be adversely affected by water depletions in the South Platte Basin.

All lands are subject to Exhibit RGFO-LN-Tribal-1 to protect culturally sensitive locations and comply with laws and regulations.

CO-2025-09-0363 Split Estate
CO, White River Field Office, Bureau of Land Management, PD
T. 1 N., R. 96 W., SIXTH PRINCIPAL
Sec. 5 LOTS 7, 8, 10, 16, 18, 20;
Sec. 5 S1/2NE1/4, N1/2SE1/4;
Sec. 6 LOTS 9, 10, 11, 24, 36, 37, 40, 42.
T. 1 N., R. 97 W., SIXTH PRINCIPAL
Sec. 2 LOTS 17, 35.
Rio Blanco County
511.93 Acres
16.670% Royalty Rate
EOI# CO00018678

All lands are subject to Exhibit HQ-CR-1 for cultural resource protection.

All lands are subject to Exhibit HQ-MLA-1 concerning Mineral Leasing Act Section 2(a)(2)(A).

All lands are subject to Exhibit HQ-TES-1 for threatened and endangered species.

All lands are subject to Exhibit CO-29 to alert lessee of potential paleontological resource inventory and mitigation.

All lands are subject to Exhibit CO-34 to alert lessee of potential habitat for a threatened, endangered, candidate, or other special status plant or animal.

All lands are subject to Exhibit CO-39 to protect cultural resources.

The following lands are subject to Exhibit WR-NSO-34 to protect Areas of Critical Environmental Concern and the natural resources for which they were designated:
T. 1 N., R. 96 W., SIXTH PRINCIPAL
Sec. 6 LOTS 24, 36.
T. 1 N., R. 97 W., SIXTH PRINCIPAL
Sec. 2 LOTS 17, 35.

All lands are subject to Exhibit CO-CSU-BG-1 to maintain, conserve, and protect big game high priority habitat.

The following lands are subject to Exhibit Wildlife Greater Sage-Grouse CSU-1 to protect General Habitat Management Areas (GHMAs) within 1 mile of Priority Habitat Management Areas (PHMAs):
T. 1 N., R. 96 W., SIXTH PRINCIPAL
Sec. 5 S1/2NE1/4, NE1/4SE1/4.

All lands are subject to Exhibit CO-TL-BG-1 to reduce disruption of big game during the winter season in crucial big game winter habitat.

The following lands are subject to Exhibit Wildlife Greater Sage-Grouse TL-1 to minimize impacts to Greater sage-grouse during lekking, nesting, and early brood-rearing:
T. 1 N., R. 96 W., SIXTH PRINCIPAL
Sec. 5 S1/2NE1/4, NE1/4SE1/4;

All lands are subject to Exhibit CO-LN-BG-1 to alert the lessee that the lease overlaps with CPW-mapped big game HPH and requires a WMP; and CPW recommends a surface density limitation of less than one linear mile of routes per square mile (640 acres).

All lands are subject to Exhibit CO-LN-BG-2 to alert the lessee that the lease area is located within big game habitat or currently under big game HPH review by the State of Colorado and requires a WMP.

All lands are subject to Exhibit WR-LN-10 to alert lessee of an overlapping wild horse herd management area (HMA).

CO-2025-09-0371
CO, White River Field Office, Bureau of Land Management, PD
T. 2 N., R. 97 W., SIXTH PRINCIPAL
Sec. 2 LOTS 7, 8;
Sec. 2 S1/2NW1/4, W1/2SW1/4;
Sec. 3 LOTS 5 thru 8;
Sec. 3 S1/2N1/2, S1/2;
Sec. 4 LOTS 5 thru 8;
Sec. 4 S1/2N1/2,S1/2;
Sec. 6 LOTS 8 thru 14;
Sec. 6 S1/2NE1/4,SE1/4NW1/4,E1/2SW1/4,SE1/4;
Sec. 7 SE1/4NE1/4.
Rio Blanco County
2195.48 Acres
16.670% Royalty Rate
EOI# CO00018678

All lands are subject to Exhibit HQ-CR-1 for cultural resource protection.

All lands are subject to Exhibit HQ-MLA-1 concerning Mineral Leasing Act Section 2(a)(2)(A).

All lands are subject to Exhibit HQ-TES-1 for threatened and endangered species.

All lands are subject to Exhibit CO-29 to alert lessee of potential paleontological resource inventory and mitigation.

All lands are subject to Exhibit CO-34 to alert lessee of potential habitat for a threatened, endangered, candidate, or other special status plant or animal.

All lands are subject to Exhibit CO-39 to protect cultural resources.

The following lands are subject to Exhibit WR-NSO-12 to protect soils on natural slopes greater than or equal to 50 percent:
T. 2 N., R. 97 W., SIXTH PRINCIPAL
Sec. 6 LOT 14;
Sec. 6 SE1/4SW1/4, SE1/4SE1/4.

The following lands are subject to Exhibit WR-NSO-19 to protect special status raptor, golden eagle, and prairie falcon nests:
T. 2 N., R. 97 W., SIXTH PRINCIPAL

Sec. 3 LOTS 7, 8;
Sec. 3 S1/2NW1/4, N1/2SW1/4;

The following lands are subject to Exhibit WR-NSO-26 to protect occupied and/or suitable habitat for BLM sensitive plants:
T. 2 N., R. 97 W., SIXTH PRINCIPAL
Sec. 4 SW1/4.

All lands are subject to Exhibit CO-CSU-BG-1 to maintain, conserve, and protect big game high priority habitat.

The following lands are subject to Exhibit WR-CSU-10 to protect soils on natural slopes greater than or equal to 35 percent but less than 50 percent:
T. 2 N., R. 97 W., SIXTH PRINCIPAL
Sec. 6 LOTS 10-12, 14;
Sec. 6 SE1/4SW1/4, S1/2SE1/4.

The following lands are subject to Exhibit WR-CSU-11 to protect the productivity of saline soils and to reduce salt and selenium loading of surface waters:
T. 2 N., R. 97 W., SIXTH PRINCIPAL
Sec. 6 LOTS 10-14;
Sec. 6 E1/2SW1/4, W1/2SE1/4, SE1/4SE1/4.

The following lands are subject to Exhibit WR-CSU-12 to protect water resources:
T. 2 N., R. 97 W., SIXTH PRINCIPAL
Sec. 2 LOTS 7 and 8
Sec. 2 S1/2NW1/4, W1/2SW1/4
Sec. 3 LOTS 5 through 8
Sec. 3 S1/2NE1/4, E1/2W1/2, NE1/4SE1/4;
Sec. 4 LOTS 5 through 8
Sec. 4 S1/2NE1/4, SW1/4NW1/4, W1/2SW1/4, SE1/4SW1/4, SE1/4SE1/4;
Sec. 6 LOTS 10 through 14
Sec. 6 S1/2NE1/4, NE1/4SW1/4, N1/2SE1/4, SE1/4SE1/4
Sec. 7 SE1/4NE1/4

The following lands are subject to Exhibit WR-CSU-15 to protect rock art and standing architecture:
T. 2 N., R. 97 W., SIXTH PRINCIPAL
Sec. 6.

All lands are subject to Exhibit CO-TL-BG-1 to reduce disruption of big game during the winter season in crucial big game winter habitat.

All lands are subject to Exhibit CO-TL-BG-2 to reduce behavioral disruption during big game parturition and early young rearing periods.

The following lands are subject to Exhibit WR-TL-15 to protect raptor nests other than special status raptors:
T. 2 N., R. 97 W., SIXTH PRINCIPAL
Sec. 4 LOT 8.

The following lands are subject to Exhibit WR-TL-17 to protect golden eagle and prairie falcon nests:
T. 2 N., R. 97 W., SIXTH PRINCIPAL
Sec. 3 LOTS 5 thru 8;

Sec. 3 S1/2N1/2, S1/2;
Sec. 4 LOT 5;
Sec. 4 SE1/4NE1/4, E1/2SE1/4.

All lands are subject to Exhibit CO-LN-BG-1 to alert the lessee that the lease overlaps with CPW-mapped big game HPH and requires a WMP; and CPW recommends a surface density limitation of less than one linear mile of routes per square mile (640 acres).

All lands are subject to Exhibit CO-LN-BG-2 to alert the lessee that the lease area is located within big game habitat or currently under big game HPH review by the State of Colorado and requires a WMP.

CO-2025-09-0373 Split Estate
CO, Royal Gorge Field Office, Bureau of Land Management, PD
T. 10 N., R. 59 W., SIXTH PRINCIPAL
Sec. 25 W1/2.
Weld County
320 Acres
18.750% Royalty Rate
EOI# CO00018313

All lands are subject to Exhibit HQ-CR-1 for cultural resource protection.

All lands are subject to Exhibit HQ-MLA-1 concerning Mineral Leasing Act Section 2(a)(2)(A).

All lands are subject to Exhibit HQ-TES-1 for threatened and endangered species.

All lands are subject to Exhibit RGFO-NSO-Water-5 to protect water resources.

All lands are subject to Exhibit CO-CSU-BG-1 to maintain, conserve, and protect big game high priority habitat.

All lands are subject to Exhibit RGFO-CSU-Water-2 to protect perennial, intermittent and ephemeral streams; riparian areas, fens and/or wetlands; and water impoundments.

All lands are subject to Exhibit CO-TL-BG-1 to reduce disruption of big game during the winter season in crucial big game winter habitat.

All lands are subject to Exhibit CO-LN-BG-1 to alert the lessee that the lease overlaps with CPW-mapped big game HPH and requires a WMP; and CPW recommends a surface density limitation of less than one linear mile of routes per square mile (640 acres).

All lands are subject to Exhibit CO-LN-BG-2 to alert the lessee that the lease area is located within big game habitat or currently under big game HPH review by the State of Colorado and requires a WMP.

All lands are subject to Exhibit RGFO-LN-Air-1 to alert lessee of potential supplementary air analysis.

All lands are subject to Exhibit RGFO-LN-Cultural-1 to protect culturally sensitive locations and comply with laws and regulations.

All lands are subject to Exhibit RGFO-LN-SSSpecies-1 to further species conservation and management objectives.

All lands are subject to Exhibit RGFO-LN-SSSpecies-2 for biological inventories.

All lands are subject to Exhibit RGFO-LN-SSSpecies-3 to mitigate effects on Federally listed species that are likely to be adversely affected by water depletions in the South Platte Basin.

All lands are subject to Exhibit RGFO-LN-Tribal-1 to protect culturally sensitive locations and comply with laws and regulations.

CO-2025-09-0377
CO, White River Field Office, Bureau of Land Management, PD
T. 2 N., R. 97 W., SIXTH PRINCIPAL
Sec. 9 N1/2, NE1/4SW1/4, N1/2SE1/4, SE1/4SE1/4;
Sec. 10 SW1/4;
Sec. 11 W1/2;
Sec. 14 W1/2;
Sec. 15 NE1/4, SW1/4;
Sec. 22 N1/2NE1/4, SW1/4NE1/4;
Sec. 24 NE1/4NW1/4.
Rio Blanco County
1760 Acres
16.670% Royalty Rate
EOI# CO00018678

All lands are subject to Exhibit HQ-CR-1 for cultural resource protection.

All lands are subject to Exhibit HQ-MLA-1 concerning Mineral Leasing Act Section 2(a)(2)(A).

All lands are subject to Exhibit HQ-TES-1 for threatened and endangered species.

All lands are subject to Exhibit CO-29 to alert lessee of potential paleontological resource inventory and mitigation.

All lands are subject to Exhibit CO-34 to alert lessee of potential habitat for a threatened, endangered, candidate, or other special status plant or animal.

All lands are subject to Exhibit CO-39 to protect cultural resources.

The following lands are subject to Exhibit WR-NSO-12 BLM to protect soils on natural slopes greater than or equal to 50 percent:
T. 2 N., R. 97 W., SIXTH PRINCIPAL
Sec. 9 SE1/4NE1/4;
Sec. 10 NE1/4SW1/4;
Sec. 11 W1/2NW1/4, SE1/4NW1/4, SW1/4;
Sec. 14 N1/2NW1/4, W1/2SW1/4, SE1/4SW1/4;
Sec. 15 NE1/4NE1/4, W1/2SW1/4, SE1/4SW1/4;
Sec. 22 NW1/4NE1/4;

Sec. 24 NE1/4NW1/4.

The following lands are subject to Exhibit WR-NSO-26 to protect occupied and/or suitable habitat for BLM sensitive plants:
T. 2 N., R. 97 W., SIXTH PRINCIPAL
Sec. 9 W1/2NW1/4, NE1/4NW1/4.

All lands are subject to Exhibit CO-CSU-BG-1 to maintain, conserve, and protect big game high priority habitat.

The following lands are subject to Exhibit WR-CSU-10 to protect soils on natural slopes greater than or equal to 35 percent but less than 50 percent:
T. 2 N., R. 97 W., SIXTH PRINCIPAL
Sec. 9 SE1/4NE1/4, SW1/4NW1/4, N1/2SE1/4, SE1/4SE1/4;
Sec. 10 SW1/4,
Sec. 11 W1/2NW1/4, SE1/4NW1/4, SW1/4;
Sec. 14 NW1/4, W1/2SW1/4, SE1/4SW1/4,
Sec. 15 NE1/4, SW1/4,
Sec. 22 N1/2NE1/4,
Sec. 24 NE1/4NW1/4.

The following lands are subject to Exhibit WR-CSU-12 to protect water resources:
T. 2 N R 97 W., SIXTH PRINCIPAL
Sec. 9 NE1/4, E1/2NW1/4, NW1/4NW1/4, NE1/4SW1/4, SE1/4SE1/4;
Sec. 10 SW1/4
Sec. 11 NW1/4, NE1/4SW1/4, W1/2SW1/4;
Sec. 14
Sec. 15 NE1/4
Sec. 22
Sec. 24

The following lands are subject to Exhibit WR-CSU-15 to protect rock art and standing architecture:
T. 2 N., R. 97 W., SIXTH PRINCIPAL
Sec. 9.

All lands are subject to Exhibit CO-TL-BG-1 to reduce disruption of big game during the winter season in crucial big game winter habitat.

All lands are subject to Exhibit CO-LN-BG-1 to alert the lessee that the lease overlaps with CPW-mapped big game HPH and requires a WMP; and CPW recommends a surface density limitation of less than one linear mile of routes per square mile (640 acres).

All lands are subject to Exhibit CO-LN-BG-2 to alert the lessee that the lease area is located within big game habitat or currently under big game HPH review by the State of Colorado and requires a WMP.

CO-2025-09-0383
CO, White River Field Office, Bureau of Land Management, PD
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 11 LOTS 7 thru 9, 11 thru 20;
Sec. 11 NE1/4SW1/4;

Sec. 12 LOTS 1 thru 3, 9 thru 11, 15, 17, 18, 20, 27, 28, 30, 36;
Sec. 12 E1/2NE1/4.
Rio Blanco County
608.96 Acres
16.670% Royalty Rate
EOI# CO00018678

All lands are subject to Exhibit HQ-CR-1 for cultural resource protection.

All lands are subject to Exhibit HQ-MLA-1 concerning Mineral Leasing Act Section 2(a)(2)(A).

All lands are subject to Exhibit HQ-TES-1 for threatened and endangered species.

All lands are subject to Exhibit CO-29 to alert lessee of potential paleontological resource inventory and mitigation.

All lands are subject to Exhibit CO-34 to alert lessee of potential habitat for a threatened, endangered, candidate, or other special status plant or animal.

All lands are subject to Exhibit CO-39 to protect cultural resources.

The following lands are subject to Exhibit WR-NSO-12 to protect soils on natural slopes greater than or equal to 50 percent:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 12 LOT 1, 2, 3, 27;
Sec. 12 NE1/4NE1/4.

The following lands are subject to Exhibit WR-NSO-17 to protect endangered Colorado River Fish:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 12 LOTS 3, 9, 27, 36.

The following lands are subject to Exhibit WR-NSO-18 to protect raptor nests other than special status raptors (except golden eagles and prairie falcons):
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 11 LOTS 8 thru 9, 11, 14;
Sec. 12 LOTS 1 thru 3, 15, 17.

The following lands are subject to Exhibit WR-NSO-19 to protect special status raptor, golden eagle, and prairie falcon nests:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 11 LOTS 8 thru 9, 11, 13, 14;
Sec. 11 NE1/4SW1/4;
Sec. 12 LOTS 1 thru 3, 15, 17;

The following lands are subject to Exhibit WR-NSO-34 to protect Areas of Critical Environmental Concern and the natural resources for which they were designated:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 12 LOT 3, 9, 27, 36.

All lands are subject to Exhibit CO-CSU-BG-1 to maintain, conserve, and protect big game high priority habitat.

The following lands are subject to Exhibit WR-CSU-10 to protect soils on natural slopes greater than or equal to 35 percent but less than 50 percent:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 12 LOTS 1, 2, 3, 27, 28, 36;
Sec. 12 NE1/4NE1/4.

The following lands are subject to Exhibit WR-CSU-11 to protect the productivity of saline soils and to reduce salt and selenium loading of surface waters:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 12 LOT 3.

The following lands are subject to Exhibit WR-CSU-12 to protect water resources:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 11 LOTS 7, 8, 11, 15, 16, 19, 20;
Sec. 12 LOTS 3, 9,10, 15, 17, 18, 20, 27, 28, 30, 36;
Sec. 12 E1/2NE1/4.

The following lands are subject to Exhibit WR-CSU-14 to protect bald eagle nest, roost, and perch habitat:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 12 LOTS 3, 8, 27, 36.

All lands are subject to Exhibit CO-TL-BG-1 to reduce disruption of big game during the winter season in crucial big game winter habitat.

The following lands are subject to Exhibit WR-TL-19 to protect bald eagle nests:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 11 LOTS 11,13,14
Sec. 12 LOTS 1 thru 3, 9 thru 11, 15;
Sec. 12 NE1/4NE1/4.

The following lands are subject to Exhibit WR-TL-20 to protect bald eagle critical night roosts:
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 12 LOT 3.

All lands are subject to Exhibit CO-LN-BG-1 to alert the lessee that the lease overlaps with CPW-mapped big game HPH and requires a WMP; and CPW recommends a surface density limitation of less than one linear mile of routes per square mile (640 acres).

All lands are subject to Exhibit CO-LN-BG-2 to alert the lessee that the lease area is located within big game habitat or currently under big game HPH review by the State of Colorado and requires a WMP.

The following lands are subject to Exhibit WR-LN-10 to alert lessee of an overlapping wild horse herd management area (HMA):
T. 2 N., R. 98 W., SIXTH PRINCIPAL
Sec. 11 LOTS 7 thru 9, 11 thru 20;
Sec. 11 NE1/4SW1/4;
Sec. 12 LOTS 27, 28, 30.

CO-2025-09-6031

CO, White River Field Office, Bureau of Land Management, PD
T. 3 N., R. 96 W., SIXTH PRINCIPAL
Sec. 18 SE1/4;
Sec. 19 LOTS 5 thru 8;
Sec. 19 E1/2, E1/2W1/2;
Sec. 20 W1/2NW1/4, NW1/4SW1/4;
Sec. 30 LOTS 5;
Sec. 30 NE1/4NW1/4.
Moffat, Rio Blanco County
998.2 Acres
16.670% Royalty Rate
EOI# CO00015230

All lands are subject to Exhibit HQ-CR-1 for cultural resource protection.

All lands are subject to Exhibit HQ-MLA-1 concerning Mineral Leasing Act Section 2(a)(2)(A).

All lands are subject to Exhibit HQ-TES-1 for threatened and endangered species.

All lands are subject to Exhibit CO-29 to alert lessee of potential paleontological resource inventory and mitigation.

All lands are subject to Exhibit CO-34 to alert lessee of potential habitat for a threatened, endangered, candidate, or other special status plant or animal.

All lands are subject to Exhibit CO-39 to protect cultural resources.

The following lands are subject to Exhibit Wildlife Greater Sage-Grouse NSO-1 to protect Greater Sage-grouse Priority Habitat Management Areas (PHMAs):
T. 3 N., R. 96 W., SIXTH PRINCIPAL
Sec. 18 SE1/4;
Sec. 19 LOTS 5 thru 8;
Sec. 19 S1/2NE1/4,NW1/4NE1/4, E1/2W1/2, SE1/4;
Sec. 20 SW1/4NW1/4, NW1/4SW1/4;
Sec. 30 LOTS 5;
Sec. 30 NE1/4NW1/4.

The following lands are subject to Exhibit WR-NSO-12 to protect soils on natural slopes greater than or equal to 50 percent:
T. 3 N., R. 96 W., SIXTH PRINCIPAL
Sec. 19 NW1/4NE1/4, SE1/4SE1/4;
Sec. 20 NW1/4SW1/4.

The following lands are subject to Exhibit WR-NSO-35 to protect wilderness characteristics (Tier 1) as a priority over other multiple uses:
T. 3 N., R. 96 W., SIXTH PRINCIPAL
Sec. 19 SE1/4NE1/4, SE1/4SW1/4, SE1/4;
Sec. 20 W1/2NW1/4, SW1/4SW1/4;
Sec. 30 NE1/4NW1/4,

All lands are subject to Exhibit CO-CSU-BG-1 to maintain, conserve, and protect big game high priority habitat.

The following lands are subject to Exhibit Wildlife Greater Sage-Grouse CSU-1 to protect General Habitat Management Areas (GHMAs) within 1 mile of Priority Habitat Management Areas (PHMAs):
T. 3 N., R. 96 W., SIXTH PRINCIPAL
Sec. 18 SE1/4;
Sec. 19 S1/2NE1/4,SE1/4SE1/4;
Sec. 20 SW1/4NW1/4, NW1/4SW1/4.

