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Bureau of Land Management

Environmental Assessment

July 2024 Oil and Gas Lease Parcel Sale

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U.S. Department of the Interior
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The Bureau of Land Management's mission is to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

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1 Introduction

1.1 Summary of Proposed Project

This environmental assessment (EA) was prepared to examine the potential environmental impacts of the proposed action and alternative actions to support informed decision-making. This analysis is consistent with the purpose and goals of NEPA; the requirements of the Council on Environmental Quality's (CEQ) implementing NEPA regulations at 40 CFR Parts 1500-1508; longstanding federal judicial and regulatory interpretations; the Department of the Interior's NEPA regulations (43 CFR Part 46); and Administration priorities and policies including Secretary's Order No. 3399 requiring bureaus and offices to use "the same application or level of NEPA that would have been applied to a proposed action before the 2020 Rule went into effect."

This EA has been prepared to disclose and analyze the potential environmental consequences from leasing 27 nominated lease parcels encompassing approximately 5,574.46 Federal mineral acres located across the Montana/Dakotas in the Bureau of Land Management's North Dakota Field Office (NDFO), Havre Field Office (Havre FO), Miles City Field Office (MCFO), and within the administrative boundaries of the United States Forest Service (USFS) Dakota Prairie Grasslands (DPG) Medora Ranger District, and the U.S Army Corps of Engineers (USACE) Garrison Dam/Lake Sakakawea Project, Omaha District. The parcels would be included as part of a competitive oil and gas lease sale tentatively scheduled to occur during July of 2024. The proposed parcels are in Big Horn, Blaine, Liberty, Roosevelt, Richland and Rosebud counties in Montana and Dunn, Mountrail, McKenzie and Slope counties in North Dakota. Refer to parcel maps in **Appendix C**.

The Bureau of Land Management (BLM) Montana/Dakotas State Office conducts Oil and Gas Federal mineral estate lease auctions for lands managed by the Federal Government, whether the surface is managed by the Department of the Interior (BLM or Bureau of Reclamation (BOR)), United States Forest Service (USFS), or other departments and agencies. These auctions also include split estate lands, where the BLM holds subsurface mineral rights, but a party other than the Federal Government owns the surface estate. The Montana/Dakotas State Office has historically conducted four lease sales per year. The BLM's authority to conduct these lease sales is based on various laws including the Mineral Leasing Act of 1920, as amended, and the Federal Land Policy and Management Act of 1976. The Federal Onshore Oil and Gas Leasing Reform Act of 1987 Sec. 5102(a)(b)(1)(A) directs the BLM to conduct quarterly oil and gas lease sales in each state whenever eligible lands are available for leasing.

Members of the public file Expressions of Interest (EOI) to nominate parcels for leasing by the BLM. The BLM may also nominate a parcel if an existing well is draining Federal minerals or for other reasons. From these EOIs and BLM nominations, the Montana/Dakotas State Office prepares a preliminary parcel list and provides them to the field offices for review. The BLM also reviews parcels located in designated greater sage-grouse habitat to guide development to lower conflict areas and protect important habitat consistent with conservation objectives in the 2015 Rocky Mountain Region Record of Decisions and the applicable Approved Resource Management Plans (ARMPs), a court order in the U.S. District Court for the District of Montana (case 4:18-cv-00069-BMM filed 5/22/20), and Montana/Dakotas Instruction Memorandum MT-2020-018. Montana/Dakotas BLM reviews the parcels, and evaluates:

1. If they are in areas open to leasing;
2. If new information has come to light which might change previous analyses conducted during the land use planning process;

3. Whether there are site specific resource concerns that warrant not leasing a particular parcel,
4. If there are special resource conditions of which potential bidders should be made aware; and,
5. Which stipulations should be identified and included as part of a lease.

If the decision is made to offer lease parcels, the Montana/Dakotas State Office would publish a Notice of Competitive Oil and Gas Lease Sale (Sale Notice) at least 45 days before the auction is held. The Sale Notice will identify applicable lease stipulations for each parcel.

The offering and subsequent issuance of oil and gas leases would not result in immediate ground disturbance. However, once a lease is sold the lessee maintains the right to occupy, explore for, and develop oil and gas resources from the lease consistent with the lease terms and conditions and upon approval of a site-specific permit by the BLM authorized officer. These lease operations can result in surface disturbance and other impacts.