The following lands are subject to Exhibit Wildlife Greater Sage-Grouse CSU-2 to apply disturbance restrictions in Priority Habitat Management Areas (PHMAs):
T. 3 N., R. 96 W., SIXTH PRINCIPAL
Sec. 18 SE1/4;
Sec. 19 LOTS 5 thru 8;
Sec. 19 S1/2NE1/4,NW1/4NE1/4, E1/2W1/2, SE1/4;
Sec. 20 SW1/4NW1/4, NW1/4SW1/4;
Sec. 30 LOTS 5;
Sec. 30 NE1/4NW1/4.

The following lands are subject to Exhibit WR-CSU-10 to protect soils on natural slopes greater than or equal to 35 percent but less than 50 percent:
T. 3 N., R. 96 W., SIXTH PRINCIPAL
Sec. 18 SW1/4SE1/4;
Sec. 19 W1/2 NE1/4, SE1/4SE1/4;
Sec. 20 NW1/4SW1/4.

The following lands are subject to Exhibit WR-CSU-12 to protect water resources:
T. 3 N., R. 96 W., SIXTH PRINCIPAL
Sec. 18 SE1/4
Sec. 19 LOTS 5, 6 and 8
Sec. 19 NE1/4NE1/4, S1/2NE1/4, E1/2NW1/4, E1/2SW1/4, SE1/4;
Sec. 20 W1/2NW1/4
Sec. 30 LOT 5
Sec. 30 NE1/4NW1/4

The following lands are subject to Exhibit CO-TL-BG-1 to reduce disruption of big game during the winter season in crucial big game winter habitat:
T. 3 N., R. 96 W., SIXTH PRINCIPAL
Sec. 18 SE1/4;
Sec. 19 LOTS 5 thru 8;
Sec. 19 NWNE;
Sec. 30 LOTS 5;
Sec. 30 NE1/4NW1/4.

The following lands are subject to Exhibit CO-TL-BG-2 to reduce behavioral disruption during big game parturition and early young rearing periods:
T. 3 N., R. 96 W., SIXTH PRINCIPAL
Sec. 19 LOTS 6 thru 8;
Sec. 19 E1/2, E1/2W1/2;
Sec. 20 W1/2NW1/4, NW1/4SW1/4;
Sec. 30 LOTS 5;
Sec. 30 NE1/4NW1/4.

All lands are subject to Exhibit Wildlife Greater Sage-Grouse TL-1 to minimize impacts to Greater sage-grouse during lekking, nesting, and early brood-rearing.

All lands are subject to Exhibit CO-LN-BG-1 to alert the lessee that the lease overlaps with CPW-mapped big game HPH and requires a WMP; and CPW recommends a surface density limitation of less than one linear mile of routes per square mile (640 acres).

All lands are subject to Exhibit CO-LN-BG-2 to alert the lessee that the lease area is located within big game habitat or currently under big game HPH review by the State of Colorado and requires a WMP.

All lands are subject to Exhibit WR-LN-09 to maintain the occupancy, integrity, and extent of white-tailed prairie dog habitat.

CO-2025-09-6251 Split Estate
CO, White River Field Office, Bureau of Land Management, PD
T. 2 N., R. 96 W., SIXTH PRINCIPAL
Sec. 15 S1/2;
Sec. 16 NE1/4, N1/2NW1/4, S1/2SW1/4;
Sec. 17 NE1/4;
Sec. 22 NE1/4, E1/2NW1/4, NW1/4NW1/4, N1/2SE1/4.
Rio Blanco County
1160 Acres
16.670% Royalty Rate
EOI# CO00018678

All lands are subject to Exhibit HQ-CR-1 for cultural resource protection.

All lands are subject to Exhibit HQ-MLA-1 concerning Mineral Leasing Act Section 2(a)(2)(A).

All lands are subject to Exhibit HQ-TES-1 for threatened and endangered species.

All lands are subject to Exhibit CO-29 to alert lessee of potential paleontological resource inventory and mitigation.

All lands are subject to Exhibit CO-34 to alert lessee of potential habitat for a threatened, endangered, candidate, or other special status plant or animal.

All lands are subject to Exhibit CO-39 to protect cultural resources.

The following lands are subject to Exhibit WR-NSO-12 to protect soils on natural slopes greater than or equal to 50 percent:
T. 2 N., R. 96 W., SIXTH PRINCIPAL
Sec. 15 E1/2SW1/4;
Sec. 16 NE1/4NE1/4, N1/2NW1/4;
Sec. 22 E1/2NW1/4, SW1/4NE1/4.

The following lands are subject to Exhibit WR-NSO-18 to protect raptor nests other than special status raptors (except golden eagles and prairie falcons):

T. 2 N., R. 96 W., SIXTH PRINCIPAL
Sec. 15 N1/2SE1/4.

All lands are subject to Exhibit CO-CSU-BG-1 to maintain, conserve, and protect big game high priority habitat.

The following lands are subject to Exhibit WR-CSU-10 to protect soils on natural slopes greater than or equal to 35 percent but less than 50 percent:
T. 2 N., R. 96 W., SIXTH PRINCIPAL
Sec. 15 NE1/4SE1/4, W1/2SE1/4, E1/2SW1/4;
Sec. 16 E1/2NE1/4, N1/2NW1/4, S1/2SW1/4;
Sec. 17 SE1/4NE1/4;
Sec. 22 SE1/4NE1/4, W1/2NE1/4, E1/2NW1/4, N1/2SE1/4.

The following lands are subject to Exhibit WR-CSU-11 to protect the productivity of saline soils and to reduce salt and selenium loading of surface waters:
T. 2 N., R. 96 W., SIXTH PRINCIPAL
Sec. 15 N1/2SW1/4;
Sec. 16 E1/2NE1/4, SW1/4NE1/4, N1/2NW1/4, S1/2SW1/4;
Sec. 22 NW1/4NE1/4, E1/2NW1/4, NW1/4SE1/4.

The following lands are subject to Exhibit WR-CSU-12 to protect water resources:
T. 2 N., R. 96 W., SIXTH PRINCIPAL
Sec. 16 NWNW;
Sec. 17 NE1/4;

All lands are subject to Exhibit CO-TL-BG-1 to reduce disruption of big game during the winter season in crucial big game winter habitat.

The following lands are subject to Exhibit CO-TL-BG-2 to reduce behavioral disruption during big game parturition and early young rearing periods:
T. 2 N., R. 96 W., SIXTH PRINCIPAL
Sec. 15 S1/2;
Sec. 16 NE1/4, N1/2NW1/4;
Sec. 17 NENE;
Sec. 22 N1/2NE, SENE.

The following lands are subject to Exhibit Wildlife Greater Sage-Grouse TL-1 to minimize impacts to Greater sage-grouse during lekking, nesting, and early brood rearing:
T. 2 N., R. 96 W., SIXTH PRINCIPAL
Sec. 15 W1/2S1/2;
Sec. 16 S1/2SW1/4;
Sec. 17 NE1/4;
Sec. 22 N1/2NW1/4.

The following lands are subject to Exhibit WR-TL-15 to protect raptor nests other than special status raptors:
T. 2 N., R. 96 W., SIXTH PRINCIPAL
Sec. 15 N1/2SE1/4, NE1/4SW1/4;

The following lands are subject to Exhibit WR-TL-17 to protect golden eagle and prairie falcon nests:
T. 2 N., R. 96 W., SIXTH PRINCIPAL
Sec. N1/2N1/2.

All lands are subject to Exhibit CO-LN-BG-1 to alert the lessee that the lease overlaps with CPW-mapped big game HPH and requires a WMP; and CPW recommends a surface density limitation of less than one linear mile of routes per square mile (640 acres).

All lands are subject to Exhibit CO-LN-BG-2 to alert the lessee that the lease area is located within big game habitat or currently under big game HPH review by the State of Colorado and requires a WMP.

CO-2025-09-6253 Split Estate
CO, Royal Gorge Field Office, Bureau of Land Management, ACQ
T. 4 S., R. 65 W., SIXTH PRINCIPAL
Sec. 31 ALL;
Sec. 32 N1/2, N1/2S1/2;
Arapahoe County
1123.64 Acres
16.670% Royalty Rate
EOI# CO00018399

All lands are subject to Exhibit HQ-CR-1 for cultural resource protection.

All lands are subject to Exhibit HQ-MLA-1 concerning Mineral Leasing Act Section 2(a)(2)(A).

All lands are subject to Exhibit HQ-TES-1 for threatened and endangered species.

All lands are subject to Exhibit RGFO-NSO-SSSpecies-20 to protect special status amphibian habitat.

All lands are subject to Exhibit RGFO-NSO-Water-1 to protect public water supplies, water quality, aquatic habitat, and human health.

All lands are subject to Exhibit RGFO-NSO-Water-4 to protect waterways.

All lands are subject to Exhibit RGFO-NSO-Water-5 to protect water resources.

All lands are subject to Exhibit RGFO-CSU-Water-2 to protect perennial, intermittent and ephemeral streams; riparian areas, fens and/or wetlands; and water impoundments.

All lands are subject to Exhibit CO-TL-BG-1 to reduce disruption of big game during the winter season in crucial big game winter habitat.

All lands are subject to Exhibit CO-LN-BG-1 to alert the lessee that the lease overlaps with CPW-mapped big game HPH and requires a WMP; and CPW recommends a surface density limitation of less than one linear mile of routes per square mile (640 acres).

All lands are subject to Exhibit CO-LN-BG-2 to alert the lessee that the lease area is located within big game habitat or currently under big game HPH review by the State of Colorado and requires a WMP.

All lands are subject to Exhibit RGFO-LN-Air-1 to alert lessee of potential supplementary air analysis.

All lands are subject to Exhibit RGFO-LN-Cultural-1 to protect culturally sensitive locations and comply with laws and regulations.

All lands are subject to Exhibit RGFO-LN-SSSpecies-1 to further species conservation and management objectives.

All lands are subject to Exhibit RGFO-LN-SSSpecies-2 for biological inventories.

All lands are subject to Exhibit RGFO-LN-SSSpecies-3 to mitigate effects on Federally listed species that are likely to be adversely affected by water depletions in the South Platte Basin.

All lands are subject to Exhibit RGFO-LN-Tribal-1 to protect culturally sensitive locations and comply with laws and regulations.

Appendix C. Stipulation Exhibits

Exhibit HQ-CR-1, Cultural Resources

This lease may be found to contain historic properties and/or resources protected under National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, or other statutes and executive orders. The BLM will not approve any ground-disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized, or mitigated.

Exhibit HQ-MLA-1, Notice to Lessee Concerning Mineral Leasing Act Section 2(a)(2)(A)

Provisions of the Mineral Leasing Act (MLA) of 1920, as amended by the Federal Coal Leasing Amendments Act of 1976, affect an entity's qualifications to obtain an oil and gas lease. Section 2(a)(2)(A) of the MLA, 30 U.S.C. 201(a)(2)(A), requires that any entity that holds and has held a Federal Coal Lease for 10 years beginning on or after August 4, 1976, and that is not producing coal in commercial quantities from each such lease cannot qualify for the issuance of any other lease granted under the MLA. 43 C.F.R. 3472 explains coal lessee compliance with Section 2(a)(2)(A). 37 In accordance with the terms of this oil and gas lease with respect to compliance by the initial lessee with qualifications concerning Federal coal lease holdings, all assignees and transferees are hereby notified that this oil and gas lease is subject to cancellation if: (1) the initial lessee as assignor or as transferor has falsely certified compliance with Section 2(a)(2)(A) because of a denial or disapproval by a State Office of a pending coal action, i.e., arms-length assignment, relinquishment, or logical mining unit; (2) the initial lessee as assignor or as transferor is no longer in compliance with Section 2(a)(2)(A); or (3) the assignee or transferee does not qualify as a bona fide purchaser and, thus, has no rights to bona fide purchaser protection in the event of cancellation of this lease due to noncompliance with Section 2(a)(2)(A).

The lease case file, as well as in other Bureau of Land Management (BLM) records available through the State Office issuing this lease, contains information regarding assignor or transferor compliance with Section 2(a)(2)(A).

HQ-TES-1, Endangered Species Act Section 7 Consultation

The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. The BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. The BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. The BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation.

CO-29, Paleontological Resources

The lessee is hereby notified that prior to any surface disturbing activities, an inventory of paleontological resources (fossils) may be required. Mitigation may be required such as monitoring in any area of PFYC 4 or 5 and also upon the discovery of any vertebrate fossil or other scientifically important paleontological resource. Mitigation of scientifically important paleontological resources may include avoidance, monitoring, collection, excavation, or sampling. Mitigation of discovered scientifically important paleontological resources may require the relocation of the surface disturbance activity over 200 meters. Inventory and any subsequent mitigation shall be conducted by a BLM permitted paleontologist.

CO-34, Threatened, Endangered, or Other Special Status Species

The lease area may now or hereafter contain plants, animals, or their habitats determined to be threatened, endangered, or other special status species. BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that will contribute to a need to list such a species or their habitat. BLM may require modifications to or disapprove proposed activity that is likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of a designated or proposed critical habitat. BLM will not approve any ground-disturbing activity that may affect any such species or critical habitat until it completes its obligations under applicable requirements of the Endangered Species Act as amended, 16 U.S.C. § 1531 et seq., including completion of any required procedure for conference or consultation.

CO-39, Historic Properties and/or Resources Protected under the National Historic Preservation Act

This lease may be found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, E.O. 13007, or other statutes and executive orders. The BLM will not approve any ground disturbing activities that may affect any such properties or resources until it completes its obligations under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized or mitigated.

Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes. (For guidance on the use of this stipulation, see BLM Manual 1624 and 3101 or FS Manual 1950 and 2820.)

Exhibit CO-NSO-BG-1

Stipulation: Prohibit surface occupancy and use and apply restrictions within bighorn sheep production areas.

Purpose: To protect bighorn sheep production areas.

Standard EXCEPTION, MODIFICATION, and WAIVER criteria apply.

In addition, an EXCEPTION, MODIFICATION, or WAIVER may be granted in coordination with Colorado Parks and Wildlife (CPW). This may include special design, construction, and implementation measures, including relocation of proposed facilities and operations, timing limitations, and may require additional compensatory mitigation to offset the adverse impacts associated with high intensity activities (e.g., construction, drilling, and completions) that would provide conservation benefits sufficient to offset the residual direct and indirect impacts to big game HPH caused by the proposed oil and gas activities.

Exhibit RGFO-NSO-SSSpecies-8

Stipulation: No surface occupancy or use is allowed within a 0.25-mile (0.4-kilometer) radius of bald eagle winter roosts, and 0.5 mile (0.8 kilometer) of active or historic nest sites to maintain the integrity of sites and surrounding habitat as mapped in the RMP, BLM's GIS database, or other maps provided by local, state, federal, or tribal agencies that are analyzed and accepted by the BLM.

Purpose: To protect bald eagle nest and roost sites.

Standard EXCEPTION, MODIFICATION, and WAIVER criteria apply.

In addition, an EXCEPTION may be granted depending on the status of the nest site or the geographical relationship of topographic barrier and vegetation screening to the nest.

Exhibit RGFO-NSO-SSSpecies-9

Stipulation: No surface occupancy or use is allowed within a 0.5-mile (0.8-kilometer) radius of golden eagle active nest sites as mapped in the RMP, BLM's GIS database, or other maps provided by local, state, federal, or tribal agencies that are analyzed and accepted by the BLM to maintain the integrity of sites and surrounding habitat; and within a 0.25-mile (0.4-kilometer) radius of abandoned nests with all or part of nest remaining.

Purpose: To protect golden eagle nest sites.

Standard EXCEPTION, MODIFICATION, and WAIVER criteria apply.

In addition, an EXCEPTION may be granted depending on the status of the nest site or the geographical relationship of topographic barrier and vegetation screening to the nest.

Exhibit RGFO-NSO-SSSpecies-20

Stipulation: No surface occupancy or use is allowed within 0.5 mile (0.8 kilometer) of identified breeding sites of special status amphibians as mapped in the RMP, BLM's GIS database, or other maps provided by local, state, federal, or tribal agencies that are analyzed and accepted by the BLM.

Purpose: To protect special status amphibian habitat.

Standard EXCEPTION, MODIFICATION, and WAIVER criteria apply.

Exhibit RGFO-NSO-Water-1

Stipulation: No surface occupancy or use is allowed within 1,000 feet (305 meters) of a classified surface water supply stream segment (as measured from the average high water mark) for a distance of 5 miles (8 kilometers) upstream of a public water supply intake, surface water, diversions, reservoirs, intakes and public water system infrastructure associated with "Water Supply" by the State of Colorado.

Purpose: To protect public water supplies, water quality, aquatic habitat, and human health.

Standard EXCEPTION, MODIFICATION, and WAIVER criteria apply.

Exhibit RGFO-NSO-Water-4

Stipulation: For all areas outside the South Park Leasing Area, no surface occupancy or use is allowed within 500 feet (152 meters) of waterways, including wetlands, perennial water impoundments, perennial streams, fens, and wetlands. For streams, the buffer will be measured from ordinary high water mark (bank full stage), whereas for wetland features, the buffer will be measured from the edge of the mapped extent.

Purpose: To maintain the proper functioning condition, including the vegetation, hydrologic and geomorphic functionality of wetland features. Protect water quality, riparian zones, fens, fish habitat, aquatic habitat, and provide a clean, reliable source of water for downstream users. Buffers are expected to indirectly benefit migratory birds, wildlife habitat, amphibians, and other species.

Standard EXCEPTION, MODIFICATION, and WAIVER criteria apply.

Exhibit RGFO-NSO-Water-5

Stipulation: No surface occupancy or use is allowed within 100 horizontal feet (30 meters) as measured from the top of the stream bank for all intermittent or ephemeral streams. If riparian vegetation extends beyond the top of the stream bank, the buffer will be measured from the extent of the riparian vegetation.

Surface occupancy or use may be restricted beyond 100 feet (33 meters), where activities would adversely impact water quality and stream stability. Surface-disturbing activities may require special engineering design, construction, and implementation measures, including re-location of operations beyond 656 feet (200 meters) from the extent of water impoundments, streams, riparian areas, and/or wetlands to protect water resources.

Purpose: To maintain the proper functioning condition, including the vegetation, hydrologic and geomorphic functionality of wetland features. Protect water quality, riparian zones, fens, fish habitat, aquatic habitat, and provide a clean, reliable source of water for downstream users. Buffers are expected to indirectly benefit migratory birds, wildlife habitat, amphibians, and other species.

Standard EXCEPTION, MODIFICATION, and WAIVER criteria apply.

Exhibit Wildlife Greater Sage-Grouse-NSO-1

Stipulation: Apply No Surface Occupancy (NSO) to leases in Greater Sage-grouse (GRSG) Priority Habitat Management Areas (PHMA). This lease is subject to GRSG NSO-1 and does not guarantee the lessee the right to occupy the surface of the lease for the purpose of producing oil and natural gas. In areas open to fluid mineral leasing with NSO stipulations, fluid mineral leasing activities are permitted, but surface-disturbing activities cannot be conducted on the surface of the land unless an exception, modification, or waiver is granted.

Purpose: Manage fluid mineral leasing and development (including geothermal) in GRSG habitat management areas to avoid, minimize, and compensate for adverse impacts to GRSG habitat to the extent practical under the law and BLM jurisdiction.

Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes.

Exception 1: The Authorized Officer may consider and grant an exception to the NSO stipulation within 1 mile of occupied leks in PHMA if it can be demonstrated that development and surface occupancy will have no direct impacts to or disruption of GRSG or its habitat based on at least one of the following conditions – after documenting the review of available information associated with the site proposed for the exception – both internally compiled and as provided by State, County and other local agencies, tribal governments, project proponents, other federal agencies, or interested stakeholders:

- The location of the proposed authorization is determined to be non-habitat (refer to Appendix 6, Glossary; as determined by a qualified biologist and confirmed by BLM using Criteria Based Management for Non-Habitat methods outlined in the Greater Sage-grouse Rangewide Planning Record of Decision (ROD) and Approved Resource Management Plan Amendment (ARMPA) for Colorado (2025), does not provide important connectivity between habitat areas, and the project includes design features to prevent indirect disturbance to or disruption of adjacent seasonal habitats (whether adjacent seasonal habitat are within 1 mile of an occupied lek or greater than 1 mile from occupied leks that will impair their biological function.
- Topography/areas of non-habitat create an effective barrier to adverse impacts (e.g., protected from visual and audible disturbances to GRSG and its habitat).
- By co-locating the proposed authorization with existing disturbance, no additional impacts will be realized above those already associated with the existing similarly sized infrastructure, including indirect disturbance to or disruption of adjacent seasonal habitats that will impair their biological function.

Beyond considering an exception where no direct or indirect impacts on GRSG or its habitat will occur, an exception could also be considered if the proposed location on public lands will be undertaken as an alternative to a similar action occurring on a nearby non-public lands parcel (for example, due to landownership patterns), and development on the public parcel in question will eliminate impacts on more important and/or limited GRSG habitat (e.g., wet meadows, brood-rearing habitat, etc.) on the non-public nearby parcel; this exception must also include measures sufficient to allow the BLM to conclude in its documenting analysis that such benefits will endure for the duration of the proposed action's impacts on public lands (e.g., confirmation of an easement).

To approve this exception based on any of the above criteria, after coordination with the appropriate State agency, the Authorized Officer must document, that the proposed action satisfies at least one of the criteria listed above. If the State agency does not concur with granting the exception, the Authorized Officer must provide rationale for how the criteria are met considering the information the State provides.

If the area associated with the proposed development seeking the exception (e.g., well pad, compressor station, etc.) is in an area (neighborhood lek cluster or as appropriate an alternative adaptive management unit as described and allowed in the adaptive management section) that has met one of the adaptive management thresholds (hard or soft) (refer to

Adaptive Management section in this table), no exceptions will be considered until the causal factor analysis is completed. If the causal factor analysis concludes that development associated with the type of activity seeking the exception is or could contribute to the threshold being met or not recovering, no exception will be granted. If the causal factor analysis is inconclusive on cause, exceptions could be considered by the authorized officer.

Exception 2: The Authorized Officer may consider and grant an exception to the NSO stipulation associated with the remainder of PHMA beyond 1 mile from occupied leks if one of the following criteria apply – after documenting the review of available information associated with the site proposed for the exception – both internally compiled and as provided by State, County and other local agencies, tribal governments, project proponents, other federal agencies, or interested stakeholders:

- The criteria presented in Exception #1. **OR**
- Granting the exception must be in conformance with the RMP GRSG goal and habitat objectives, and the impacts anticipated by the proposed activity will be addressed through application of the mitigation hierarchy, including consideration of compensatory mitigation in accordance with compensatory mitigation direction in the Mitigation section of the Greater Sage-grouse Rangewide Planning ROD and ARMPA for Colorado (2025). To grant this exception based on the use of compensatory mitigation, the compensatory mitigation direction in the Mitigation section must be followed, though the compensation project must be completed and habitat functionality documented before the exception is granted. The compensation must also provide offsetting benefits to the population being impacted. If it can be demonstrated by a qualified biologist and confirmed by the BLM, based on site-specific information (using tools such as the Habitat Assessment Framework), that the project cannot be avoided or minimized and granting the mitigated exception will not result in adverse effects to GRSG seasonal habitats.

Prior to granting an exception to an NSO stipulation the potential exception shall be subject to public review for at least a 30-day period (e.g., could be part of the APD NEPA process) and all exceptions granted will be tracked in a public place and the exception tracker will be consulted when exceptions are being considered.

If the area associated with the proposed development seeking the exception (e.g., well pad, compressor station, etc.) is in an area (neighborhood cluster or CO Management Zone) that has met one of the adaptive management thresholds (hard or soft) (refer to Adaptive Management Section in the Greater Sage-grouse Rangewide Planning ROD and ARMPA for Colorado (2025), no exceptions will be considered until the causal factor analysis is completed. If the causal factor analysis concludes that development associated with the type of activity seeking the exception is or could contribute to the threshold being met or not recovering, no exception will be granted. If the analysis is inconclusive on cause, exceptions could be considered.

Modification: The Authorized Officer may consider and grant a modification to the fluid mineral lease NSO stipulation, allowing for surface occupancy only where:

- An exception is granted, as described above, for the primary disturbance (e.g., well pad, compressor station), **AND**
- The potential associated infrastructure related to the development is not individually precluded by other actions (e.g., roads, pipelines, power lines that could otherwise be considered through a ROW).

While the NSO stipulation could be modified for these additional developments, they must still comply with other GRSG management actions (e.g., mitigation, disturbance cap, minerals/energy density, seasonal restrictions, RDFs, etc.) if an exception to the NSO is granted.

Prior to modifying the area subject to the NSO stipulation, the potential modification shall be subject to public review for at least a 30-day period (e.g., could be part of the APD NEPA process).

If the area (neighborhood cluster or Colorado Management Zone (MZ)) associated with the proposed exception has met one of the adaptive management thresholds (hard or soft) (refer to Adaptive Management section in the Greater Sage-grouse Rangewide Planning ROD and ARMPA for Colorado (2025)), no modification will be considered until the causal factor analysis is completed. If the causal factor analysis concludes that development associated with the type of activity seeking the exception is or could contribute to the threshold being met or not recovering, no modification will be granted. If the analysis is inconclusive on cause, modifications could be considered.

Waiver: The Authorized Officer may consider and grant a waiver of the NSO stipulation on an existing lease after documenting, in coordination with the appropriate State agency, that the lease with the GRSG NSO stipulation is no longer in PHMA. This will only be applicable on leases that were issued when the parcel was in PHMA, then the PHMA boundaries were subsequently adjusted through the appropriate planning process.

Prior to waiving the NSO stipulation for a given area, the potential waiver shall be subject to public review for at least a 30-day period (e.g., could be part of the APD NEPA process).

Exhibit WR-NSO-12, Steep Natural Slopes

Stipulation: No surface occupancy or disturbance will be allowed on natural slopes greater than or equal to 50 percent (as defined by digital elevation model data).

Area: 114,200 acres.

Purpose: To protect soils on natural slopes greater than or equal to 50 percent.

Exception: The Authorized Officer may authorize surface occupancy if an environmental analysis finds the nature of the proposed action could be conditioned so as not to negatively impact the stability of or productivity of the steep slopes identified.

Modification: Site-specific modification may be granted by the Authorized Officer pending determination that a portion of the proposed surface disturbance meets the following conditions:

1. More than 75 percent of the proposed surface disturbance and infrastructure are on stable soils that are not on natural slopes greater than or equal to 50 percent; and
2. The proposed action utilizes construction, reclamation, and design features that stabilize the site during occupation and restore the original contours after occupation.

Waiver: If better elevation data indicates that there are no natural slopes greater than or equal to 50 percent anywhere within the leasehold, the stipulation no longer applies.

Exhibit WR-NSO-13, Protection for Impaired Waters in the Mesaverde Play Area

Stipulation: No surface occupancy or disturbance will be allowed within 500 feet of the following impaired stream segments:

- Duck Creek tributary to Yellow Creek (COLCWH13b);
- Yellow Creek from Barcus Creek to the White River (COLCWH13c);
- Piceance Creek from Willow Creek to Hunter Creek (COLCWH14a);
- Piceance Creek from Ryan Gulch to the White River (COLCWH15); and
- Black Sulphur Creek (COLCWH20).

These areas are within the Mesaverde play area.

Area: 2,500 acres.

Purpose: To allow for the improvement of water quality in these stream segments.

Exception: The Authorized Officer may authorize surface occupancy if an environmental analysis finds the nature of the proposed action could be conditioned so as not to aggravate causes of impairment or so it meets applicable Colorado Public Land Health Standards.

Modification: None.

Waiver: This NSO stipulation will be waived for individual stream segments if they are de-listed from the 303(d) list of impaired waters by Colorado Department of Public Health and Environment.

Exhibit WR-NSO-17, Endangered Colorado River Fish

Stipulation: No surface occupancy or disturbance will be allowed within designated critical habitat for federally listed fish species (e.g., 100-year floodplain of the White River below Rio Blanco Lake).

Area: 1,100 acres.

Purpose: Confining surface disturbance and surface use activities to areas outside the flood-prone area would reduce the immediate risk of sediment and contaminant discharge into occupied riverine habitat and the compromise of physical and biological habitat features that are essential to the proper functioning condition of the aquatic systems that support federally listed fishes.

Exception: The Authorized Officer, in consultation with the FWS and CPW, may grant an exception to this stipulation if environmental analysis establishes that the proposed action would not adversely influence important fishery functions or compromise the integrity of constituent elements of critical habitat. Exception requests will require the submission of a proponent-prepared spill/leak contingency plan that would be analyzed integral with BLM's biological assessment to the FWS.

Specific measures that could be considered for granting exceptions include, but would not be limited to the following:

1. Pipelines could not be constructed in sites identified by the CPW or FWS as important for Colorado pikeminnow reproduction and recruitment of young.
2. Pipelines transporting potential contaminants will be equipped with automatic shut off valves and may be required to be double-walled where they cross the White River's 100-year floodplain or the lower mile of its larger perennial tributaries (e.g., Piceance Creek, Yellow Creek, Crooked Wash).

Modification: The Authorized Officer, in consultation with the FWS, may modify the provisions of the NSO if the proposed action can be sited, conducted, or conditioned to remain compatible with habitat protection and species recovery objectives.

Waiver: The Authorized Officer may grant a waiver if the BLM, in consultation with the FWS, establishes that the White River's designated critical habitat is incapable of serving the long term requirements of Colorado pikeminnow and that this aquatic system no longer warrants consideration as a recovery component for the four species of endangered Colorado River fishes.

Exhibit WR-NSO-18, Raptor Nests – Other Than Special Status Raptors (Except Golden Eagle and Prairie Falcon)

Stipulation: No surface occupancy or disturbance will be allowed within 0.19 mile (990 feet) of functional nest sites of those raptors that are not considered special-status.

Area: 120,700 acres.

Purpose: To maintain the utility of the nest site and the surrounding physical and vegetation character of the habitat for current and subsequent reproductive functions. This stipulation does not apply to golden eagle or prairie falcon.

Exception: An exception may be granted if an environmental analysis of the proposed action indicates that nature or conduct of the activity could be conditioned so as not to impair the utility of nest for current or subsequent nesting activity or occupancy. An exception may also be granted by the Authorized Officer consistent with policies derived from federal administration of the Migratory Bird Treaty Act.

Modification: The Authorized Officer may modify the NSO buffer distances or substitute with a timing limitation, if an environmental analysis indicates that a portion of the area is nonessential to nest utility or function, or that the proposed action could be conditioned so as not to impair the utility of the nest site for current or subsequent nest activities or occupation. The stipulation may also be modified if the proponent, BLM, and where necessary, other affected interests, negotiate compensation that satisfactorily offsets anticipated impacts to raptor breeding activities and/or habitats. Modifications could also occur if sufficient information is provided that supports the contention that the action would not contribute to the suppression of breeding population densities or the population's production or recruitment regime from a regional perspective. A modification may be granted if the nest has remained unoccupied for a minimum of 5 years or conditions have changed such that there is no reasonable likelihood of site occupation over a minimum 10-year period.

Waiver: The Authorized Officer may grant a waiver if conditions have changed such that there is no reasonable likelihood of site occupation within the lease area in the long term.

Exhibit WR-NSO-19, Special Status Raptor, Golden Eagle, and Prairie Falcon Nests

Stipulation: No surface occupancy or disturbance will be allowed within 0.5 mile of functional nest sites of federal endangered, threatened, proposed, and candidate raptor species; Colorado state endangered, threatened, and special-status raptor species; BLM sensitive raptor species; golden eagles, and prairie falcons.

Area: 59,900 acres.

Purpose: To maintain the integrity of the nest substrate and the character of habitat surrounding the nest site.

Exception: An exception can be granted if an environmental analysis of the proposed action indicates that nature or conduct of the activity could be conditioned so as not to impair the utility of the nest site for current or subsequent nesting activity or occupancy. Section 7 consultation procedures will be instituted in those instances where an exception is being considered that involves a federally listed or proposed species. An exception to the NSO may also be granted by the Authorized Officer consistent with policies and regulations derived from federal administration of the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act.

Modification: The Authorized Officer may modify the stipulation buffer distances or substitute with a timing limitation if an environmental analysis indicates that a portion of the area is nonessential to nest utility or function, or that the proposed action could be conditioned so as not to impair the utility of the nest site for current or subsequent nest activities or occupation. Specifically, the buffer distance applied to burrowing owl nest burrows may be reduced to 0.25 mile where appropriate. The stipulation may also be modified if the proponent, BLM, FWS, and where necessary, other affected interests, negotiate compensation that satisfactorily offsets anticipated impacts to raptor breeding activities and/or habitats. Modifications could also occur if sufficient information is provided that supports the contention that the action will not contribute to the suppression of breeding population densities or the population's production or recruitment regime from a regional perspective. A modification may be granted if the nest has remained unoccupied for a minimum of five years or conditions have changed such that there is no reasonable likelihood of site occupation over a minimum 10-year period. Section 7 consultation procedures will be instituted in those instances where a modification is being considered that involves a federally listed or proposed species.

Waiver: The Authorized Officer may grant a waiver if conditions have changed such that there is no reasonable likelihood that the lease area can support further nesting activity. Section 7 consultation procedures will be instituted in those instances where a waiver is being considered that involves a federally listed or proposed species.

Exhibit WR-NSO-21, Bald Eagle Critical Night Roosts

Stipulation: No surface occupancy or disturbance will be allowed within 0.25 mile of identified bald eagle critical night roosts (as defined by the FWS).

Area: 1,000 acres.

Purpose: To maintain the integrity of the roost stand and the character of habitat surrounding the roost site.

Exception: The Authorized Officer may also grant an exception if an environmental analysis indicates that the nature or conduct of the action, as proposed or conditioned, would not impair the function or utility of the site for current or subsequent roosting activities or occupancy.

Modification: The no surface occupancy or use stipulation may be modified by the Authorized Officer if an environmental analysis indicates that a portion of the area is nonessential to roost site function or utility; or that the proposed action could be conditioned to not impair the function or utility of the site for current or subsequent roosting activities or occupancy. The NSO may be modified if the site has failed to support roosting activities over a minimum five year period.

Waiver: The Authorized Officer may grant a waiver if the area has changed such that there is no reasonable likelihood of further winter roost functions taking place within the lease area.

Exhibit WR-NSO-25, Federally Listed Plant Species

Stipulation: No surface occupancy or disturbance will be allowed within 660 feet of occupied and suitable habitat for federally listed, proposed, and candidate plant species, including any new habitat mapped as a result of future surveys.

Area: 32,400 acres.

Purpose: To protect federally listed, proposed, and candidate plant species and designated critical habitat from direct and indirect impacts, including loss and degradation of habitat due to dust transport, weed invasion, chemical and produced-water spills. It also reduces impacts to important pollinators and their habitat.

Exception: The following exceptions may only be granted if they do not preclude the survival and recovery of the species, as agreed or consulted upon by the BLM and FWS, with particular emphasis on protecting populations within ACECs:

1) Maintenance of existing facilities.
2) Surface occupancy may be authorized within 330 feet of occupied habitat following an environmental analysis and ESA Section 7 consultation or conference with the FWS (for species listed under the ESA) that results in "no effect" or concurrence with a wholly beneficial effect determination. Surface occupancy may be considered for actions when the overall impacts to the species' habitat from an action would be less than compared to other project alternatives that maintain a 330 foot buffer around occupied habitat. The proponent must convincingly demonstrate through in-depth biological analyses and collaboration with BLM and FWS that any action within 330 feet is the least damaging option when compared to other project alternatives. The FWS must concur with the proposed action in their Biological Opinion for approval of the exception to be considered by the BLM.
3) Surface occupancy may be authorized within 330-660 feet of occupied habitat or anywhere within suitable habitat if the proposed action results in insignificant (not reasonably measured/detected), discountable (extremely unlikely to occur), or wholly beneficial effects (no negative impacts) to occupied habitat or a similar level of impacts to suitable habitat (as defined under ESA Section 7 implementing regulations).
4) Surface occupancy may be authorized anywhere within suitable habitat for new construction/disturbances located adjacent to an existing disturbance if an environmental analysis of the proposed action indicates that the activity could be conditioned so as to result in a much reduced cumulative environmental impact to the species compared to other project alternatives.
5) Exceptions may be contingent on special design, construction, and implementation measures. Mitigation measures may include, but are not limited to:

a. Relocation of operations by more than 660 feet;
b. Delaying operations by more than 60 days so that construction occurs outside of the blooming season (i.e., construction could occur September through March;
c. Minimizing the area of disturbance;
d. Intensive control of fugitive dust;
e. Using signs, fencing, and other deterrents to reduce possible human disturbance;
f. Monitoring and control of invasive plants;
g. Specialized reclamation procedures (e.g., separating soil and subsoil layers with barriers to reclaim in the correct order and additional emphasis on forbs in seed mixes to promote pollinator habitat;
h. Long term monitoring of the species and/or habitat;
i. Use of a qualified, independent third-party contractor provide general oversight and assure compliance with project terms and conditions; and/or
j. Consideration of off-site mitigation such as conservation easements, or mitigation banking to offset impacts to occupied plant populations, adequate funding of research, or habitat protection/improvement projects.

Modification: If the site has been unoccupied by the species for a minimum period of 20 years then the habitat will be considered as suitable instead of occupied. Due to the persistence of the seed bank and variability in environmental conditions related to germination, surveys would be required over multiple years to make a determination that the area is no longer occupied. The BLM will confer with FWS in determining whether an area should be considered as suitable or occupied habitat.

Waiver: A waiver may be granted by the Authorized Officer if the species becomes extinct or if the species is downgraded in status, the NSO stipulation may be replaced with less stringent criteria.

Exhibit WR-NSO-26, BLM Sensitive Plant Species

Stipulation: No surface occupancy or disturbance will be allowed within 330 feet of occupied or suitable habitat for BLM sensitive plants.

Area: 7,300 acres.

Purpose: To protect BLM sensitive plant species from direct and indirect impacts, including loss of habitat. The protection buffer reduces the risk of impacts to special status plant populations from dust transport, weed invasion, chemical and produced-water spills. It also reduces impacts to important pollinators and their habitat.

Exception: An exception may be granted by the Authorized Officer if it can be demonstrated that the activity would not cause adverse impacts or have negligible impacts to occupied and suitable habitat. An exception may be granted for maintenance of existing facilities or for new construction/disturbances located adjacent to an existing disturbance if an environmental analysis of the proposed action indicates that the activity could be conditioned so as to result in a much reduced cumulative environmental impact to the species compared to other project alternatives. If an exception is granted, special design, construction, reclamation, and implementation measures, including relocation of operations and postponing construction by more than 60 days, may be required. Specialized reclamation procedures may include:

1. Collection of seeds for sensitive plant species' genetic preservation, grow-out, and future reclamation attempts; and
2. Using a higher percentage of forbs in the reclamation seed mix to promote pollinator habitat.

Modification: The Authorized Officer may modify (increase, decrease, or relocate) the area subject to the stipulation if it is determined that the nature or conduct of the activity, as proposed or conditioned, would not impair values associated with the maintenance or recovery of the species. If the site has been unoccupied by the species for a minimum period of 20 years then the habitat will be considered as suitable instead of occupied. Due to the persistence of the seed bank and variability in environmental conditions related to germination, surveys would be required over multiple years to make a determination that the area is no longer occupied.

Waiver: If the species is removed from the Colorado BLM State Director's Sensitive Species List, a waiver may be granted by the Authorized Officer or the NSO stipulation may be replaced with less stringent criteria.

Exhibit WR-NSO-34, Areas of Critical Environmental Concern

Stipulation: No surface occupancy or disturbance will be allowed within the boundaries of the following ACECs: Dudley Bluffs, Yanks Gulch/Upper Greasewood Creek, Lower Greasewood Creek, Raven Ridge, South Cathedral Bluffs, Deer Gulch, Ryan Gulch, Blacks Gulch, Coal Draw, Moosehead Mountain, White River Riparian and Duck Creek.

Area: 29,900 acres.

Purpose: These ACECs contain fossils of high scientific value; fragile soils; cultural resources; special status plants (federally listed, proposed, or candidate plant species, BLM sensitive species), important biologically diverse plant communities; riparian areas; bald eagle roosts; critical habitat for pikeminnow; and/or remnant vegetation associations.

Exception: The Authorized Officer may grant an exception to this stipulation if an environmental analysis indicates that the nature or conduct of the action, as proposed or conditioned, would not risk long-term or substantive compromise of the values or functions for which the ACEC was established or subsequently serves. Resource inventories, appropriate for the resource affected, may be required prior to considering any requests for exceptions. The granting of exceptions will be conditioned on the results of ESA consultation, species recovery plans, law or regulation, current BLM management policies, or resource-specific provisions expressed in related WRFO RMP stipulations.

Modification: The Authorized Officer may alter the temporal or spatial configuration of the applied NSO if an environmental analysis indicates that the action, as proposed or conditioned, may be conducted without risking long-term or substantive compromise of the values or functions for which the ACEC was established or subsequently serves.

Waiver: The Authorized Officer may waive the NSO if the ACEC no longer serves in the support of those values or functions for which the ACEC was established or subsequently served and where there is no reasonable likelihood of that utility being restored or redeveloping within reasonable timeframes.

Exhibit WR-NSO-35, Tier 1 Areas within Lands with Wilderness Characteristics Units

Stipulation: No surface occupancy or disturbance will be allowed in Tier 1 areas within lands with wilderness characteristics units. All acreage within land with wilderness characteristic units 24, 26, and 33 are classified as Tier 1 areas and portions of land with wilderness characteristic units 1, 2, 19, 20, 21, 29, 32, and 34 are classified as Tier 1 areas (refer to Map 2-9).

Area: 71,500 acres.

Purpose: To protect wilderness characteristics as a priority over other multiple uses.

Exception: None.

Modification: None.

Waiver: None.

Exhibit CO-CSU-BG-1

Stipulation: Surface occupancy and use may be restricted within big game high priority habitat (HPH). Authorization of new oil and gas facility locations within big game HPH will be avoided when the oil and gas location density exceeds one active oil and gas location per square mile or contributes to an increased density beyond one active oil and gas location per square mile. In addition, a BLM- and CPW-approved Wildlife Mitigation Plan (WMP) will be required and implemented for new oil and gas facility locations within big game HPH. The WMP will address direct and indirect functional habitat loss, including consideration of the impacts of both oil and gas facilities and new oil and gas routes, and offset the unavoidable adverse impacts to the affected big game habitat.

Purpose: To maintain, conserve, and protect big game HPH on BLM-administered lands and Federal mineral estate in Colorado.

Standard EXCEPTION, MODIFICATION, and WAIVER criteria apply.

In addition, the Authorized Officer may grant an EXCEPTION, MODIFICATION, or WAIVER in coordination with CPW, where a proposed action:

- Would have negligible or nominal direct, indirect, or cumulative effects on big game HPH;
- Is an alternative to a similar action on a nearby parcel with greater overall adverse impacts to big game HPH or species of higher conservation concern (e.g., ESA listed species, BLM sensitive species);
- Where the oil and gas location density exceeds one active oil and gas location per square mile, the BLM in coordination with CPW, may require additional compensatory mitigation to offset the adverse impacts associated with high intensity activities (e.g., construction, drilling, and completions) that would provide conservation benefits sufficient to offset the residual direct and indirect impacts to big game HPH caused by the proposed oil and gas activities.

Such an exception, modification, or waiver will not be granted unless the BLM, in coordination with CPW, finds that the proposed action satisfies the above. Such finding shall initially be made by a team of one field biologist or other expert from each respective agency. In the event the initial finding is not unanimous, the finding may be elevated to the appropriate senior official for final resolution. In the event their finding is not unanimous, the exception will not be granted.