In accordance with BLM Handbook H-1624-1 (“Planning for Fluid Mineral Resources” January 28, 2013), the Federal Government retains certain rights when issuing an oil and gas lease. While the BLM may not unilaterally add a new stipulation to an existing lease that it has already issued, the BLM can subject development of existing leases to reasonable conditions, as necessary, through the application of Conditions of Approval (COAs) at the time of permitting. The new constraints must be in conformance with the applicable land use plan and not conflict with rights granted to the holder under the lease. See 30 U.S.C. § 226(g); 43 CFR § 3101.1-2. See also *Yates Petroleum Corp.*, 176 IBLA 144 (2008); *National Wildlife Federation*, 169 IBLA 146, 164 (2006).

BLM Montana/Dakotas has prepared this Environmental Assessment for the July 2024 oil and gas lease sale, which considers two alternatives:

- Alternative A: No Action
 - The nominated parcels would not be offered for lease as part of a competitive oil and gas lease sale.
- Alternative B: Proposed Action
 - The BLM would offer 27 nominated lease parcels encompassing approximately 5,574.46 Federal mineral acres as part of a competitive oil and gas lease sale in the BLM North Dakota Field Office, BLM Havre Field Office, and BLM Miles City Field Office within the administrative boundary of the DPG McKenzie Ranger District, and the USACE Garrison Dam/Lake Sakakawea Project.

The BLM assigned lease stipulations to the parcels to address resources concerns. A Federal oil and gas lease would be issued for a 10-year period and would remain valid for as long thereafter as oil or gas is produced in paying quantities, required payments are made and lease operations are conducted in compliance with regulations and approved permits. If a lessee fails to produce oil and gas by the end of the initial 10-year period, does not make annual rental payments, or does not comply with the terms and conditions of the lease, the BLM will terminate the lease. The lessee can relinquish the lease. The oil and gas resources could be offered for sale at a future lease sale. Drilling of wells on a lease would not be permitted until the lessee or operator secures approval of a drilling permit and a surface use plan as specified in 43 CFR § 3162. This requires additional environmental reviews, by the BLM, at the time of application.

1.1 Purpose and Need

The purpose and need for this action are to respond to EOIs to lease parcels of land for oil and gas development as mandated by Federal laws, including the Mineral Leasing Act of 1920, as amended, Federal Land Policy and Management Act of 1976, and Federal Onshore Oil and Gas Leasing Reform Act of 1987.

Offering parcels for competitive oil and gas leasing provides opportunities for private individuals or companies to explore and develop federal oil and gas resources after receipt of necessary approvals, and to sell the oil and gas in public markets.

1.2 Decision to be Made

Based on this review and public comment, the BLM will determine whether to make lands available for leasing, and, if so, identify stipulations that would be included with specific lease parcels at the time of lease sale.

1.3 Land Use Plan Conformance

This Environmental Assessment (EA) is tiered to the information and analysis and conforms to the decisions contained in the North Dakota Resource Management Plan (ND RMP) of April 1988, and the 2015 Rocky Mountain Region Record of Decisions and the applicable Approved Resource Management Plans, the HiLine ARMP and FEIS of September 2015, the Miles City ARMP and FEIS of September 2015 and the 2023 Draft MCFO SEIS. These plans are the governing land use plans for their respective geographic areas. The lease parcels to potentially be offered for sale are within an area determined to be open to oil and gas leasing in the RMPs. An electronic copy of these planning documents is available via the internet on the BLM e-Planning page: <https://www.blm.gov/programs/planning-and-nepa/eplanning>.

The NDFO is in the process of updating the RMP. The draft RMP was available for Public Comment on January 20, 2023. The Reasonable Foreseeable Development Plan (RFD) from the Draft RMP has been used to develop the RFD for this EA.

This EA is also tiered to the information and analysis and conforms to the decisions contained in the Dakota Prairie Grasslands Final Environmental Impact Statement (July 2002) and Oil and Gas Leasing Record of Decision (June 2003). This conformance applies only to the parcels fee surface located within the administrative boundaries of the USDA Forest Service Dakota Prairie Grasslands.