Exhibit RGFO-CSU-Water-2

Stipulation: For all areas outside the South Park Leasing Area, surface occupancy or use may be restricted beyond 500 feet (152 meters) of perennial, intermittent and ephemeral streams; riparian areas, fens and/or wetlands; and water impoundments. Surface disturbing activities may require special engineering design, construction, and implementation measures, including re-location of operations beyond 656 feet (200 meters) from the extent of water impoundments, streams, riparian areas, and/or wetlands to protect water resources.

Purpose: To maintain the proper functioning condition, including the vegetation, hydrologic and geomorphic functionality of wetland features. Protect water quality, riparian zones, fens, fish habitat, aquatic habitat, and provide a clean, reliable source of water for downstream users. Buffers are expected to indirectly benefit migratory birds, wildlife habitat, amphibians, and other species.

Standard EXCEPTION, MODIFICATION, and WAIVER criteria apply.

Exhibit Wildlife Greater Sage-Grouse-CSU-1

Stipulation: Apply CSU constraints on surface use, occupancy, placement of permanent tall structures, and surface-disturbing activities (as detailed below) in General Habitat Management Area (GHMA) within 1 mile of Priority Habitat Management Area (PHMA) that will decrease habitat availability or functionality of important seasonal habitats including breeding, nesting, or winter concentration; or that create new perching/nesting/food subsidy opportunities for avian predators.

Surface use including infrastructure and surface-disturbing activities may require special design, construction, and implementation measures. The actual required measures will be based on the purpose, nature, and extent of the surface occupancy including infrastructure and total surface disturbance, the affected seasonal habitat, and the feasibility of relocating the project. A tall structure is any man-made structure that provides for perching/nesting opportunities for predators (e.g., raptors, ravens) that may naturally be absent, or that decreases the use of an area. A determination as to whether something is considered a tall structure will be made based on local conditions such as existing vegetation or topography.

Examples of measures and limitations include:

- Relocate operations beyond the standard relocation setback defined in CFR 3101.12 to areas outside of habitat, to areas of existing disturbance, or to areas where site-specific topography mitigates project impacts;
- Defer activities beyond the standard development timeframe deferral defined in CFR 3101.12 to avoid seasonal habitat use periods;
- Modify project design to discourage avian predator perching;
- Limit, relocate, or collocate placement of tall structures to reduce impacts of project infrastructure;
- Limit activity associated with construction, drilling, or completions to certain seasons or times of day;
- Minimize noise using the best available technology to dampen or direct noise away from breeding or nesting habitat.
- Modify access routes to avoid important areas or habitats.

Purpose: Manage fluid mineral leasing and development (including geothermal) in GRSG habitat management areas to avoid, minimize, and compensate for adverse impacts to GRSG habitat to the extent practical under the law and BLM jurisdiction.

Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes.

Exception: The Authorized Officer may consider and provide temporary relief from controlled surface use constraints by granting an exception after documenting the review of available information, including best available science, associated with the site proposed for the exception. While the BLM considers information from all sources, the State wildlife agency can provide information directly associated with bird use (including whether GRSG populations are not using the seasonal habitat during that year's seasonal life cycle period if available). Based on this information and recommendation, and documented variability in climatic conditions (e.g., early/late spring, long/heavy winter), use patterns, or other applicable information the Authorized Officer may consider a one-time exception if development associated with it will not have direct/indirect negative impacts on GRSG and/or their habitat.

Modification: The BLM can and does grant modifications to controlled surface use restrictions if the BLM, in coordination with the state wildlife agency and other appropriate state authorities, on a case-by-case basis, determines that granting the modification will not adversely impact the population being protected. The authorized officer may consider and grant a modification to the restrictions based on one of the criteria described below – after documenting the review of available information associated with the site proposed for the modification, if:

1. The geographic and temporal conditions demonstrate that any modification is justified on the basis that it serves to better protect or enhance GRSG and its habitat than if the strict application of controlled surface use restriction is implemented. Under this scenario, modifications can occur if one or more of the following conditions can be documented:

    - A proposed authorization is expected to have beneficial or neutral impacts on GRSG and its habitat.
    - Topography or other factors eliminate direct and indirect impacts from visibility and audibility to GRSG and its habitat.
    - There are documented local variations that indicate the seasonal life cycle periods are different than presented.

2. Modifications are needed to address an immediate public health and/or safety concern in a timely manner (e.g., maintaining a road impacted by flooding).

Waiver: The Authorized Officer may consider and grant a waiver of the stipulation on an existing lease if the area that was mapped as a GRSG habitat management area (regardless of type) when the lease was issued is no longer mapped as such through the appropriate planning process.

Exhibit Wildlife Greater Sage-Grouse-CSU-2

Stipulation: New leases in Priority Habitat Management Area (PHMA) are subject to the restrictions of 3% disturbance and an average of 1 disturbance per 640 acres calculated by each Colorado Management Zone (MZ) to allow clustered development.

Purpose: Manage fluid mineral leasing and development (including geothermal) in GRSG habitat management areas to avoid, minimize, and compensate for adverse impacts to GRSG habitat to the extent practical under the law and BLM jurisdiction.

Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes.

Exception: Authorized Officer may consider projects on public lands that could result in exceeding the disturbance cap across all ownership at the project scale only if the project meets the criteria for one of the following categories of exceptions and also meets the following conditions applicable to that exception:

Categories for Disturbance Cap Exceptions:

a. If the disturbance is associated with the renewal or re-authorization of existing infrastructure in previously disturbed sites or expansions of existing infrastructure that do not result in new direct, indirect, or cumulative impacts on GRSG and its habitat, and is documented.
b. If a technical team evaluates and concludes site-specific GRSG habitat and population information, combined with project design elements – including compensatory mitigation, indicates the proposed project is expected to improve the condition of GRSG habitat within the proposed project analysis area. The technical team should consist of, at a minimum, a BLM field office biologist and a biologist from the appropriate State agency. The methods, rationale, and data used in developing recommendations shall be retained as part of the project record.
c. If the disturbance is within an RMP designated utility corridors, the disturbance cap may be exceeded if site specific NEPA analysis indicates doing so will decrease impacts to GRSG habitat in comparison to siting a project outside the designated corridor. This exception is limited to projects that fulfill the use for which the corridors were designated (ex., transmission lines, pipelines) and the designated width of a corridor will not be exceeded as a result of any project co-location. (Note: A plan amendment would be required for the development of new corridors and, as necessary, would need to appropriately address any changes in the disturbance cap.)
d. If the environmental review document(s) explains how the GRSG RMP goals and objectives will be met, including compliance with the RMP's GRSG mitigation strategy (Greater Sage-grouse Rangewide Planning Record of Decision (ROD) and Approved Resource Management Plan Amendment (ARMPA) for Colorado (2025) Table 1) of avoidance first (e.g., locating the proposed projects outside PHMA, colocation within footprint of existing disturbance, etc.), then minimization (including application of RDFs, etc.) with appropriate documentation. The environmental review document must also consider the cumulative effects of other exceptions granted in adjacent project scale units. If avoidance is not possible and minimization does not address all direct, indirect, and cumulative impacts, compensatory mitigation can be considered, in coordination with the appropriate State agency.

If one or more of the exception criteria can be met, the activity associated with the disturbance must also meet all of the following conditions in order to be permitted:

a. If the exception relies on compensatory mitigation:
    i. The mitigation must be completed prior to the disturbance that results in the exceedance of the disturbance cap and provide the same or better value habitat based on site limitations, or better based on site limitations,
    AND

ii. The compensation must be implemented in the same Colorado Management Zone unit as the potential development. Consideration may be given to providing compensatory mitigation in adjacent Colorado Management Zone areas if doing so will more effectively provide the offsetting benefit.

b. All disturbance cap exceptions MUST have concurrence from the State Director.
c. If proposed disturbance cap exception is requested in an area (neighborhood lek cluster or as appropriate an alternative adaptive management unit) that has met one of the adaptive management thresholds, no exceptions to the disturbance cap at the Colorado Management Zone scale would be considered until the causal factor analysis is completed and cause identified and corrected unless the disturbance is needed for the protection of human life and safety, as concurred by the State Director.
d. All disturbance cap exceptions will be tracked by the BLM state sage-grouse lead and provided for cumulative analyses for any proposed development within the same neighborhood cluster or appropriate biological area. All requests for the use of compensatory mitigation to exceed the disturbance cap should be reviewed by the technical team for likelihood of success and efficacy of offsetting impacts to the affected habitats and associated populations.
e. All Colorado Management Zone Scale disturbance cap exceptions approved by the State Director will be tracked by the BLM State sage-grouse lead.
f. Apply the disturbance cap to the extent consistent with applicable law (such as the Mining Law of 1872) and valid existing rights.

Modification: None

Waiver: The Authorized Officer may consider and grant a waiver of the stipulation on an existing lease if the area mapped as PHMA when the lease was issued is no longer mapped as such through the appropriate planning process. Prior to waiving the disturbance cap stipulation for a given area, the potential waiver shall be subject to public review for at least a 30-day period (e.g., could be part of the APD NEPA process).

Exhibit WR-CSU-10, Steep Natural Slopes

Stipulation: Surface disturbing activities will be allowed on natural slopes greater than or equal to 35 percent but less than 50 percent (as defined by digital elevation model data) only after an engineered construction/reclamation plan is submitted by the operator and approved by the Authorized Officer. The following items must be addressed in the plan:

1. How soil productivity will be restored; and
2. How surface runoff will be treated to avoid accelerated erosion such as riling, gullying, piping, and mass wasting.

Area: 231,500 acres.

Purpose: To protect soils on natural slopes greater than or equal to 35 percent but less than 50 percent.

Exception: An exception may be granted by the Authorized Officer if an environmental analysis of the proposed action identifies that the scale or nature of the operation would not result in any long term decrease in site productivity or increased erosion. An exception may also be granted by the Authorized Officer if a more detailed survey determines that the proposed action will not disturb soils on slopes greater than or equal to 35 percent.

Modification: None.

Waiver: None.

Exhibit WR-CSU-11, Saline Soils

Stipulation: Surface disturbing activities will be allowed in areas with saline soils (i.e., greater than 8 mmhos/cm), as identified in USDA NRCS Web Soil Survey, only after a reclamation plan is submitted by the operator and approved by the Authorized Officer. Operators must consider the stability and productivity of these soils in the reclamation plan and specifically address:

1. How soil productivity will be restored; and
2. How reclamation success will be evaluated.

Area: 44,300 acres.

Purpose: To protect the productivity of saline soils and to reduce salt and selenium loading of surface waters.

Exception: An exception may be granted by the Authorized Officer if an environmental analysis of the proposed action identifies that the scale of the operation would not result in any long term decrease in site productivity or increased erosion. An exception may also be granted if a more detailed soil survey, i.e., Order I, conducted by a qualified soil scientist, finds the soil properties associated with the proposed action are not saline.

Modification: None.

Waiver: None.

Exhibit WR-CSU-12, Water Resources

Stipulation: Surface disturbance and occupation will be avoided in the following areas:

1. Mapped 100-year floodplains;
2. Areas within 500 feet from perennial waters, springs, water wells, and wetland/riparian areas; and
3. Areas within 100 feet from the inner gorge of ephemeral or intermittent stream channels. (See Approved RMPA Glossary for definition of inner gorge.)

Area: The areas within mapped floodplain boundaries comprise 22,100 acres. Areas within 500 feet of perennial waters, springs, water wells, and wetland/riparian areas comprise 55,300 acres. Wetlands and the inner gorge of stream channels will be identified during site-specific analysis.

Purpose: To maintain the vegetative, hydrologic, and geomorphic functionality of stream channels, water quality characteristics, spring function, water well integrity, proper wetland/riparian function, aquatic health, aquatic and wetland habitat, macroinvertebrate communities, downstream fisheries and natural sediment and salt processes.

Exception: An exception may be granted by the Authorized Officer to the avoidance of these areas if an environmental analysis determines that the proposed activity would not or if the activity could be conditioned so as to not degrade the resources identified (see the modification criteria below). The Authorized Officer may authorize surface disturbance and occupation in identified areas when avoidance would result in the degradation of off-site resources to an extent that contravenes the BLM management direction or objectives, provided that adverse effects to water resources are satisfactorily resolved by design considerations, engineering, reclamation, and best management practices.

Modification: The stipulation may be modified by the Authorized Officer pending an environmental analysis of site specific information by BLM staff that finds the sites proposed for surface disturbance or occupancy after construction, during operation, and after final abandonment would:

1. Pass the 10-year peak flow event without erosion;
2. Pass the 25-year peak flow without failed infrastructure;
3. Pass the 50-year peak flow event without failure (when surface occupancy is planned for greater than 50 years);
4. Not impede a 100-year peak flow event causing upstream flooding beyond floodplain boundaries;
5. Not negatively impact springs or water wells, and
6. Beyond temporary, short-term timeframes would:
    a. Not degrade water quality;
    b. Not compromise, degrade, or forestall attainment of proper wetland/riparian conditions or channel functions; and
    c. Maintain aquatic health and habitat.

The proposed activity must further not represent a vector for the transmission of aquatic pathogens or invasive/nuisance aquatic organisms, and must include provisions to restore wetland/riparian/floodplain vegetation and stream channel features temporarily impacted by the proposed activity. Modifications may also include the use of timing limitations designed to limit impacts to aquatic, riparian or channel resources (e.g., restrictions on activities during high or low flow conditions or during times that are critical for fish reproduction).

Waiver: None.

Exhibit WR-CSU-13, Native Cutthroat Trout Habitat

Stipulation: Prior to authorizing surface disturbance of native cutthroat trout habitat (including occupied stream reaches, those slated for recovery, or within watersheds contributing to occupied habitats), the proponent/applicant will be required to submit a plan of development that will demonstrate that the proposed action will not:

1. Increase stream gradient;
2. Result in a net increase in sediment contribution;
3. Decrease stream channel sinuosity;
4. Increase the channel width to depth ratio;
5. Increase water temperature;
6. Decrease vegetation derived stream shading; or
7. Degrade existing water quality parameters, including specific conductance, turbidity, organic/inorganic contaminant levels, and dissolved oxygen in identified reaches or contributing perennial or intermittent tributaries.

If approvals are granted and development results in these standards being exceeded, additional measures will be required to correct the deficiencies. The proponent may be required to monitor stream/channel responses throughout the life of the project.

Area: 108,900 acres.

Purpose: Protection of aquatic habitats occupied by or suited for recovery of native cutthroat trout.

Exception: The Authorized Officer may authorize surface disturbance in these areas if an environmental analysis indicates that the project would have no adverse influence on identified stream characteristics.

Modification: Short term transgressions of the stream characteristics listed above may be allowed if the Authorized Officer determines, through environmental analysis, that short term deviations will have no adverse consequences on affected channel reaches beyond the construction phase of the project. In the event the management status of native cutthroat trout warrants downgrading, this stipulation may be replaced by less stringent criteria. The provisions of the stipulation may also be modified if the proponent, BLM, CPW, and where necessary, other affected interests, negotiate compensation that satisfactorily offsets anticipated impacts to channel function and aquatic habitat conditions as they pertain to the support of native trout populations.

Waiver: A waiver may be granted if habitat conditions are determined to be permanently incapable of supporting populations of native cutthroat trout.

Exhibit WR-CSU-14, Bald Eagle Nest, Roost, and Perch Habitat

Stipulation: Prior to authorizing surface disturbance within bald eagle nest, roost, and perch habitat, and pending coordination with the FWS consistent with provisions of the Bald and Golden Eagle Protection Act, including its implementing regulations, the Authorized Officer may require the proponent/applicant to submit a plan of development that will demonstrate that:

1. Involvement of cottonwood stands or cottonwood regeneration areas have been avoided to the extent practicable;
2. Special reclamation measures or design features are incorporated that will accelerate recovery and/or reestablishment of affected cottonwood communities;
3. The pre-development potential of affected floodplains to develop or support riverine cottonwood communities has not been diminished; and
4. The current/future utility of such cottonwood substrate for bald eagle use will not be impaired.

Area: 930 acres.

Purpose: For maintaining the long term suitability, utility and development opportunities for specialized riverine habitat features involving bald eagle nest, roost, and perch substrate on federal lands.

Exception: The Authorized Officer may grant an exception to this stipulation if an environmental analysis indicates that the proposed or conditioned activities would not affect the long term suitability or utility of habitat features or diminish opportunities for natural floodplain functions. Surface disturbance and occupation may also be authorized in the event that established impacts to habitat values would be compensated or offset to the satisfaction of the BLM in consultation with FWS and CPW.

Modification: Integral with exception and stipulation.

Waiver: None.

Exhibit WR-CSU-15, Rock Art and Standing Architecture

Stipulation: Oil and gas exploration and development activities that produce vibrations will be restricted within 660 feet of rock art or standing architecture such as cabins, rock structures, and wickiups. Vibration sources, which could include but are not limited to, road and well pad construction, drilling, and operation of compressor stations, will be restricted unless it could be shown that environmental attenuation will prevent the vibrations from reaching the rock art or standing architecture. Particular attention will be placed on low frequency, long wavelength vibrations at or below the range of human hearing.

Area: 13,900 acres.

Purpose: To preserve and protect examples of cultural and historic resources to ensure that they are available for appropriate uses by present and future generations.

Exception: If avoidance standards could not be met, mitigation as determined through consultation with the Colorado SHPO, ACHP and Native American tribes could be required before development would be allowed to proceed. Appropriate mitigation would be determined by site type and proximity to proposed activity, and could include but is not limited to:

1. Studies monitoring the vibrations in relation to the given site, during the length of the activity causing them;
2. Level II archival documentation; or
3. Offsite mitigation.

Modification: None.

Waiver: None.

Exhibit CO-TL-BG-1

Stipulation: Prohibit surface use and surface-disturbing and disruptive activities during the following time period(s) in the big game winter range high priority habitat as mapped by Colorado Parks and Wildlife (CPW) and analyzed and accepted by the BLM:

- Bighorn sheep winter range - November 1 to April 30;
- Elk and mule deer severe winter range and winter concentration areas, - December 1 to April 30; and
- Pronghorn winter concentration areas - January 1 to April 30.

Purpose: To reduce disruption of big game during the winter season in crucial big game winter habitat.

Standard EXCEPTION, MODIFICATION, and WAIVER criteria apply.

In addition, an EXCEPTION, MODIFICATION, or WAIVER may be granted in coordination with CPW. This may require additional compensatory mitigation to offset the adverse impacts associated with high intensity activities (e.g., construction, drilling, and completions) that would provide conservation benefits sufficient to offset the residual direct and indirect impacts to big game HPH caused by the proposed oil and gas activities.

Exhibit CO-TL-BG-2

Stipulation: Prohibit surface use and surface-disturbing and disruptive activities during the following time period(s) in the big game production high priority habitat as mapped by Colorado Parks and Wildlife (CPW) and analyzed and accepted by the BLM:

- Bighorn sheep production areas - Rocky Mtn bighorn sheep April 15 - June 30, Desert bighorn sheep - February 1 to May 1;
- Elk production (calving) areas - May 15 to June 30.

Purpose: To reduce behavioral disruption during big game parturition and early young rearing periods.

Standard EXCEPTION, MODIFICATION, and WAIVER criteria apply.

In addition, an EXCEPTION, MODIFICATION, or WAIVER may be granted in coordination with CPW. This may require additional compensatory mitigation to offset the adverse impacts associated with high intensity activities (e.g., construction, drilling, and completions) that would provide conservation benefits sufficient to offset the residual direct and indirect impacts to big game HPH caused by the proposed oil and gas activities.

Exhibit Wildlife Greater Sage-Grouse-TL-1

Stipulation: New leases in Priority Habitat Management Area (PHMA) and General Habitat Management Area (GHMA) are subject to Timing Limitation stipulations (GRSG TL-1) to minimize impacts to GRSG during lekking, nesting, and early brood-rearing. No activity associated with construction, drilling, or completions within 4 miles from occupied leks during lekking, nesting, and early brood-rearing (March 1 to July 15).

Purpose: Manage fluid mineral leasing and development (including geothermal) in GRSG habitat management areas to avoid, minimize, and compensate for adverse impacts to GRSG habitat to the extent practical under the law and BLM jurisdiction.

Any changes to this stipulation will be made in accordance with the land use plan and/or the regulatory provisions for such changes.

Exception: The Authorized Officer may consider and provide temporary relief from seasonal constraints by granting an exception after documenting the review of available information, including best available science, associated with the site proposed for the exception. This direction applies in PHMA, GHMA, and all other state identified HMAs. While the BLM considers information from all sources, the State wildlife agency can provide information directly associated with bird use (including whether GRSG populations are not using the seasonal habitat during that year's seasonal life cycle period if available). Based on this information and recommendation, and documented variability in climatic conditions (e.g., early/late spring, long/heavy winter), use patterns, or other applicable information the Authorized Officer may consider a one-time exception if development associated with it will not have direct/indirect negative impacts on GRSG and/or their habitat.

Modification: The BLM can and does grant modifications to seasonal restrictions if the BLM, in coordination with the state wildlife agency and other appropriate state authorities, on a case-by-case basis, determines that granting the modification will not adversely impact the population being protected. The authorized officer may consider and grant a modification to the dates and areas associated with seasonal timing restrictions based on one of the criteria described below – after documenting the review of available information associated with the site proposed for the modification, if:

1. The geographic and temporal conditions demonstrate that any modification (shortening/extending seasonal timeframes) is justified on the basis that it serves to better protect or enhance GRSG and its habitat than if the strict application of seasonal timing restrictions is implemented. Under this scenario, modifications can occur if one or more of the following conditions can be documented:
    a. A proposed authorization is expected to have beneficial or neutral impacts on GRSG and its habitat.
    b. Topography or other factors eliminate direct and indirect impacts from visibility and audibility to GRSG and its habitat.
    c. There are documented local variations that indicate the seasonal life cycle periods are different than presented.
2. Modifications are needed to address an immediate public health and/or safety concern in a timely manner (e.g., maintaining a road impacted by flooding).

Waiver: The Authorized Officer may consider and grant a waiver of the stipulation on an existing lease if the area that was mapped as a GRSG habitat management area (regardless of type) when the lease was issued is no longer mapped as such through the appropriate planning process.

Exhibit WR-TL-12, Big Game Severe Winter Range

Stipulation: All defined big game severe winter ranges within the WRFO (see Map 2-7) will be subject to a timing limitation from December 1 through April 30 which will be applied through lease stipulations or as COAs that could extend up to 120 days. Timing limitations will typically be applied regardless of weather conditions (i.e., address of chronic influences).

Area: 673,100 acres; 10,700 acres CPW Restricted Development Areas.

Purpose: Timing limitations are intended to reduce the intensity, frequency, and extent of disturbances imposed on animals occupying important seasonal habitats during periods when animals are physiologically or energetically challenged. The behavioral response of animals exposed to these disturbances generally elevates energetic demands (e.g., avoidance movements, elevated metabolism) or reduces foraging efficiency (e.g., disuse of available resources, reduced foraging efficiency) which suppresses animal fitness or reproductive performance. This stipulation includes an exception criterion that is intended to promote the clustering of development activity and thereby reduce the extent of seasonal ranges subject to cumulative and chronic adverse behavioral effects (i.e., harassment, avoidance) attributable to oil and gas development.

Exception: The Authorized Officer may grant an exception for clustered development remaining within the acute and collective thresholds described below (evaluated by total leaseholdings within a GMU). In short, the threshold allowances are a predetermined percentage of each seasonal range within a leaseholding (i.e., listed below). To qualify for timing limitation exceptions, the extent of fluid mineral development activity, as measured by the area encompassed by 200-meter buffers surrounding development features (i.e., routes, pipelines, pads) within a leaseholding, must not exceed the acreage represented by those threshold allowances. For leaseholders that do not choose to participate in clustered development strategies within threshold allowances, exceptions could be granted if:

1. An environmental analysis indicates that the proposed action can be conditioned so as not to interfere cumulatively with habitat function or utility, or compromise animal condition within the project vicinity;
2. The proponent, BLM, and CPW negotiate mitigation that would satisfactorily offset anticipated impacts to big game seasonal range function or utility; or
3. For actions intended to enhance the long term utility or availability of suitable habitat. This latter set of exceptions is intended to be considered in the context of a project's contribution to cumulative effects through project life and not granted as a means of circumventing clustered development strategies that are meant to reduce spatial and temporal exposure of big game to behavioral disturbance.

Acute Thresholds: The area of acute effects are defined by the physical footprint of those concentrated, intensive activities associated with, for example, pad and pipeline construction and well drilling and completion operations buffered by 660 feet on all seasonal ranges.

- 20 percent of deer winter range.
- 15 percent of deer severe winter range.
- 15 percent of deer summer range.
- 20 percent of deer winter concentration area.
- 0 percent of defined Restricted Development Areas.

Collective Thresholds: The area of collective effects include the area of acute effects in addition to all residual and incomplete lease development activities buffered as above, including but not limited to: access corridors, multiple well pads awaiting further drilling or not meeting interim reclamation success criteria, linear ROWs that support vehicle traffic after final reclamation, and facilities receiving frequent visitation (i.e., an average greater than seven vehicle trips per pad per week).

- 20 percent of deer winter range.
- 20 percent of deer severe winter range.
- 20 percent of deer summer range.
- 20 percent of deer winter concentration area.
- 5 percent of defined Restricted Development Areas.

The area of acute effects will be exempt from big game seasonal timing limitations as long as lease development activities are managed to not exceed the threshold allowances for collective and acute effects. Minor work involving lower intensity activity (e.g., installation of production facilities, reclamation) within the area of remaining collective effects would, where practicable, be subject to timing limitations. Construction activity that is unrelated to the exercise of lease rights would continue to be subject to timing limitations as established above. Development activities that may affect adjoining leaseholders' acreage may be assessed against the proponent's threshold allowances. Access or other features and facilities used in common may be prorated by operator.

Adverse effects that exceed either the acute or collective threshold will nullify the timing limitation exemptions and subject all leaseholding development to timing limitations as established above.

Because there is no allowance for acute activity (i.e., 0 percent) in Restricted Development Areas, the manner in which these areas would be managed in the context of the threshold strategies differs from its application elsewhere. In these cases, intensive development activities normally assigned to the "acute" effects category would generally be allowed only during those timeframes outside the period of animal occupation (i.e., similar to traditional application of timing limitations). The accumulation of collective activity would remain subject to a threshold allowance of 5 percent.

Modification: The Authorized Officer may modify the size and time frames of this stipulation if:

1. CPW monitoring information indicates that current animal use patterns are inconsistent with dates established for animal occupation;
2. The proposed action could be conditioned so as not to interfere with habitat function or utility, or compromise animal condition;
3. The proponent, BLM, and CPW agree to mitigation that satisfactorily offsets anticipated impacts to big game fitness, productivity, or habitat condition; or
4. For actions intended to enhance the long term utility or availability of suitable habitat.

Waiver: The Authorized Officer may grant a waiver if CPW determines that the lease area is no longer utilized for, or capable of serving as, seasonal habitat for big game.

Exhibit WR-TL-14, Big Game Winter Range and Winter Concentration Areas

Stipulation: All defined big game winter range and winter concentration areas(see Map 2-7) will be subject to deferrals of up to 60 days within the period of December 1 through April 30 in stratified zones of seasonal use (refined set of seasonal use timeframes developed in coordination with CPW). Timing limitations will typically be applied regardless of weather conditions (i.e., address of chronic influences).

Area: 604,500 acres.

Purpose: Timing limitations are intended to reduce the intensity, frequency, and extent of disturbances imposed on animals occupying important seasonal habitats during periods when animals are physiologically or energetically challenged. The behavioral response of animals exposed to these disturbances generally elevates energetic demands (e.g., avoidance movements, elevated metabolism) or reduces foraging efficiency (e.g., disuse of available resources, reduced foraging efficiency) which suppresses animal fitness or reproductive performance. This stipulation includes an exception criterion that is intended to promote the clustering of development activity and thereby reduce the extent of seasonal ranges subject to cumulative and chronic adverse behavioral effects (i.e., harassment, avoidance) attributable to oil and gas development.

Exception: The Authorized Officer may grant an exception for clustered development remaining within the acute and collective thresholds described below (evaluated by total leaseholdings within a GMU). In short, the threshold allowances are a predetermined percentage of each seasonal range within a leasehold (i.e., listed below). To qualify for timing limitation exceptions, the extent of fluid mineral development activity, as measured by the area encompassed by 200-meter buffers surrounding development features (i.e., routes, pipelines, pads) within a leaseholding, must not exceed the acreage represented by those threshold allowances. For leaseholders that do not choose to participate in clustered development strategies within threshold allowances, exceptions could be granted if:

1. An environmental analysis indicates that the proposed action can be conditioned so as not to interfere cumulatively with habitat function or utility, or compromise animal condition within the project vicinity;
2. The proponent, BLM, and CPW negotiate mitigation that would satisfactorily offset anticipated impacts to big game seasonal range function or utility; or
3. For actions intended to enhance the long term utility or availability of suitable habitat. This latter set of exceptions is intended to be considered in the context of a project's contribution to cumulative effects through project life and not granted as a means of circumventing clustered development strategies that are meant to reduce spatial and temporal exposure of big game to behavioral disturbance.

Acute Thresholds: The area of acute effects are defined by the physical footprint of those concentrated, intensive activities associated with, for example, pad and pipeline construction and well drilling and completion operations buffered by 660 feet on all seasonal ranges.

- 20 percent of deer winter range.
- 15 percent of deer severe winter range.
- 15 percent of deer summer range.
- 20 percent of deer winter concentration area.
- 0 percent of defined Restricted Development Areas.

Collective Thresholds: The area of collective effects include the area of acute effects in addition to all residual and incomplete lease development activities buffered as above, including but not limited to: access corridors, multiple well pads awaiting further drilling or not meeting interim reclamation success criteria, linear ROWs that support vehicle traffic after final reclamation, and facilities receiving frequent visitation (i.e., an average greater than seven vehicle trips per pad per week).

- 20 percent of deer winter range.
- 20 percent of deer severe winter range.
- 20 percent of deer summer range.
- 20 percent of deer winter concentration area.
- 5 percent of defined Restricted Development Areas.

The area of acute effects will be exempt from big game seasonal timing limitations as long as lease development activities are managed to not exceed the threshold allowances for collective and acute effects. Minor work involving lower intensity activity (e.g., installation of production facilities, reclamation) within the area of remaining collective effects would, where practicable, be subject to timing limitations. Construction activity that is unrelated to the exercise of lease rights would continue to be subject to timing limitations as established above. Development activities that may affect adjoining leaseholders' acreage may be assessed against the proponent's threshold allowances. Access or other features and facilities used in common may be prorated by operator.

Adverse effects that exceed either the acute or collective threshold will nullify the timing limitation exemptions and subject all leaseholding development to timing limitations as established above.

Modification: The Authorized Officer may modify the size and time frames of this stipulation if:

1. CPW monitoring information indicates that current animal use patterns are inconsistent with dates established for animal occupation;
2. The proposed action could be conditioned so as not to interfere with habitat function or utility, or compromise animal condition;
3. The proponent, BLM, and CPW agree to mitigation that satisfactorily offsets anticipated impacts to big game fitness, productivity, or habitat condition; or
4. For actions intended to enhance the long term utility or availability of suitable habitat.

Waiver: The Authorized Officer may grant a waiver if CPW determines that the lease area is no longer utilized for, or capable of serving as, seasonal habitat for big game.

Exhibit WR-TL-15, Raptor Nests (not considered Special Status Species)

Stipulation: Surface-disturbing and disruptive activities will not be allowed within 0.25 mile of active nest sites of those raptors that are not considered special-status during the period from nest territory establishment to dispersal of young from nest (within a period from February 1 through August 31).

Area: 59,900 acres.

Purpose: To prevent disruptions of nesting raptors that may result in absences of adults sufficient to cause direct or indirect mortality of the eggs or young or the premature departure of young from the nest.

Exception: An exception to the TL can be granted if an environmental analysis of the proposed action indicates that nature or conduct of the activity could be conditioned so as not to interfere with adult attendance and visitation of the nest site, jeopardize survival of the eggs or nestlings, or otherwise impair the utility of nest for current or subsequent nesting activity or occupancy. The Authorized Officer may also grant an exception if the nest is unattended or remains unoccupied by May 15 of the project year. An exception may be granted to these dates by the Authorized Officer, consistent with policies derived from federal administration of the Migratory Bird Treaty Act.

Modification: The Authorized Officer may modify the TL dates or buffer distances if an environmental analysis indicates that a portion of the area is nonessential to nest utility or function, or that the proposed action could be conditioned so as not to interfere with adult attendance and visitation of the nest site, jeopardize survival of the eggs or nestlings, or otherwise impair the utility of the nest site for current or subsequent nest activities or occupation. The stipulation may also be modified if the proponent, BLM, and where necessary, other affected interests, negotiate compensation that satisfactorily offsets anticipated impacts to raptor breeding activities and/or habitats. Modifications could also occur if sufficient information is provided that supports the contention that the action would not contribute to the suppression of breeding population densities or the population's production or recruitment regime from a regional perspective. A modification may be granted if the nest has remained unoccupied for a minimum of 5 years or conditions have changed such that there is no reasonable likelihood of site occupation over a minimum 10-year period.

Waiver: The Authorized Officer may grant a waiver if conditions have changed such that there is no reasonable likelihood of site occupation within the lease area in the long term.

Exhibit WR-TL-17, Golden Eagle and Prairie Falcon Nests

Stipulation: Surface-disturbing and disruptive activities will not be allowed within 0.5 mile of active nest sites of golden eagle and prairie falcon during the period from nest territory establishment to dispersal of young from nest (within a period from February 1 through August 31).

Area: 85,100 acres.

Purpose: To prevent disruptions of nesting raptors that may result in absences of adults sufficient to cause direct or indirect mortality of the eggs or young or the premature departure of young from the nest.

Exception: An exception to the TL can be granted if an environmental analysis of the proposed action indicates that nature or conduct of the activity could be conditioned so as not to interfere with adult attendance and visitation of the nest site, jeopardize survival of the eggs or nestlings, or otherwise impair the utility of nest for current or subsequent nesting activity or occupancy. The Authorized Officer may also grant an exception if the nest is unattended or remains unoccupied by May 15 of the project year. An exception may be granted to these dates by the Authorized Officer, consistent with policies derived from federal administration of the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act.

Modification: The Authorized Officer may modify the TL dates or buffer distances if an environmental analysis indicates that a portion of the area is nonessential to nest utility or function, or that the proposed action could be conditioned so as not to interfere with adult attendance and visitation of the nest site, jeopardize survival of the eggs or nestlings, or otherwise impair the utility of the nest site for current or subsequent nest activities or occupation. The stipulation may also be modified if the proponent, BLM, and where necessary, other affected interests, negotiate compensation that satisfactorily offsets anticipated impacts to raptor breeding activities and/or habitats. Modifications could also occur if sufficient information is provided that supports the contention that the action would not contribute to the suppression of breeding population densities or the population's production or recruitment regime from a regional perspective. A modification may be granted if the nest has remained unoccupied for a minimum of 5 years or conditions have changed such that there is no reasonable likelihood of site occupation over a minimum 10-year period.

Waiver: The Authorized Officer may grant a waiver if conditions have changed such that there is no reasonable likelihood of site occupation within the lease area in the long term.

Exhibit WR-TL-19, Bald Eagle Nests

Stipulation: Surface disturbing and disruptive activities will not be allowed within 0.5 mile of identified nests of bald eagles from November 15 through July 31 or until fledging and dispersal of young.

Area: 800 acres.

Purpose: To prevent disruptions of nesting raptors that may result in absences of adults sufficient to cause direct or indirect mortality of the eggs or young or the premature departure of young from the nest, injury to birds, or prompt abandonment of the nest site.

Exception: An exception may be granted to these dates by the Authorized Officer, if authorization is obtained from the FWS (through applicable provisions of the Endangered Species Act, Eagle Protection Act, or Migratory Bird Treaty Act) to disturb, harass, harm, wound, or kill in the context of active nesting attempts. An exception can also be granted if an environmental analysis of the proposed action indicates that nature or conduct of the activity could be conditioned so as not to impair the utility of nest for current or subsequent nesting activity or occupancy. The Authorized Officer may also grant an exception if the nest is unattended or remains unoccupied by May 15 of the project year.

Modification: The Authorized Officer may modify the size of the stipulation area if an environmental analysis indicates that a portion of the area is nonessential to nest utility or function, or that the proposed action could be conditioned so as not to impair the utility of the nest site for current or subsequent nest activities or occupation. If the species status is downgraded, or if the species is delisted, the size of the TL area may be reduced.

Waiver: A waiver may be granted if the nest has remained unoccupied for a minimum of 5 years or conditions have changed such that there is no reasonable likelihood of site occupation over a minimum 10 year period.

Exhibit WR-TL-20, Bald Eagle Critical Night Roosts

Stipulation: Surface disturbing and disruptive activities will not be allowed within 0.5 mile of identified bald eagle critical night roosts from November 15 through March 15.

Area: 2,800 acres.

Purpose: To prevent disruptions to bald eagles that may result in eagle injury, reduced productivity, or abandonment of the site.

Exception: An exception may be granted to these dates by the Authorized Officer, if authorization is obtained from the FWS (through applicable provisions of the Eagle Protection Act or Migratory Bird Treaty Act) to disturb, harass, harm, wound, or kill in the context of ongoing roosting activities and/or short or long term adverse modification of suitable roost site characteristics. An exception can also be granted if an environmental analysis of the proposed action indicates that nature or conduct of the activity could be conditioned so as not to impair the utility of the site for current or subsequent roosting activities or occupancy. An exception may also be granted if forms of compensation are satisfactorily negotiated which fully offset losses associated with project implementation.

Modification: The Authorized Officer may modify the size of the stipulation area or timeframes if an environmental analysis indicates that a portion of the area is nonessential to roost site function and utility, or that the proposed action could be conditioned so as not to impair the utility of the roost site for current or subsequent roosting activities or occupancy.

Waiver: A waiver may be granted if the species becomes extinct, the site has failed to support roosting activities over a minimum 5 year period, or if the site conditions have changed such that there is no reasonable likelihood of site occupation over a minimum 10 year period.

Exhibit WR-TL-21, Bald Eagle Winter Hunting Perches

Stipulation: Surface disturbing and disruptive activities will not be allowed within 0.25 mile of identified bald eagle winter hunting perches from November 15 through March 15.

Area: 0 acres.

Purpose: To prevent disruptions to bald eagles that may elevate energetic demands or displace birds from favored foraging areas.

Exception: An exception may be granted to these dates by the Authorized Officer, if authorization is obtained from the FWS (through applicable provisions of the Eagle Protection Act or Migratory Bird Treaty Act) to harass, harm, wound, or kill in the context of ongoing perching activities and/or short or long term adverse modification of suitable winter hunting perch characteristics. An exception can also be granted if an environmental analysis of the proposed action indicates that nature or conduct of the activity could be conditioned so as not to impair the utility of the site for current or subsequent perching activities or occupancy. An exception may also be granted if forms of compensation are satisfactorily negotiated which fully offset losses associated with project implementation.

Modification: The Authorized Officer may modify the size of the stipulation area or timeframes if an environmental analysis indicates that a portion of the area is nonessential to perch site function and utility, or that the proposed action could be conditioned so as not to impair the utility of the perch site for current or subsequent perching activities or occupancy.

Waiver: A waiver may be granted if the species becomes extinct, the site has failed to support perching activities over a minimum 5 year period, or if the site conditions have changed such that there is no reasonable likelihood of site occupation over a minimum 10 year period.

Exhibit CO-LN-BG-1

Lease Notice (LN): This lease overlaps with CPW-mapped big game high priority habitat and requires a wildlife mitigation plan (WMP). CPW recommends a surface density limitation of less than one linear mile of routes per square mile (640 acres). The lessee or their designated operator shall consult with the BLM prior to seeking approval for an application for permit to drill (APD) or surface disturbance, whichever occurs first, to discuss best management practices and potential habitat mitigation requirements. The lessee or their designated operator shall work with the BLM and coordinate with Colorado Parks and Wildlife to take reasonable measures to avoid, minimize, and/or mitigate impacts to big game habitat functionality. The BLM will encourage the use of Master Development Plans or agreements for operations proposed on this lease.

Exhibit CO-LN-BG-2

Lease Notice (LN): The lease area is located within big game habitat or currently under big game high priority habitat review by the State of Colorado and requires a wildlife mitigation plan (WMP). The lessee or their designated operator shall work with the BLM and coordinate with Colorado Parks and Wildlife to take reasonable measures to avoid, minimize, and/or mitigate impacts to big game habitat functionality. Big game habitats are mapped in land use plans, BLM's GIS database, or other maps provided by local, state, federal or tribal agencies that are analyzed and may be incorporated by the BLM in future RMP amendments or maintenance actions. The BLM will encourage the use of Master Development Plans or agreements for operations proposed on this lease.

Exhibit RGFO-LN-Air-1

Notice: Due to potential air quality concerns, supplementary air quality analysis may be required for any proposed development of this lease. This may include preparing a comprehensive emissions inventory, performing air quality modeling, and initiating interagency consultation with affected land managers and air quality regulators to determine potential mitigation options for any predicted significant impacts from the proposed development. Potential mitigation may include limiting the time, place, and pace of any proposed development, as well as providing for the best air quality control technology and/or management practices necessary to achieve area-wide air resource protection objectives. Mitigation measures would be analyzed through the appropriate type of NEPA analysis to determine effectiveness, and will be required or implemented as a permit condition of approval (COA). At a minimum, all projects and permitted uses implemented under this lease will comply with all applicable National Ambient Air Quality Standards and ensure Air Quality Related Values are protected in nearby Class I or Sensitive Class II areas that are afforded additional air quality protection under the Clean Air Act (CAA).

Exhibit RGFO-LN-Cultural-1

Notice: Apply a lease notice for oil and gas activities on BLM-administered lands notifying the lessee that leases may be found to contain historic properties and/or resources protected under the National Historic Preservation Act (NHPA), American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, Executive Order 13007, or other statutes and executive orders. The BLM will not approve any ground-disturbing activities that may affect any such properties or resources until it completes its obligations (e.g., State Historic Preservation Office (SHPO) and tribal consultation) under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized, or mitigated.

Purpose: To protect culturally sensitive locations and comply with laws and regulations.

Exhibit RGFO-LN-SSSpecies-1

Notice: Apply a lease notice for oil and gas activities on BLM-administered surface lands notifying the lessee that fluid mineral lease areas may now or hereafter contain plants, animals, or their habitats determined to be threatened endangered, or other special status species. The BLM may recommend modifications to exploration and development proposals to further species conservation and management objectives.

Exhibit RGFO-LN-SSSpecies-2

Notice: Apply a lease notice for oil and gas activities on BLM-administered surface lands notifying the lessee that a biological inventory may be required prior to approval of fluid mineral leasing operations in areas known or suspected habitat of special status species, or habitat of other species of interest such as but not limited to raptor nests and migratory bird nests. The operator, in coordination with the BLM, shall use the inventory to prepare mitigation measures to reduce the impacts of affected species and/or their habitats.

Exhibit RGFO-LN-SSSpecies-3

Notice: For operators likely to deplete water from the South Platte Basin, the BLM recommends enrolment in the South Platte Water Related Activities Program to mitigate effects on federally listed species that are likely to be adversely affected by water depletions in the South Platte Basin.