This EA is also tiered to the Dakota Prairie Grasslands Northern Great Plains Management Plans Revision Final Environmental Impact Statement for Oil and Gas Leasing (December 2020) and Record of Decision Oil and Gas Leasing USDA Forest Service Little Missouri National Grassland, Dakota Prairie Grasslands (December 2020) and the BLM Record of Decision Adopting USDA Forest Service Final Supplemental Environmental Impact Statement for Oil and Gas Leasing, Little Missouri National Grassland, Dakota Prairie Grasslands (DOI-BLM-MT-2021-0001-OTHER_NEPA). This conformance applies only to the parcels on USDA Forest Service managed surface located within the administrative boundaries of the USDA Forest Service Dakota Prairie Grasslands.

This EA is also tiered to the information and analysis and conforms to the decisions contained in the USACOE Garrison Dam/Lake Sakakawea Project Oil and Gas Management Plan (June 2020). This conformance applies only to the parcels located within the administrative boundaries of the USACOE Garrison Dam/Lake Sakakawea Project.

In an opinion and amended order on March 26, 2018, the U.S. District Court for the District of Montana found that the BLM violated NEPA in the Final EISs for the Buffalo and Miles City RMPs (*Western Organization of*

Resource Councils (WORC) et al. v. BLM, Case 4:16-cv-00021-BMM, filed 3/23/18)) with respect to consideration of the amount of coal made available for lease and consideration of climate change impacts. On July 31, 2018, the District Court issued an order directing the BLM to prepare a Supplemental EIS for the RMP, and to complete comprehensive environmental analysis in compliance with the Court's March 26, 2018, Order, and all existing procedural requirements under NEPA and the Administrative Procedures Act (APA) for any new or pending leases of coal, oil, or gas resources in the planning areas subject to the Buffalo RMP and the Miles City RMP. The BLM has prepared the July 2024 Oil and Gas Lease Sale EA in compliance with the terms of the WORC Order, NEPA, and the APA.

1.4 Relationship to Statutes, Regulations, Other NEPA Documents

The mandate of the BLM is derived from various laws, including the Mineral Leasing Act (MLA) and the Federal Land Policy and Management Act of 1976 (FLPMA), as amended, to promote the exploration and development of oil and gas on the public domain. Additionally, the Federal Onshore Oil and Gas Leasing Reform Act of 1987 states 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.

The Inflation Act (IRA) of 2022 introduced several changes that affect oil and gas leasing on Federal lands. Section 50262 of the IRA updates the MLA, increasing onshore oil and gas royalty rates from 12.5 percent to 16.67 percent for newly issued leases, increasing onshore oil and gas leasing minimum bids from \$2 per acre to \$10 per acre, and increasing oil and gas rental rates from \$1.50 per acre for years 1-5 and \$2 for years 6-10 to \$3 per acre for years 1-2, \$5 for years 3-8, and \$15 for all years after. In addition, it introduced a fee for submitting expressions of interest for oil and gas leasing of \$5 per acre and eliminated noncompetitive leasing. Section 50265 establishes that the Secretary of the Interior may not issue a right-of-way for wind or solar energy development on Federal land unless a) an onshore lease sale has been held during the 120-day period ending on the date of the issuance of the right-of-way for wind or solar energy development; and b) the sum total of acres offered for lease in onshore lease sales during the 1-year period ending on the date of the issuance of the right-of-way for wind or solar energy development is not less than the lesser of 2,000,000 acres; and 50 percent of the acreage for which expressions of interest have been submitted for lease sales during that period.

Purchasers of oil and gas lease parcels are required to comply with all applicable Federal, State, and local laws and regulations, including obtaining all necessary permits prior to any lease development activities. Stipulations attached to the lease, restrictions deriving from specific, nondiscretionary statutes, and such reasonable measures may be required to minimize adverse impacts to other resource values (43 CFR§3101.1-2).

The regulations, policies, and plans utilized in preparing this EA include, but are not limited to the following:

- 43 CFR § 3100 – Oil and Gas Leasing
- BLM Manual 3120 – Competitive Leasing
- BLM Competitive Leasing Handbook (H-3120-1)
- Directional Drilling into Federal Mineral Estate from Well Pads on Non-Federal Locations (WO IM 2018-014)
- Impacts of the Inflation Reduction Act of 2022 (Pub. L. No. 117-169) to the Oil and Natural Gas Leasing Program (WO IM 2023-008)
- Oil and Gas Leasing – Land Use Planning and Lease Parcel Review (WO IM 2023-010)
- On June 16, 2023, Onshore Orders (OOs) #1, #2, #6, and #6 were codified into the Code of Federal Regulations (CFRs) as follows: OO#1: 43 CFR § 3171, OO#2: 43 CFR § 3172, OO#6: 43 § CFR 3176. OO#7: 43 § CFR 3177.

- Instruction Memorandums MT-2020-018, IM-2023-007, IM-2023-008

❖ Evaluating Competitive Oil and Gas Lease Sale Parcels for Future Lease Sales (WO IM 2023-007): In accordance with Instruction Memorandum (IM) 2023-007, the BLM has evaluated the nominated lease parcels against five criteria to determine each parcel’s leasing preference (**see Appendix J**). As a result, of the 27 nominated parcels, the potential development is classified as follows: six (5) very high, eleven (11) high, two (2) moderate, nine (9) low, and zero (0) very low. Of all the parcels nominated, nine were rated as low or very low potential for leasing based on one or more criteria (proximity to development, proximity to habitat, cultural resources, and development potential).

The IM states that the BLM will close all EOIs that have remained pending for three or more years, and that the Montana/Dakotas State Office will notify each EOI submitter of a planned closure; the notice will provide 30-days for the EOI submitter to express a continuing interest in the EOI(s) which would result in the EOI remaining active. There are no nominations that have been pending for three or more years on this lease sale. Furthermore, none of the EOIs tied to the lands in this sale were submitted anonymously.

During the public scoping period, comments received highlighted that lands with low potential for development should be avoided. Although the BLM had previously determined that the parcels had low potential for development (Hiline RMP 2015), commentors pointed to IM 2023-007 and its Lease Parcel Preference Criteria #1 Proximity to existing oil and gas development, giving preference to lands upon which a prudent operator would seek to expand existing operations; After further consideration, reviews of previous screenings these parcels are in active/producing fields areas and the BLM will add these parcels for the July 2024 Lease Sale 30-Day Public Comment Period

This EA was prepared to thoroughly examine the potential environmental impacts of the proposed action in order to support informed decision-making. This EA is consistent with the purpose and goals of NEPA; the requirements of the Council on Environmental Quality’s (CEQ) implementing NEPA regulations at 40 CFR Parts 1500-1508; longstanding federal judicial and regulatory interpretations; the Department of the Interior’s NEPA regulations (43 CFR Part 46); and Administration priorities and policies including Secretary’s Order No. 3399 requiring bureaus and offices to use “the same application or level of NEPA that would have been applied to a proposed action before the 2020 Rule went into effect.”

1.5 Issues Identified for Analysis

Analysis issues include resource issues that could potentially be affected by oil and gas leasing. The BLM focuses its analysis on “issues that are truly significant to the action in question, rather than amassing needless detail” (40 CFR § 1500.1(b)). The BLM identified site-specific resource concerns and lease stipulations for proposed parcels through a preliminary review process conducted prior to a 30-day public scoping period. After scoping was completed, the BLM identified issues of concern identified by the public, determined how to address those concerns in this EA, and reviewed and edited lease stipulations as necessary. The following resources/issues will be analyzed in detail in this EA:

1.5.1 Issue 1 – Air Resources

What types of emissions would be generated from subsequent oil and gas development of leased parcels? What quantity of air pollutants would be produced based on the assumptions for analysis? How would air pollutant emissions from subsequent development of leased parcels affect air quality?

- Indicator: Tons per well and tons per year of PM₁₀, PM_{2.5}, NO_x, SO₂, CO, VOCs, HAPs

How would air emissions from subsequent development of leased parcels affect visibility at Class I Airsheds?

- Indicator: Change in deciviews, which is a unit of measurement to quantify human perception of visibility. It is derived from the natural logarithm of atmospheric light extinction coefficient. One deciview is roughly the smallest change in visibility (haze) that is barely perceptible.

1.5.2 Issue 2 – Greenhouse Gases

How would future potential development of nominated lease parcels contribute to greenhouse gas (GHG) emissions and climate change?

- Indicator: Metric tonnes (t) or megatonnes (Mt), and social cost of GHGs (\$)

1.5.3 Issue 3 – Socioeconomic Conditions, Environmental Justice, and Human Health

How would the leasing and potential development of these parcels affect local economic activity and revenues for Federal, State, and local governments?

Would Environmental Justice populations be disproportionately adversely affected by the leasing of the proposed parcels?