Exhibit RGFO-LN-Tribal-1

Notice: Apply a lease notice for oil and gas activities on BLM-administered lands notifying the lessee that leases may be found to contain historic properties and/or resources protected under the NHPA, American Indian Religious Freedom Act, Native American Graves Protection and Repatriation Act, Executive Order 13007, or other statutes and executive orders. The BLM will not approve any ground-disturbing activities that may affect any such properties or resources until it completes its obligations (e.g., SHPO and tribal consultation) under applicable requirements of the NHPA and other authorities. The BLM may require modification to exploration or development proposals to protect such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized, or mitigated.

Purpose: To protect culturally sensitive locations and comply with laws and regulations.

Exhibit WR-LN-07, Potential Habitat Federally Listed Plants

Lease Notice: The lease contains potential and/or critical habitat for federally listed, proposed, and candidate plant species. Special status plant species inventories must be conducted by a qualified botanist prior to approving any surface disturbing activities in potential habitat. Surface occupancy is generally not permitted in areas within 660 feet of occupied and suitable habitat for federally listed, proposed, and candidate plant species, including any new habitat mapped as a result of future surveys. Conditions of approval identified through an environmental analysis as appropriate to mitigate impacts to federally listed, proposed, and candidate species and associated habitat will be applied to land use authorizations, permits, and leases that fall within the plant consideration area (e.g., 1,970 feet of the affected plant species) or critical habitat. Possible mitigation strategies may include, but are not limited to:

1. Restricting development within 330 feet of occupied habitat;
2. Adjusting the location of the disturbance to be at least 660 feet from the edge of occupied or suitable habitat and ideally outside of the plant consideration area;
3. Minimizing the area of disturbance;
4. The use of dust abatement measures;
5. Using signs, fencing, and other deterrents to reduce possible human disturbance;
6. Requiring construction to occur outside of the blooming season (i.e., construction could occur September through March), involving possibly delaying the project by more than 60 days;
7. Requiring specialized reclamation procedures (e.g., separating soil and subsoil layers with barriers to reclaim in the correct order and additional emphasis on forbs in seed mixes to promote pollinator habitat);
8. Long term monitoring of the species and/or habitat;
9. Using a qualified, independent third-party contractor to provide general oversight and assure compliance with project terms and conditions;
10. Non-native or invasive species monitoring and control. These measures may also be applied to projects near suitable habitat that may hold special value or to provide protection to suitable habitat that may allow for species' expansion; and/or
11. Consideration of off-site mitigation such as conservation easements or mitigation banking to offset impacts to occupied plant populations, adequate funding of research, or habitat protection/improvement projects.

Area: 91,400 acres.

Exhibit WR-LN-09, Prairie Dog Towns

Lease Notice: Lands within this lease parcel involve prairie dog ecosystems that constitute potential habitat for wild or reintroduced populations of the federally endangered black-footed ferret. Conservation and recovery efforts for the black-footed ferret are authorized by the Endangered Species Act of 1973 (as amended). The successful lessee may be required to perform special conservation measures prior to and during lease development. These measures may include one or more of the following:

1. Participating in the preparation of a surface use plan of operations with BLM, FWS, and CPW, which will be expected to integrate and coordinate long term lease development with measures necessary to minimize adverse impacts to black-footed ferrets or their habitat;
2. Abiding by special daily and seasonal activity restrictions on construction, drilling, product transport, and service activities;
3. Incorporating special modifications to facility siting, design, construction, and operation; and/or
4. Providing in-kind compensation for habitat loss and/or displacement (e.g., special on-site rehabilitation/revegetation measures or off-site habitat enhancement).

Area: Mapped Prairie Dog Towns

Exhibit WR-LN-10, Wild Horse Habitat

Lease Notice: This lease parcel encompasses a portion of a wild horse herd management area (HMA). In order to protect wild horses within this area, intensive development activities may be delayed for a specified 60-day period within the spring foaling period between March 1 and June 15.

The lessee may be required to perform special conservation measures within the wild horse management area including:

1. Habitat improvement projects within the HMA in areas adjacent to development if such development displaces wild horses from crucial habitat;
2. Disturbed watering areas will be replaced with an equal source of water, having equal utility; and/or
3. Activity/improvements will provide for unrestricted movement of wild horses between summer and winter ranges.

Area: Herd Management Area

Exhibit WR-LN-12, Paleontological Values

Lease Notice: An on-the-ground survey will be required prior to approval of any surface disturbing activities to avoid resource bearing strata for PFYC Class 4 and 5 formations. Mitigation may be required upon the discovery of any vertebrate fossil or other scientifically-important paleontological resource. Mitigation of scientifically important paleontological resources may include avoidance, monitoring, collection, excavation, or sampling. Mitigation of discovered scientifically important paleontological resources might require the relocation of the disturbance over 330 feet. This and any subsequent mitigation work shall be conducted by a BLM-permitted paleontologist. The lessee shall bear all costs for inventory and mitigation (WO IM-2009-011). Exceptions to the survey requirement in these areas could be granted in areas having vertical to near vertical (i.e., unsafe) slopes, areas of soil development, and areas covered with much vegetation, as these areas will be unlikely to produce recoverable fossils. For larger projects, an on-the-ground survey sample may be required of some likely fossiliferous PFYC Class 3 areas.

Area: PFYC Class 4 and 5

Appendix D. Leasing Preference Review under 43 C.F.R. § 3120.32

Parcels were evaluated for RMP conformance and subsequently screened using the five leasing preference criteria listed in 43 C.F.R. § 3120.32. The preference criteria comprise:

1. Proximity to existing oil and gas development existing at the time of the BLM's evaluation, giving preference to lands upon which a prudent operator would seek to expand existing operations;

2. The presence of important fish and wildlife habitats or connectivity areas, giving preference to lands that would not impair the proper functioning of such habitats or corridors;

3. The presence of historic properties, sacred sites, and other high value cultural resources, giving preference to lands that would not impair the cultural significance of such resources;

4. The presence of recreation and other important uses or resources, giving preference to lands that would not impair the value of such uses or resources; and

5. The potential for oil and gas development, giving preference to lands with high potential for development.

Proposed parcels with a high preference value will be considered first for potential inclusion in a lease sale. The BLM may consider deferring all or portions of lease parcels with a low preference value. Throughout the review period for the lease sale, the BLM may also consider additional measures and deferrals to address the potential impacts of leasing, as well as new information presented during the NEPA process for the lease sale.

As shown in the table below, the thirteen parcels proposed for auction at the BLM Colorado State Office September 2025 Competitive Oil and Gas Lease Sale were evaluated based on the five leasing preference criteria.

Leasing Preference Review							
Field Office	Parcel No. (CO-2025-09-)	1, Proximity Criteria	2, Habitat Criteria	3, Cultural Resources Criteria	4, Other Resources Criteria	5, RFD Criteria	Leasing Preference
WRFO	293	H	H[1,2]	H	H	H	H
WRFO	294	H	H[1,2]	H	H	H	H
WRFO	295	H	H[1,2]	L[3]	H	H	L
WRFO	296	H	H[1,2]	L[3]	H	H	L
RGFO	362	H	H[1]	H	H	H	H
WRFO	363	H	H[1,2]	H	H	H	H
WRFO	371	H	H[1,2]	L[3]	H	H	L
RGFO	373	H	H[1]	H	H	H	H
WRFO	377	H	H[1,2]	L[3]	H	H	L
WRFO	383	H	H[1,2]	L[3]	H	H	L
WRFO	6031	H	H[1,2]	H	H	H	H
WRFO	6251	H	H[1,2]	H	H	H	H
RGFO	6253	H	H[1]	H	H	H	H

H = high; L = low
[1] Big Game RMPA
[2] 2025 GRSG RMPA
[3] Proposed Area of Critical Environmental Concern for cultural and landscape values

Three overlapping resources or values were identified in the evaluation: (1) big game habitat; (2) Greater sage-grouse habitat; and (3) a proposed Area of Critical Environmental Concern for cultural and landscape values formally requested by the Ute Tribes. All parcels overlap with big game habitat; however, due to the application of stipulations from the Big Game RMPA (BLM 2024a), significant impacts will be mitigated. All ten WRFO parcels intersect with Greater sage-grouse habitat; however, similar to big game, due to the application of stipulations from the 2025 GRSG RMPA (BLM 2025), significant impacts will be mitigated. The proposed Area of Critical Environmental Concern for cultural and landscape values formally requested by the Ute Tribes overlaps with five WRFO parcels. Given ongoing discussion with the Tribes, these five parcels are considered as low preference.

Appendix E. Basis for Issues Considered but Not Analyzed in Detail

Issues Considered but Not Analyzed in Detail	
Program Area	**Rationale**
Cultural Resources	Lease notices HQ-CR-1 and CO-39 apply to each parcel to protect cultural resources. RGFO: Consistent with the National Historic Preservation Act (NHPA), the RGFO has determined that the lease sale would result in "No Historic Properties Affected" with regard to cultural resources as described in 36 C.F.R. § 800.5(b). The RGFO conducted a literature review of records in its database and reviewed relevant information in the Compass database maintained by the Colorado Office of Archaeology and Historic Preservation (see report CR-RG-24-026 L). One unrecorded, potential historic property, Interstate 76, was identified as bisecting one proposed lease parcel. The BLM also sent an informational letter to the State Historic Preservation Office (SHPO) on April 1, 2024. The SHPO did not respond to the informational letter with any comments. WRFO: The 10 parcels proposed for sale encompass 10,391.25 acres (90 percent in Rio Blanco County and 10 percent in Moffat County), which overlap with private and BLM-managed surface. Based on record searches, 2,087 acres (20 percent) of these parcels are surveyed; 184 cultural resources or linear segments were located as a result of these inventories and 33 of these are eligible or potentially eligible for listing in the National Register of Historic Places (NRHP). However, the WRFO has determined that the September 2025 lease sale would have "No Adverse Effect" to historic properties as described in 36 C.F.R. § 800.5(b). The WRFO parcels partially overlap with previous Class III cultural inventories that identified sensitive cultural resources. All parcels retain the potential for containing unidentified historic properties. Stipulation WR-CSU-15 applies to Parcels CO-2025-09-0296, CO-2025-09-0371, and CO-2025-09-0377 to protect rock art and standing architecture. No new physical or visual impacts would occur to the landscape as leasing itself does not involve ground disturbance. However, future activities related to lease exploration and development could affect properties protected under the NHPA. If a lease is sold, additional NEPA analysis is completed prior to the BLM approving any surface disturbing activity. The BLM requires Class III (completely pedestrian) cultural resource inventories prior to surface-disturbing development proposals, including the approval of APDs. The BLM's standard cultural program procedure is to avoid all historic properties; operators work with the BLM to attempt to redesign planned development to avoid any known historic properties by at least 328 feet (100 meters). In addition, the BLM may apply COAs to protect cultural resources, which may affect or limit oil and gas development. Through Tribal consultation, such measures may include COAs to mitigate visual and audible impacts to sensitive cultural sites. See also "Native American Cultural Interests" below.
Farmlands, Prime & Unique	RGFO: According to the Natural Resources Conservation Service (2025), the following parcels contain farmland of statewide importance: • 30 acres of Parcel CO-2025-09-0362; • 90 acres of Parcel CO-2025-09-0373. According to the Natural Resources Conservation Service (2025), the following parcels contain prime farmland if irrigated: • 650 acres of Parcel CO-2025-09-6253. WRFO: According to the USDA web soil survey (2025), the following parcel contains farmland of statewide importance: • 24.2 acres of Parcel CO-2025-09-6031. According to the USDA web soil survey (2025), the following parcels contain prime farmland if irrigated: • Parcel CO-2025-09-0296 • Parcel CO-2025-09-0383 • Parcel CO-2025-09-0295

Issues Considered but Not Analyzed in Detail	
Program Area	**Rationale**
	• Parcel CO-2025-09-0377 Note that on split-estate lands, the BLM does not manage prime and unique farmlands. At the APD phase, a site-specific analysis would evaluate site-specific design features and consider the application of COAs to protect this value. No further analysis is required at this time.
Forest Management	RGFO: Forest resources are not known to occur on the parcels in the RGFO. WRFO: Pinyon/juniper woodlands cover 636,200 acres (44 percent) of the WRFO Planning Area. Generally foreseeable effects in areas with oil and gas development, a full range of silviculture practices (treatments) would be utilized to thin new growth, promote old growth, maintain desired understory and maintain desired age classes (e.g., old growth) for pinyon-juniper, Douglas-fir, aspen, and ponderosa pine woodland communities. Clearing of woodlands attributed to oil and gas activities would be limited to an annual disturbance of 260 acres or 2,600 acres per decade and primarily conducted in early or mid-seral woodland areas. Commercial and non-commercial woodlands removed as a result of oil and gas development will be appraised and purchased prior to removal. The BLM will complete a more detailed analysis if it receives a site-specific development proposal, and COAs may be attached, as appropriate.
Invasive Plants	BLM-authorized mineral and ROW development would remove vegetation and may spread noxious weeds. However, at the APD stage, the BLM will review site-specific vegetation conditions and, either as voluntary operator-committed measures or as COAs, will require the operator to implement BMPs to prevent and control Colorado A and B listed noxious weeds and meet revegetation and reclamation standards, as applicable. Effective weed control and revegetation would be monitored and enforced during surface inspections throughout the life of the well development, and would be required to meet standards prior to BLM releasing the location's bond, as applicable. The Colorado Energy and Carbon Management Commission (ECMC) also has weed control requirements for oil and gas development. RGFO: Occurrence of invasive plants on split-estate lands is unknown to the BLM. However, due to disturbance associated with land use (agriculture, landfill) on and around the parcels in the RGFO, the occurrence of invasive plants is likely. WRFO: The occurrence of invasive plants on BLM and split-estate lands varies. Common land uses in the areas of parcels are livestock grazing, oil and gas development, and recreation. Lessees and BLM WRFO manage weeds annually. There is no known occurrence of Colorado State A Listed noxious invasive weed species within the WRFO. Common List B species are jointed goatgrass, musk thistle, bull thistle, Canda thistle, cheatgrass, diffuse knapweed, Russian knapweed, spotted knapweed, houndstongue, Russian olive, leafy spurge, black henbane, hoary cress, perennial pepperweed, yellow toadflax, Scotch thistle, and salt cedar. Common List C species are common burdock, hemlock, bindweed, redstem filaree, halogeton, and common mullein. Generally foreseeable effects of development were sufficiently considered in the WRFO Oil and Gas FEIS (BLM 2015b). The BLM will complete a more detailed analysis if it receives a site-specific development proposal, and COAs may be attached, as appropriate.
Lands & Realty	The BLM authorizes ROW grants and manages the planning areas to accommodate transmission lines, communication sites, compressor stations, roads, etc. If the Federal minerals of the lease parcels are developed, the surface disturbance, infrastructure, and facilities necessary to develop the minerals may or may not involve ROWs. The BLM will complete a detailed analysis with any future site-specific development proposal and may attach COAs as appropriate.
Minerals	Fluid mineral resources would be impacted through the production of those resources. Development of these parcels for fluid minerals may impact future development of solid mineral resources present in the area.

Issues Considered but Not Analyzed in Detail	
Program Area	**Rationale**
	RGFO: The general area of the Weld County parcels historically had lode claims, as well as proposals for uranium prospecting. While the area has known uranium and vanadium deposits, exploration and extraction of solid minerals is inactive at the present time. WRFO: Certain WRFO parcels are presently encumbered with mining claims likely for uranium. No existing or proposed development of locatable minerals occurs in the area; however, exploration for uranium has occurred in the area in the past. Additionally, coal is likely present within many of the proposed lease parcels; however, no current leases or permits exist.
National & State Scenic and Historic Byways	RGFO: Parcel CO-2025-09-0373 is in proximity to the Pawnee Pioneer Trails Scenic Byway. The act of a lease sale does not affect the quality of the scenic values of the byway. The BLM may complete a detailed analysis with any future site-specific development proposal. WRFO: National and State Scenic and Historic Byways do not exist within or near the parcels in the RGFO.
National Historic Trails	National Historic Trails are not within or near parcels in the RGFO or the WRFO.
Native American Cultural Interests	RGFO: Oil and gas operations have the potential to impact traditional cultural and religious properties located nearby. Currently, the BLM is not aware of any of these types of properties located on the proposed lease parcels or in the vicinity; however, tribal consultation is ongoing. Any future undertaking with the potential to affect traditional cultural properties is subject to Section 106 of the NHPA. In addition, the BLM may apply COAs to protect such properties, which may affect or limit oil and gas development. Such measures may include COAs to mitigate visual and audible impacts to sensitive traditional cultural properties. Consultation with potentially interested Native American tribes regarding the proposed lease sale is in progress and would continue if development of any lease is proposed. WRFO: Other than the five parcels analyzed in detail, potential impacts to Native American cultural interests are not identified for the remaining five WRFO parcels. Tribal authorities have not identified potential impacts from leasing and future potential oil and gas exploration and gas development in the region. Within the 0.5-mile minimum analysis buffer for visual and audible effects, as standardized by WRFO in consultation with the Ute Indian Tribe of the Uintah & Ouray Reservation, the Southern Ute Indian Tribe, the Ute Mountain Ute Tribe, and the Eastern Shoshone Tribe, there are no known cultural resources that would be susceptible to such impacts as a result of the Full Leasing Alternative in Parcels CO-2025-09-0293, CO-2025-09-0363, CO-2025-09-0377, CO-2025-09-6031, and CO-2025-09-6251; however, tribal consultation is ongoing. Should recommended inventories or future consultations with Tribal authorities reveal the existence of such sensitive properties, appropriate mitigation and/or protection measures may be undertaken. Furthermore, any future undertaking with the potential to affect traditional cultural properties is subject to Section 106 of the NHPA. In addition, the BLM may apply COAs to protect such properties, which may affect or limit oil and gas development. Such measures may include COAs to mitigate visual and audible impacts to sensitive traditional cultural properties. Consultation with potentially interested Native American tribes regarding the proposed lease sale is in progress and would continue if development of any lease is proposed. See also “Cultural Resources” above.
Paleontological Resources	RGFO: A lease notice (RGFO-LN-Paleo-1) applies to the lease parcels to provide the mitigation deemed necessary to avoid or minimize environmental harm to potential fossil resources. During APD review, the BLM may add COAs if additional mitigation is determined necessary to avoid or minimize impacts to paleontological resources. The paleontological potential varies between parcels from low to very high (Potential Fossil Yield Classification PFYC 2-5). Eolian deposits, which have low potential (PFYC 2), are mapped in parcel 362. Parcel 373 is mapped as the White River Formation, which has very high potential (PFYC 5), as is supported by many documented localities in the region. Multiple geological units with paleontological potential including the Denver (PFYC 5) and Dawson and Arapahoe Formations (PFYC 4) are mapped within parcel 6253 additional assessment may not be possible due to surface cover and/or prior disturbance (i.e., landfill). WRFO: Lease notice WR-LN-12 applies to parcel areas with high or very high potential fossil-bearing

Issues Considered but Not Analyzed in Detail	
Program Area	**Rationale**
	formations (PFYC Class 4 -5). Geologic formations within the parcels identified may include the Green River, Uinta, Fort Union, Wasatch/DeBeque, and Williams Fork Formations. All of these formations have very high potential (PFYC 5) to contain important paleontological resources. Although systematic surveys of the lease parcels have not been fully completed, there are known scientifically important localities within the lease parcel boundaries.
Permitted Range Management	RGFO: Since the parcels proposed for leasing in the RGFO are split estate (i.e., private surface ownership), range management is not evaluated. WRFO: Nine permitted livestock grazing allotments overlap with the WRFO proposed lease parcels. Allotment management and/or permitted Animal Unit Months (AUMs) would be adjusted where oil and gas activity conflicts with grazing operations, Colorado Public Land Health Standards, and rangeland management objectives. Conflicts could include loss of forage, unsuccessful reclamation of disturbed areas, invasive species, safety hazards, improper livestock distribution, or other circumstances. Adjustments in livestock grazing use would be implemented based on monitoring results and through consultation, coordination, and cooperation with grazing permittees, other affected interests, and State agencies. The BLM will actively pursue opportunities and facilitate voluntary collaboration between operators and grazing permittees to identify and implement projects and actions to increase flexibility in livestock grazing management in areas temporarily impacted by oil and gas development and to enhance reclamation success. Additional effects of development were sufficiently considered in the WRFO Oil and Gas FEIS (BLM 2015b). The BLM will complete a more detailed analysis if it receives a site-specific development proposal, and COAs may be attached, as appropriate.
Public Recreation	RGFO: Since the parcels proposed for leasing in the RGFO are split estate (i.e., private surface ownership) and public recreation is not known to occur, public recreation is not evaluated. WRFO: Multiple Special Recreation Permit holders use the lands of the WRFO parcels, including 13 Commercial Mountain Lion SRPs and 3 Commercial Big Game SRPs. There are no commercial hunting drop camp areas within the lease parcels. Due to the various public outdoor recreation opportunities available throughout the WRFO, little to no impacts to public recreation are anticipated.
Riparian Zones & Wetlands	RGFO: Aerial imagery indicates that Parcels CO-2025-09-0373 and CO-2025-09-6253 have potential riparian vegetation. Stipulations RGFO-NSO- Special Status Species (SSS) -20, RGFO-NSO-Water-4, RGFO-NSO-Water-5, and RGFO-CSU-Water-2 apply to the parcels where applicable to protect riparian vegetation (See **Appendices B and C** for stipulation information). WRFO: Stipulations CO-28 and WR-CSU-12 apply to the parcels where applicable to protect riparian zones and wetlands (See **Appendices B and C** for stipulation information). Due to these protections, along with standard lease terms and conditions, site-specific design features, COAs, and State requirements that would be applied at the APD phase, as necessary, little to no impacts to riparian zones and wetlands are anticipated. The BLM will complete a detailed analysis with any future site-specific development proposal and may attach COAs as appropriate. See “Water Resources” for water quality protections.

Issues Considered but Not Analyzed in Detail	
Program Area	**Rationale**
Soil	Fluid mineral development is anticipated to be the most widespread surface-disturbing activity. The BLM will complete a detailed analysis with any future site-specific development proposal. At the APD stage, review of site-specific information will allow assessment of potential impacts to soil. State stormwater regulations will apply at the APD stage; and applicable BMPs will be required. RGFO: The mapped soils of three parcels include 19 unique soil types. The Parcel CO-2025-09-0363 is dominated by Fondis silt loam (482.05 acres) and Rawah loam (356.40 acres) with other silt and gravelly loams throughout. 28.44 acres (or 2.53%) of the parcel's surface is area considered to be fragile soils. Parcel CO-2025-09-6253 consists of Fluvaquents and Haplaquolls soils (135.63 acres), Fenster-Thenipel complex soils (108.51 acres), and Cryoborolls soils (36.45 acres). These soils are frequently flooded. All 280 acres (100%) of the parcel is considered to be on fragile soils. Parcel CO-2025-09-0362 is largely Canlodore very cobbly loamy sand (162.78 acres) and Castee loam (98.58 acres) with some saline Battlement silt loam (56.46 acres). A very small percentage (0.87%) of the parcel is considered to be on fragile soil. WRFO: The parcel located in Moffat County has five different soil types (175.3 acres) that range from Forelle loam to Torriorthents-Rock outcrop, sandstone complex. The parcels located within Rio Blanco County have 35 different mapped soil types (10,155 acres). The soils range widely from Rentsac-Moyerson-rock outcrop to Trembles loam, wet. Parcels that have mapped soil issues would be stipulated with four different stipulations: WR-NSO-11 to protect soils considered unstable and subject to slumping and mass movement; WR-NSO-12 to protect soils on natural slopes greater than or equal to 50 percent; WR-CSU-10 to protect soils on natural slopes greater than or equal to 35 percent but less than 50 percent; and WR-CSU-11 to protect the productivity of saline soils and to reduce salt and selenium loading of surface waters. Generally foreseeable effects of development were sufficiently considered in the WRFO Oil and Gas FEIS (BLM 2015b). The BLM will complete a more detailed analysis if it receives a site-specific development proposal, and COAs may be attached, as appropriate.
Special Designations	RGFO: Since the parcels in the RGFO are on privately owned surface, there are no BLM Special Designations (Wilderness Study Areas, Areas of Critical Environmental Concern, Wild and Scenic Rivers). WRFO: Some of the parcels in WRFO overlap with Areas of Critical Environmental Concern (ACEC). The two ACECs are White River Riparian and Lower Greasewood Creek. Any portion of the parcels that fall within these two ACECs will have WR-NSO-34 applied. WR-NSO-34 stipulates no surface occupancy or disturbance within the boundaries of the following ACECs: Dudley Bluffs, Yanks Gulch/Upper Greasewood Creek, Lower Greasewood Creek, Raven Ridge, South Cathedral Bluffs, Deer Gulch, Ryan Gulch, Blacks Gulch, Coal Draw, Moosehead Mountain, White River Riparian and Duck Creek. Foreseeable effects of development were sufficiently considered in the WRFO Oil and Gas FEIS (BLM 2015b). The BLM will complete a more detailed analysis if it receives a site-specific development proposal, and COAs may be attached, as appropriate. The WRFO parcels do not overlap with Wild and Scenic Rivers.
Vegetation, Special Status Species (Endangered Species Act and Bureau Sensitive)	RGFO: In the RGFO, oil and gas production is common in the surrounding areas of the parcels. Fluid mineral development can impact vegetation through surface disturbance and can alter the composition of vegetation communities. The BLM will complete a detailed analysis with any future site-specific development proposal. At the APD stage, the BLM will review site-specific vegetation conditions and will require reclamation, including successful revegetation, as appropriate. WRFO: Parcels with known mapped special status plant species habitat are stipulated with WR-NSO-25 or WR-NSO-26. WR-NSO-25 stipulates no surface occupancy or disturbance is allowed within 660 feet of occupied and suitable habitat for Federally listed, proposed, and candidate plant species, including any new habitat mapped as a result of future surveys. NSO-26 stipulates no surface occupancy or disturbance is allowed within 330 feet of occupied or suitable habitat for BLM sensitive plants. Stipulations HQ-TES-1 and CO-34 apply to all parcels and alert the lessee of potential habitat for a threatened, endangered, candidate, or other special status plant and/or animal. The BLM will complete a more detailed

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	analysis if it receives a site-specific development proposal, and COAs may be attached, as appropriate. At the APD stage, the BLM will review site-specific vegetation conditions and will require reclamation, including successful revegetation, as appropriate. If a Federally listed plant species may be affected by a site-specific development proposal, the BLM would complete ESA Section 7 Consultation with the FWS.
Visual Resources	RGFO: Land uses in the vicinity of the parcels in Arapahoe and Weld counties include, but are not limited to, grazing, agriculture, mineral development, recreation, residential, utility corridors, wildlife, and wind development. The landscape in Weld County – which includes nearby National Forest System lands of the PNG --- generally is characterized as low lying with an open panoramic expansiveness, broken by low washes and rises and small canyons and the Pawnee Buttes. Fencing and livestock, multiple oil and gas well pads and facilities, wind turbines, and a few residences draw the attention of the casual observer. Arapahoe County parcel is disturbed land, east of highly developed residential urban areas and adjacent to a major state highway. The Proposed Action of a lease sale does not impact the visual landscape; however, if the lease is proposed for development, further site-specific analysis would be completed before deciding whether to approve an APD. WRFO: All ten lease parcels fall within either VRM Class II or VRM Class III with objective to retain or partially retain, respectively, the existing character of the landscape. Based on the VRM class, either the WR-CSU-26 or WR-CSU-27 stipulation applies to each parcel. The BLM will review site-specific information about proposed development activities and site-specific design features at the APD stage, and will require or recommend BMPs as applicable, depending on surface land ownership, the VRM class, and the proposal's potential to affect visual resources.
Wastes, Hazardous or Solid	Most exploration and production wastes generated by potential future development (e.g., produced water, produced gas) are exempt from the Resource Conservation and Recovery Act (RCRA) Subtitle C hazardous waste regulations. However, the exemption does not mean these wastes present no hazard to human health and the environment, nor does the exemption relieve the operator from corrective action to address releases of exempt wastes. Non-exempt wastes used during exploration and production activities include but are not limited to lubricants, fuels, caustics or acids, and other chemicals. Per- and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals used in numerous industries. In oil and gas exploration and development, PFAS are typically found in aqueous film forming foam (AFFF) fire sprays, hydraulic oils used to prevent corrosion, and surfactants (compounds used to lower surface tension between two liquids), and can be used to increase production in oil reservoirs. Technologically enhanced naturally occurring radioactive material (TENORM) is also found in a number of waste streams (e.g., scrap metal, sludge, slags) and include materials such as radon and radium. In oil and gas exploration and development, these materials are typically found in specific areas where sludges and solids accumulate, mainly separators and tank bottoms. This equipment is surveyed for the presence of radioactivity and is disposed in accordance with ECMC regulations at commercial disposal facilities. Produced water may also contain elevated levels of TENORM, and may be disposed in accordance with Colorado's Underground Injection regulations. Other opportunities for these chemicals to be released into the environment is during disposal of drill cuttings and other waste streams. This disposal is also part of the overall APD review process and all on-site disposal of drill cuttings must comply with ECMC rules. Those materials not meeting the standards of the rules are hauled to appropriate commercial disposal facilities. The U.S. Environmental Protection Agency has delegated the authority to implement Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and RCRA to the Colorado Department of Public Health and Environment. When authorizing development, Federal and State laws, regulations, and policy apply to reduce effects or respond to incidents: • Federal, State, County, and Municipal fire managers coordinate on fire response and mitigation.

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	• Developers who install and operate oil and gas wells, facilities, and pipelines are responsible for complying with the applicable laws and regulations governing hazardous materials and for following all hazardous spill response plans and stipulations. The ECMC requires similar spill response measures with the release of hydrocarbons, produced water, or hydraulic fracturing fluids. • Measures are conducted to lower risks related to hydrogen sulfide (H_2S) exposure, including, but not limited to, proper ventilation of buildings, equipment, and facilities, installation of stock tank vapor recovery systems, and use of personal H_2S monitors by workers. • Workplaces (well pads, facilities, vehicles) are maintained in a condition that complies with safety laws stipulated by the Occupational Safety and Health Administration. • Vehicular traffic and pipelines are managed in compliance with safety laws stipulated by the Department of Transportation. Also please refer to "Water Resources".

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Water Resources	The State of Colorado has agencies that administer water rights and regulate water quality, including but not limited to the Division of Water Resources (a.k.a., Office of the State Engineer), the Department of Public Health and Environment, and the Energy and Carbon Management Commission. In addition, the State administers numerous water quality regulations, including the Clean Water Act of 1977, the Water Resources Planning Act of 1962, the Pollution Prevention Act of 1990, and the Safe Drinking Water Act of 1977. The Anti-degradation Policy in the Clean Water Act mandates the maintenance of the level of water quality that has been identified as being necessary to support the existing uses of a waterbody (40 C.F.R. § 131.12(a)). The split estate parcels are subject to management decisions contained in the RMPs and RMPAs, which designate areas open or closed to fluid mineral leasing and assigns standard terms and conditions as well as stipulations to protect water resource values. Fluid mineral development activities and ROW development may affect water resources qualitatively and quantitatively. As detailed in **Appendices B and C**, impacts to water resources from potential oil and gas development on the parcel would be avoided or minimized by applying lease stipulations. Qualitative impacts to water resources from potential oil and gas development are associated with 1) the transport of sediment and other parameters into surface waters by stormwater runoff from areas of surface disturbance; 2) the transport of chemical pollutants to surface waters from spills or equipment failures on the well pad or during vehicle or pipeline transport; 3) subsurface movement of pollutants to waters from pits containing fluids or cuttings stored on the pad; and 4) movement through the well bore to water due to improper casing or cementing. These potential impacts are avoided or minimized by project design measures, BMPs, and regulation. Each project proposal is designed and developed to manage stormwater in a manner that minimizes erosion, transport of sediment offsite, and site degradation, and is reviewed by the BLM and regulated by the CDPHE and ECMC. Temporarily disturbed surfaces are revegetated during interim reclamation to reduce erosion potential, and the working surface of the pad that remains open during long-term production has stormwater controls. Requisite Spill Prevention, Control, and Countermeasure plans reduce the risk of spills, addressing the transport of chemicals and materials, including loading and unloading operations; vehicle/equipment fueling; outdoor storage activities, including those for chemicals and additives; produced water and drilling fluids storage; erosion and vehicle tracking from well pads, road surfaces, and pipelines; waste disposal practices; and leaks and spills. Should a spill occur on-site or during material transport, the BLM works with the operator to immediately remediate the spill in accordance with Federal and State standards. In addition, remote (radiotelemetric) monitoring of production facilities and containment of fluid-containing structures within secondary containment – coupled with regular BLM, ECMC, and operator inspections – reduce the potential for releases related to equipment failure and facilitate identification and control. Pits are required to be lined to avoid contact between the pit contents and subsurface materials. Cuttings are either buried once meeting ECMC Table 915-1 standards or disposed at a properly licensed facility. Potential impacts to water resources could occur with improper borehole construction, casing, and cementing, and when other drilling, completion, and operational procedures are not executed in compliance with Federal and State rules and regulations. This may result in inadequate aquifer isolation, the loss of well integrity, surface spills, or loss of fluids (chemical additives, technologically enhanced naturally occurring radioactive material, etc.) in the drilling and completion process. To avoid or minimize these potential water resource impacts, both the BLM and ECMC review and approve site-specific proposed drilling plans and require adherence to Federal and State rules and regulations, as well as BMPs. Site-specific review occurs during the APD approval process, including review of the drilling plan and Surface Use Plan of Operations. The drilling plan is verified by the BLM petroleum engineer to ensure the well bore design meets the casing and cementing requirements of 43 C.F.R. Part 3170, Subpart 3171 and 43 C.F.R. Part 3170, Subpart 3172 for the protection and/or isolation of all usable water zones, lost circulation zones (including faults), and abnormally pressured zones. Wells are cased with multiple layers of steel and sealed with surrounding layers of cement to isolate usable water zones from the wellbore and avoid possible migration of fluids associated with oil and gas development. BLM petroleum engineering technicians witness the setting of surface casing to verify cementing operations on wells in a field with potential for lost circulation or in areas of exploratory drilling. A production casing is set to provide an

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	added layer of separation between the oil or natural gas stream and usable water zones. A cement bond log (well survey) is performed to ensure the cement is properly sealed around the casing. Prior to hydraulic fracturing, the casing is pressure tested with fluid to the maximum pressure anticipated in the casing. In addition, ECMC Rule 615 requires groundwater sampling, including baseline and subsequent monitoring from up to four sources within 0.5 mile of a proposed oil and gas well, multi-well pad, or disposal well. Potential water resource impacts from hydraulic fracturing are a public concern, including groundwater contamination and seismicity. While various authors (e.g., Shonkoff et al. 2014) have described the potential for contamination of groundwater via induced fractures, no such contamination has been demonstrated as a result of normal operations. One case of contamination, which did not involve normal or appropriate operations, was the subject of a lengthy investigation by the EPA at Pavilion, Wyoming (DiGiulio et al. 2016). In that study, initiated due to the presence of oil and related contaminants in a shallow freshwater aquifer and water wells, the EPA found the following: 1) flowback fluids and produced water containing hydrocarbons and high salinity were stored in 33 open pits nearby; 2) the surface casing did not extend below the elevation of the shallow aquifer and deepest water well; 3) no cementing or other bonding was used around the production casing; and 4) the vertical spacing between the fractured zones and domestic wells was inadequate. These situations would not be permitted in Colorado, and severe penalties would be levied against an operator undertaking such actions. A research network funded by the National Science Foundation, which engaged 29 researchers at nine institutions, undertook a study of hydrocarbon and fracturing fluid migration in the Wattenberg Field, Denver Basin, Colorado (Fleckenstein et al. 2015). The mission of the research was to provide a science-based framework for evaluating the tradeoffs between hydrocarbon development and protection of water and air resources. The study of the Wattenberg Field found the following: 1) there was no evidence of aquifer contamination due to stimulation through wellbores; 2) of the 17,948 wells in the study area, ten exhibited signs of hydrocarbon migration to usable water zones; 3) the probability of hydrocarbon migration in vertical wells due to failure of one or more barriers was 0.06%; 4) migration of hydrocarbons only occurred in older vertical wells in which the casing did not extend through all usable water zones; thus, the probability of hydrocarbon migration is directly correlated with the age of the well; 5) there was no evidence of failure of one or more barriers in horizontal wells for shale development; and 6) there was no evidence of hydrocarbon migration in horizontal wells used for shale development. Based on research, current technology, and practices, the BLM has concluded that use of hydraulic fracturing technology in completions of oil and gas wells to facilitate recovery of Federal fluid minerals does not present a significant risk of impacts to human health and the environment. The risks are reduced through the careful review of drilling and completion plans for proposed wells by both the BLM and ECMC petroleum engineers and advances in engineering protections. The BLM and ECMC require proper casing and cementing of wellbores to isolate the aquifer(s) penetrated by the well bore. Surface casing extends below the depth of any usable water zones that could support a human use or connect to surface waters. The upper extent of fractures is vertically separated from such zones. In addition, the ECMC regulates a number of aspects of hydraulic fracturing and requires operators to publicly disclose chemicals used in hydraulic fracturing. In 2011, the COGCC (now ECMC) published an analysis of the use of hydraulic fracturing in Colorado and potential risks to human health and the environment, which notes that, “Hydraulic fracturing has occurred in Colorado since 1947. Nearly all active wells in Colorado have been hydraulically fractured. The COGCC serves as first responder to incidents and complaints concerning oil and gas wells, including those related to hydraulic fracturing. To date, the COGCC has not verified any instances of groundwater contaminated by hydraulic fracturing.” Regarding chemicals used in hydraulic fracturing, some of these are consumed during the process, and portions that return to the surface in flowback fluids and produced fluids are present at low concentrations. Once at the surface, a variety of operational and technological requirements by the BLM and the State are designed to avoid or minimize the risk of exposure of these chemicals to human and environmental receptors while being stored, transported, or disposed.

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	The process of hydraulic fracturing during well completions results in the inducement of microseismicity due to pressures generated that result in fracturing of the surrounding bedrock as a method to enhance recovery of hydrocarbons. However, these microseismic events are normally not detectable at the surface (except by geophysical instruments) or, if felt, are not at a magnitude to cause damage to structures or to trigger slope failure. With very few exceptions, the incidence of felt earthquakes is not related to hydraulic fracturing but to disposal of flowback fluids and produced water in deep disposal wells. Both Federal and private disposal wells in Colorado are regulated by the ECMC, under its delegated authority from the EPA, with regard to location, injection depth, injection pressure, injection rate, and total injected volume. The restrictions are specifically intended to avoid or minimize the risk of felt earthquakes, and of earthquake-related damage. If future oil and gas development occurred from the parcels, water resources would be impacted from water consumption, with the minority volume for dust abatement and well drilling and the majority volume for well completions. The amount of water required for oil and gas development varies widely, even within the same basin (Gallegos et al. 2015). Water use is typically higher for horizontal wells anticipated for the parcels. Water used for oil and gas operations is associated with existing water rights or unappropriated sources; water use is administered by the State of Colorado. To minimize the freshwater consumption, produced water and reused/recycled water are used for well completions when feasible. Water depletions associated with oil and gas development can contribute to the deterioration of critical habitat for threatened and endangered species. These effects have been evaluated by the BLM and FWS and continue to be appropriately mitigated through programmatic and project-specific consultation and ongoing oversight by both agencies. Effects to springs and groundwater dependent ecosystems (GDEs) could occur where roads, stream crossings, pipelines, well pads, and facilities are in proximity, thereby affecting their functionality and associated ecosystem processes. Surface and groundwater depletions could affect springs and associated habitat. Springs and GDEs are critical for providing habitat for terrestrial and aquatic species, a perennial water source supporting streamflow, water quality, water storage, carbon storage, as well as a water source for animal use. In addition to springs, other GDEs include fens, wet meadows, riparian areas, and wetlands. Individual RMPs, lease stipulations, and analysis at the APD stage address potential impacts to springs and GDE. RGFO: Aerial imagery indicates that perennial or ephemeral surface waterways may occur on Parcels CO-2025-09-0373 and CO-2025-09-6253. If the parcels were developed in the future, little to no impacts to surface water are expected due to the application RGFO-NSO-Water-5 (100-foot buffer from intermittent or ephemeral water or riparian vegetation) and RGFO-CSU-Water-2 (500-foot buffer from perennial, intermittent, or ephemeral water or riparian vegetation) to both parcels, and RGFO-NSO-Water-4 (500-foot buffer from perennial water) to Parcel CO-2025-09-6253. Application of RGFO-NSO-Water-1 (classified surface water supply stream segment) on Parcel CO-2025-09-6253 would avoid or minimize impacts on Murphy Creek, designated as an environmental augmentation impact reach throughout parcel. Aerial imagery indicates that Parcel CO-2025-09-0362 does not have any perennial or ephemeral surface water features. WRFO: WR-NSO-13 applies to Parcel CO-2025-09-0296 to provide a buffer to Yellow Creek due to its CDPHE impaired stream designation (COLCWH13c). As of 2024, this impaired status applies to Yellow Creek between its confluence with Barcus Creek down to its confluence with Greasewood Creek (COLCWH13c_B). WR-CSU-12 applies to each parcel to protect surface water resources. No sensitive groundwater resources, such as sensitive aquifers or sources of public drinking water supply, overlap with the parcels. Due to stipulation protections, along with standard lease terms and conditions, site-specific design features, COAs, and State requirements that would be applied at the APD phase, as necessary, little to no impacts to water resources are anticipated. The BLM will complete a detailed analysis with any future site-specific development proposal and may attach COAs as appropriate. Also please refer to "Aquatic Wildlife" and “Wildlife, Special Status Species”.

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Wilderness (Lands with Wilderness Characteristics and Wilderness Study Areas)	RGFO: Since the parcels in the RGFO are on privately owned surface, the lands are not inventoried or managed for wilderness characteristics. WRFO: Parcel CO-2025-09-0296 overlaps with the Blair Mountain/Greasewood Lands with Wilderness Characteristics (LWC) Unit 13 Tier 3, Parcels CO-2025-09-0294 and CO-2025-09-6031 overlap with the North Colorow LWC Unit #19 Tier 1. Based on the LWC tier, the BLM applies the following: WR-NSO-35 for Tier 1 areas; WR-CSU-23 for Tier 2 areas; and no stipulations apply to Tier 3 areas to protect wilderness characteristics. For ROW authorizations, the following apply: Tier 1 areas are managed as ROW exclusion areas; Tier 2 areas are managed as ROW avoidance areas; and Tier 3 areas are open for ROWs and other land use authorizations. New road construction or improving/maintaining primitive roads is not allowed in Tier 1 areas and is allowed in Tier 2 and Tier 3 areas. Construction of new facilities is not allowed in Tier 1 areas and is allowed in Tier 2 and Tier 3 areas. Consistent with existing lease rights and the management objective for each tier, COAs may be applied to leased acreage in Tier 1, 2, and 3 areas that contain wilderness characteristics. Examples of such COAs could include but are not limited to: roads will not bisect the unit; visual resources will be managed similar to VRM Class II; siting of facilities will be considered in facility design (topographic screening may be applied); and timing restrictions on use of helicopters may be applied during big game hunting seasons. Wilderness Study Areas do not overlap with the parcels in the WRFO.
Wild Horses and Burros	The Wild Free-Roaming Horses and Burros Act of 1971 requires the BLM to manage wild horses according to multiple-use management principles so as to achieve and maintain a thriving, natural ecological balance on public lands. RGFO: The RGFO does not have wild horse and burro management areas. WRFO: Lease notice WR-LN-10 applies to certain WRFO parcels and alerts the lessee that the lease parcel overlaps with a wild horse herd management area (HMA). In order to protect wild horses within this area, intensive development activities may be delayed for a specified 60-day period within the spring foaling period between March 1 and June 15. The lessee may be required to perform special conservation measures within the wild horse HMA including: 1) habitat improvement projects within the HMA in areas adjacent to development if such development displaces wild horses from crucial habitat; 2) alternative water sources of equal quantity and quality if watering areas are disturbed; and/or 3) modification to activities/improvements to ensure unrestricted movement of wild horses between summer and winter ranges.
Wildlife, Aquatic	Due to the application of the stipulations below, along with standard lease terms, regulations, and applicable site-specific design features, COAs, and BMPs applied at the APD stage, impacts to these resources are anticipated to be avoided or minimized if these parcels are developed. Additionally, standard lease terms allow the BLM to require relocation of proposed operations by up to 800 meters and prohibit new surface disturbing operations for a period of up to 90 days in any lease year to mitigate adverse impacts to other resources and values (43 C.F.R. § 3101.12). RGFO: Aerial imagery indicates that Parcels CO-2025-09-0373 and CO-2025-09-6253 have potential aquatic habitat. Stipulations RGFO-NSO- Special Status Species (SSS) -20, RGFO-NSO-Water-4, RGFO-NSO-Water-5, and RGFO-CSU-Water-2 apply to the parcels where applicable to protect water resources and potential aquatic wildlife (See Appendices B and C for stipulation information). Due to these protections, along with standard lease terms and conditions, site-specific design features, COAs, and State requirements that would be applied at the APD phase, as necessary, little to no impacts to aquatic wildlife are anticipated. WRFO: Parcels with aquatic wildlife habitat have the following stipulations to provide habitat protection: CO-28, WR-NSO-17, and WR-CSU-12. See “Water Resources” and "Wildlife, Special Status Species" for additional protections.

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Wildlife, Big Game	The BLM approved the Big Game Habitat Conservation for Colorado RMPA in October 2024 which amended land use plans to incorporate oil and gas lease stipulations to enhance protection for important habitat areas for elk, mule deer, pronghorn, and bighorn sheep. Big game stipulations are applied to the parcels as applicable (See Appendices B and C for stipulation information).
	
	• CO-NSO-BG-1 to protect big horn sheep production areas.
	• CO-NSO-BG-2 to maintain, conserve, and protect big game migratory highway crossing pinch point areas and within CPW-mapped big game non-highway crossing pinch point areas.
	• CO-CSU-BG-1 to maintain, conserve, and protect big game high priority habitat (HPH) on BLM-administered lands and Federal mineral estate; surface occupancy and use may be restricted within big game HPH. Authorization of new oil and gas facility locations within big game HPH will be avoided when the oil and gas location density exceeds one active oil and gas location per square mile or contributes to an increased density beyond one active oil and gas location per square mile. In addition, a BLM- and CPW-approved Wildlife Mitigation Plan (WMP) will be required and implemented for new oil and gas facility locations within big game HPH. The WMP will address functional habitat loss, including consideration of the impacts of both oil and gas facilities and new oil and gas routes, and offset the unavoidable adverse impacts to the affected big game habitat.
	• CO-TL-BG-1 to reduce disruption of big game during the winter season in crucial big game winter habitat.
	  ○ Bighorn sheep winter range for November 1 to April 30;
	  ○ Elk and mule deer severe winter range and winter concentration areas from December 1 to April 30;
	  ○ Pronghorn winter concentration areas from January 1 to April 30.
	• CO-TL-BG-2 to reduce behavioral disruption during big game parturition and early young rearing periods.
	  ○ Bighorn sheep production areas:
	  ▪ Rocky Mountain bighorn sheep April 15 to June 30,
	  ▪ Desert bighorn sheep February 1 to May 1;
	  ○ Elk production (calving) areas from May 15 to June 30.
	• CO-LN-BG-1 to alert the lessee that the lease overlaps with CPW-mapped big game HPH and requires a WMP; and CPW recommends a surface density limitation of less than one linear mile of routes per square mile (640 acres).
	• CO-LN-BG-2 to alert the lessee that the lease area is located within big game habitat or currently under big game HPH review by the State of Colorado and requires a WMP.
	
	The BLM coordinates with CPW to create master development plans and wildlife mitigation plans as operators develop oil and gas fields. When APDs are submitted, the BLM collaborates with CPW to review design features and operator-committed measures, and determine the need for additional mitigation and/or COAs. However, until a site-specific development is proposed, the presence or extent of surface disturbance and the resulting potential effects may not be adequately analyzed. This proposed action does not authorize any surface disturbance or use. Therefore, in-depth analyses will be conducted as necessary once an action is proposed that involves surface disturbance or use of the parcel; and the aforementioned stipulations will apply accordingly.

Wildlife, Greater Sage-Grouse	Parcels that overlap functional Greater sage-grouse (GRSG) habitat are subject to habitat-specific management direction and stipulations as addressed and authorized through the Greater Sage-Grouse Rangewide Planning Record of Decision and Approved Resource Management Plan Amendment for Colorado (2025). The RMPA identifies and incorporates appropriate measures to conserve, enhance, and restore GRSG habitat in the context of BLM's multiple use and sustained yield mission under FLPMA. Consistent with Objective MR (Mineral Resources)-1: Manage fluid minerals to avoid, minimize, and compensate for: 1) disturbance, displacement, or mortality of GRSG; 2) loss of habitat or loss of effective habitat through fragmentation; and 3) cumulative landscape-level impacts. Priority will be given to leasing and development of fluid mineral resources, including geothermal, outside priority habitat management areas

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	(PHMAs) and general habitat management areas (GHMAs). When analyzing leasing and authorizing development of fluid mineral resources, including geothermal, in PHMA and GHMA, and subject to applicable stipulations for the conservation of GRSG, priority will be given to development in non-habitat areas first and then in the least suitable habitat for GRSG. RGFO: Greater sage-grouse do not occur in the RGFO. WRFO: Applicable to certain WRFO parcels, stipulations may include the following (**Appendices B and C**): • Wildlife GRSG-NSO-1: Applies a NSO constraint to leases in GRSG Priority Habitat Management Areas (PHMAs) unless a waiver, exception, or modification is granted. • Wildlife GRSG-CSU-1: Applies CSU constraints on surface use, occupancy, placement of permanent tall structures, and surface-disturbing activities in GHMAs within 1 mile of a PHMA that will decrease habitat availability or functionality of important seasonal habitats including breeding, nesting, or winter concentration; or that create new perching/nesting/food subsidy opportunities for avian predators. • Wildlife GRSG-CSU-2: New leases in PHMAs are subject to the restrictions of 3% disturbance and an average of 1 disturbance per 640 acres calculated by each Colorado Management Zone to allow clustered development. • Wildlife GRSG TL-1: Applies a TL constraint to new leases in PHMAs and GHMAs to minimize impacts to GRSG during lekking, nesting, and early brood-rearing. No activity associated with construction, drilling, or completions is allowed within 4 miles from occupied leks during lekking, nesting, and early brood-rearing (March 1 to July 15).
Wildlife, Migratory Birds	In accordance with the RMPs and RMPAs, stipulations apply for migratory birds, including raptors and waterbirds, where potential habitat occurs. The BLM does not have data on the occurrence of migratory birds on parcels with private surface ownership. If leases were developed, the BLM, within its authority, would require development to avoid or, where impractical, minimize the disruption of migratory bird nesting activity by scheduling or prioritizing vegetation clearing, facility construction, and concentrated operational activities (e.g., drilling, completion, utility installation) to avoid involvement of better quality nesting habitats (e.g., siting on edge-of-type, avoiding better developed/more mature/more extensive and contiguous habitat parcels, consolidating with pre-existing disturbance) during the core migratory bird nesting season (generally from May 15 to July 15). If APDs are received, relevant site-specific analyses will be conducted. The act of leasing does not authorize any development or use of the surface of lease lands without further application by the lessee and approval by the BLM. In the future, the BLM may receive APDs for leased parcels. The BLM would conduct additional site-specific NEPA analysis before deciding whether to approve an APD, and what COAs to apply. At that time, when site-specific proposed development information is known, the BLM would conduct relevant analysis on effects on migratory birds from the proposal. For instance, the BLM, in coordination with the ECMC, the operator, and other entities as warranted, may consider avoiding or minimizing light pollution from proposed oil and gas development by limiting the hours of development activities, the types of work lights, and/or the casting of work lights (downward and inward).

Issues Considered but Not Analyzed in Detail	
Program Area	**Rationale**
Wildlife, Special Status Species (Endangered Species Act and Bureau Sensitive)	Lease Notice CO-34 applies to all Federal leases in Colorado, alerting lessees of potential habitat for a threatened, endangered, candidate, or other special status plant or animal species. Numerous stipulations apply to the parcels for various special status species that may occur, or have potential habitat, in the proposed leasing areas in accordance with the pertinent RMPs and RMPAs (**Appendices B and C**). The BLM consulted with the FWS regarding listed species during preparation of the pertinent RMPs and RMPAs. The stipulations attached to the proposed leases are consistent with management described in the respective RMPs and RMPAs. The BLM also would apply conservation measures developed through the ESA Section 7 consultation process to any future development of leases. The act of leasing does not authorize any development or use of the surface of lease lands without further application by the lessee and approval by the BLM. In the future, the BLM may receive APDs for leased parcels. The BLM would conduct additional site-specific NEPA analysis before deciding whether to approve an APD, and what COAs to apply. For instance, the BLM, in coordination with the ECMC, the operator, and other entities as warranted, may consider avoiding or minimizing light pollution from proposed oil and gas development by limiting the hours of development activities, the types of work lights, and/or the casting of work lights (downward and inward). At that time, when site-specific proposed development information is known, the BLM would conduct Section 7 consultation as appropriate. The BLM may recommend modifications to exploration and development proposals to further its conservation and management objective to avoid BLM-approved activity that may contribute to a need to list a species or their habitat. The BLM may require modifications to or disapprove proposed activity likely to result in jeopardy to the continued existence of a proposed or listed threatened or endangered species or result in the destruction or adverse modification of designated or proposed critical habitat. A number of BLM Colorado sensitive animal species (BLM 2023b) may inhabit or may be influenced from development of the proposed lease parcels, including Bluehead sucker, Boreal toad, Brewer's sparrow, Colorado River cutthroat trout, Columbian sharp-tailed grouse, Flannelmouth sucker, Gray vireo, Midget faded rattlesnake, Monarch butterfly, Mountain sucker, Northern leopard frog, Roundtailed chub, Suckley's cuckoo bumblebee, and Western bumblebee. The following FWS iPAC species list was generated on January 30, 2025, to identify threatened and endangered (proposed or listed) species that may occur and/or may be affected by potential future development consequent to leasing: Bonytail Chub, Colorado Pikeminnow, Eastern Black Rail, Gray Wolf, Humpback Chub, Mexican Spotted Owl, Monarch Butterfly, Suckley's Cuckoo Bumble Bee, Pallid Sturgeon, Piping Plover, Preble's Meadow Jumping Mouse, Razorback Sucker, Tricolored Bat, Whooping Crane, and Yellow-billed Cuckoo RGFO: In the RGFO, the FWS issued a Programmatic Biological Opinion (PBO) (06E-24000-2014-F-0671) on February 2, 2015, which concurred with BLM's determination that water depletions are "Likely to Adversely Affect" the whooping crane (*Grus americana*), interior least tern (*Sternula antillarum*), northern Great Plains population of the piping plover (*Charadrius melodus*), pallid sturgeon *(Scaphirhynchus albus*) (collectively referred to as the target species), and designated critical habitat of the whooping crane. However, the FWS also determined that BLM water depletions from the Platte River Basin are not likely to jeopardize the continued existence of the whooping crane, interior least tern, northern Great Plains population of the piping plover, and the pallid sturgeon, and that BLM water depletions are not likely to destroy or adversely modify designated critical habitat for the whooping crane. The Platte River Recovery Implementation Program (PRRIP), established in 2006, is implementing actions designed to assist in the conservation and recovery of the target species and their associated habitats. The PRRIP addresses the adverse impacts of existing and certain new water-related activities on the Platte's target species and associated habitats and provides ESA compliance for effects on the target species and whooping crane critical habitat from such activities, including avoidance of any prohibited take of the species. The PRRIP serves as the reasonable and prudent alternative to offset the effects of water-related activities that FWS found were likely to cause jeopardy to one or more of the target species or to adversely modify critical habitat. The PBO addresses water depletions associated with fluid minerals development on BLM lands, including water used for well drilling, hydrostatic testing of pipelines, dust

Issues Considered but Not Analyzed in Detail	
Program Area	**Rationale**
	abatement on roads, and seismic activity. The PBO includes reasonable and prudent alternatives developed by the FWS, which allow BLM to authorize oil and gas wells that result in water depletion while avoiding the likelihood of jeopardy to the endangered species and avoiding destruction or adverse modification of their critical habitat. The PBO confirms ESA compliance for water-related activities of oil and gas operators that elect to rely on the PRRIP through maintaining membership in good standing in the South Platte Water Related Activities Program, Inc. (SPWRAP) organization. The SPWRAP organization is formally charged with certifying to the FWS that water users in Colorado are meeting the requirements to support reliance on the PRRIP for ESA compliance purposes. Among other things, SPWRAP assists the State of Colorado in complying with its financial and water requirements under the PRRIP. This includes implementation of groundwater recharge operations at times when South Platte River flows are in excess of the needs of endangered species and allowing the return of water to the river when flows are less than needed by endangered species. WRFO: In the WRFO, the FWS issued a Programmatic Biological Opinion (PBO) (ES/GJ-6-CO-08-F-0006 TAILS 65413-2008-F-0073-R001) on December 26, 2017, which concurred with BLM's determination that water depletions are "Likely to Adversely Affect" the Colorado Pikeminnow, Razorback Sucker, Humpback Chub, and Bonytail Chub. The BLM obtains data on actual freshwater used for Federal actions via a COA and subsequent sundry notice. These water-use amounts are summarized to calculate a total annual water depletion amount that is submitted at the end of each calendar year to the FWS and tracked against the overall projected threshold freshwater use. Also see "Wildlife, Aquatic."

Appendix F. Basis for Hypothetical Future Parcel Oil and Gas Development Scenarios

Royal Gorge Field Office – Rocky Mountain District

Arapahoe County – 4S 65W

Hypothetical development: Assuming an average 160-acre well spacing across 1,280 acres of Federal and non-Federal mineral estate, develop 8 wells from one disturbance area. From a maximum 25-acre disturbance area, develop up to 8 horizontal wells with 2-mile lateral reaches (12.5% Federal) to target production in the Niobrara formation, optimizing resource recovery while adhering to state spacing and development regulations.

Location ID	Pad	Well Spacing Order				Well Density (acres per well)	Lateral Reach (mile)	Disturbance (acre)
		Date	No.	Density	Formation			
443722	Prosper Farms 4-65 2-1-6	11/16/2022	535-1398	3,200 acres/ 11 wells	Niobrara	290.9091	3	24.86
482655	Sky Ranch 4-65 10-9 S	7/12/2023	535-1435	3,840 acres/ 18 wells	Niobrara	213.3333	4	8.26
449486	Lone Tree North	1/31/2024	535-1463	1,280 acres/ 16 wells	Niobrara	80	2	19.72
474845	Eastern Hills 4-65 17-18/3AH	8/30/2023	535-1440	5,200 acres/ 24 wells	Niobrara	216.6667	3	11.31
472938	Grande 4-65 20-19/1AH	1/6/2021	535-1342	1,280 acres/ 8 wells	Niobrara	160	3	4.02
450063	Grande 4-65 20-19/3AH	1/6/2021	535-1342	1,280 acres/ 8 wells	Niobrara	160	4	22.03
471001	Rush 4-65 29-30/1AH	10/29/2018	535-1141	1,280 acres/ 11 wells	Niobrara	116.3636	2	15.47
449806	Rush 4-65 29-30/3AH	10/29/2018	535-1141	1,280 acres/ 11 wells	Niobrara	116.3636	2	19.8
455198	Chico 4-65/26-25 N	9/27/2023	535-1442	2,560 acres/ 20 wells	Niobrara	128	2	7.63
467266	State Bierstadt 4-65 35-34 2AH	9/17/2018	535-1086	1,278 acres/ 8 wells	Niobrara	159.75	2	
486500	Lussing Trust 4-64/19-20 N	4/10/2024	535-1479	2,720 acres/19 wells	Niobrara	143.1579	2	11.62
429810	Watkins 30-5-5H	9/27/2023	535-1442	2,560 acres/ 20 wells	Niobrara	128	2	5.89
485220	Chico-Watkins S	9/27/2023	535-1442	2,560 acres/ 20 wells	Niobrara	128	2	15.03
		3/27/2024	535-1472	1,278 acres/ 8 wells	Niobrara	159.75		
Mean						**157**	**2.54**	**13.8**
Maximum								**24.86**

Weld County - 10N 59W & 2N 63W

Hypothetical development: Assuming an average 150-acre well spacing across 2,560 acres of Federal and non-Federal mineral estate, develop a combined 18 wells from two disturbance areas. From each maximum 20-acre disturbance area, develop up to 9 horizontal wells with 2-mile lateral reaches (25% Federal) to target production in the Niobrara and other formations (e.g., Carlile, Codell, Fort Hays, and Sharon Springs), optimizing resource recovery while adhering to state spacing and development regulations.

Location ID	Pad	Well Spacing Order				Well Density (acres per well)	Lateral Reach (mile)	Disturbance (acre)
		Date	No.	Density	Formation			
471229	KBL 02N-63-19	8/24/2020	407-3140	1,600 acres/ 16 wells	Niobrara and Codell	100	2.5	13.36
454529	Arnold 02N-64W-24	7/10/2024	407-3635	1,280 acres/ 9 wells	Niobrara and Codell	142.2222	2	4.98
485622	Y12-15	11/15/2023	407-3542	2,264 acres/ 16 wells	Niobrara	141.5	2	9.6
485623	YY18-07	11/15/2023	407-3542	2,264 acres/ 16 wells	Niobrara, Fort Hays, Codell, and Carlile	141.5	1.5	9.62
486605	Acacia 13-17	4/10/2024	407-3595	5,440 acres/ 35 wells	Sharon Springs, Niobrara, Fort Hays, Codell, and Carlile	155.4286	2.5	19.33
486606	Alder 23-16HZ	4/10/2024	407-3595	5,440 acres/ 35 wells	Sharon Springs, Niobrara, Fort Hays, Codell, and Carlile	155.4286	2	20.06
468727	Timbro 0101	4/19/2023	535-1427	1,280 acres/ 8 wells	Niobrara, Fort Hays, Codell, and Carlile	160	2	10.23
481827	Peanut Fed 3403	3/9/2022	535-1374	1,280 acres/ 5 wells	Niobrara, Fort Hays, Codell, and Carlile	256	2	7.43
426426	Wildhorse 04	10/23/2024	535-1504	3,200 acres / 26 wells	Niobrara, Fort Hays, and Carlile	123.0769	1	15.8
488345	Wildhorse 07	10/23/2024	535-1504	3,200 acres / 26 wells	Niobrara, Fort Hays, and Carlile	123.0769	2	15.86
--	--	7/31/2024	407-3638	1,280 acres/ 8 wells	Sharon Springs, Niobrara, Fort Hays, Codell, and Carlile	160	--	--
Mean						**151**	**1.95**	**12.6**
Maximum								**20.06**

White River Field Office – Northwest District

Moffat & Rio Blanco Counties – 1N 96W, 2N 96W, 3N 96W, 1N 97W, 2N 97W, 2N 98W

Hypothetical development: Assuming an average 470-acre well spacing across approximately 11,500 acres of Federal and non-Federal mineral estate (10,391.25 acres of Federal mineral estate plus an additional 10 percent non-Federal), develop 24 wells from 16 disturbance areas (based on the distribution of the parcels). Each disturbance area covers an average of 30 acres. Each well is horizontal with a 2-mile lateral reach (100% Federal) to target production in the Niobrara formation, optimizing resource recovery while adhering to state spacing and development regulations.

Location ID	Pad	Well Spacing Order				Well Density (acres per well)	Wells per Pad	Lateral Reach (mile)	Disturbance (acre)
		Date	No.	Density	Formation				
487080	Mohee Fed 0297-17-8 & 29	6/12/2024	593-1	2,560 acres/ 8 wells	Niobrara	320	8	2.5	15.173
455017	Quandary Fed 0297-27-34	1/30/2017	547-23	1,280 acres/ 4 wells	Niobrara	320	2	1.75	13.8
486773	Sylvester Fed 0397-12-13 & 36	5/1/2024	568-3	2,560 acres/ 6 wells	Niobrara	426.6667	6	3	38.08
484545	Coyote Fed 0397-14-2, 3, & 23	5/10/2023	568-2	3,840 acres/ 6 wells	Niobrara	640	6	2	47.45
	Mongo Fed 0297-16-9 & 28				Niobrara		8	2.25	28.44
430927	BHR J22 Fed 0397-22-15, 34, & 35	1/6/2021	568-1	640 acres/ 1 well	Niobrara	640	6	2.25	41.166
	Leghorn Fed 0497-34-3 & 22				Niobrara		8	2.5	64.565
430926	Road Runner Fed 0397-23-14				Niobrara		2	2	9.93
	Buckskin Fed 0297-27-22 & 34				Niobrara		7	1	7.63
Mean						**469**	**5.89**	**2.14**	**29.6**
Minimum						**320**	**2**	**1**	**7.63**
Maximum						**640**	**8**	**3**	**64.6**