- Indicator: Total revenue income and bonus bids over 10-year lease term
- Indicator: Disproportionate impacts from leasing parcels
- Indicator: Population groups of concern

Executive Order 12898 (Feb. 11, 1994), Federal Actions to Address Environmental Justice (hereby referred as EJ) in Minority and Low-Income Populations, provides that BLM shall identify and address disproportionately high and adverse human health or environmental effects on low-income populations, minority populations, or Indian tribes that may experience common conditions of environmental exposure or effects associated with a plan or project.

- Indicator: Opportunity for meaningful involvement

Meaningful public engagement focuses on empowering vulnerable and affected populations to participate in decisions that have the potential to affect their lives, regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

1.5.4 Issue 4 – Water Resources

What are the effects of potential oil and gas development, including hydraulic fracturing, on parcels that may be offered for lease on surface and groundwater quality and quantity?

- Indicator: Characterize the affected environment in the watersheds where parcels are proposed. Quantify estimated acres of surface disturbance and million gallons water used. Qualitatively assess effects to surface and groundwater resources from oil and gas development.

1.5.5 Issue 5 – Cultural Resources and National Historic Preservation Act

How would the leasing and potential development of these parcels affect cultural resources to include Native American Religious Concerns and National Historic Landmarks and Trails?

- Indicator: Characterize the affected environment in the landscape where the parcels are proposed. Quantify estimated acres of surface disturbance and duration of development.

1.5.6 Issue 6 – Big Game

What are the effects to Big Game habitat if the parcels nominated in the July 2024 lease sale are leased and subsequently developed for oil or gas production?

- Assess baseline condition of road density and oil and gas well density for Rosebud County, Montana parcels and assess how development of up to three oil or gas wells would affect those metrics.

1.5.7 Issue 7 – Greater Sage-Grouse

What are the effects to greater sage-grouse habitat if the parcels nominated in the July 2024 lease sale are leased and subsequently developed for oil or gas production?

- Indicator: Identify active leks within 3.1 miles of proposed parcels and determine whether existing disturbance is present. Qualitatively describe effects of potential future development on habitat.

1.6 Issues Identified but Eliminated from Further Analysis

The following resources/issues are not present and not considered in this EA: lands and realty conflicts, locatable and salable minerals, forest and woodland, cave and karst resources, wilderness study areas, ACECs, and wild and scenic rivers. Other resource issues BLM considered but eliminated from further analysis due to environmental impacts previously analyzed through prior NEPA reviews and/or lease notices or stipulations that were applied to avoid and minimize impacts are discussed below:

Paleontology: The application of lease terms and the paleontological lease notices (Standard 16-3, LN 14-12) at leasing provides protection to paleontological resources. The paleontological lease notice LN 14-12 is applied to all lease parcels that are within or could contain geological units with a PFYC Class of 3 or higher. Leased lands that fall into this category could require professional assessment which may include a field survey prior to surface disturbance. The results of the assessment and survey by a BLM-permitted paleontologist will serve as the basis for a mitigation plan during development. If the inventory resulted in the identification of paleontological resources, mitigation measures such as avoidance, professional monitoring, development of an Unanticipated Resource Discovery Plan or salvage would be initiated by BLM and the operator. Within the administrative boundaries of the USFS Dakota Prairie Grasslands LMG2020-LN-04 is applied to protect these resources.

Soils Resources and Vegetation: The Standard Lease Stipulation (Standard 16-3) has been applied to all parcels to mitigate any impacts associated with leasing or development of these parcels. Controlled Surface Use Stipulations (CSU 12-24, CSU 12-62) have also been applied to applicable parcels. At the time of exploration or development the APD surface use plan of operations will include design features and mitigation measures to reduce, avoid, or minimize potential impacts to soil and vegetative resources consistent with the RMP for the respective planning area. Within the administrative boundaries of the USFS Dakota Prairie Grasslands LMG2020-NSO-01 is applied to protect these resources.

Riparian – Wetland Habitats: The Standard Lease Stipulation (Standard 16-3) have been applied to all parcels to mitigate any impacts associated with leasing or development of these parcels. Stipulations CSU 12-5 and NSO 11-33 have been added to appropriate parcels to achieve the same objective. At the time of exploration or development, the APD surface use plan of operations will include design features and mitigation measures to reduce, avoid, or minimize impacts to riparian-wetland areas, consistent with the RMP for the respective planning area. Additionally, all stipulations related to setback distances from the edge of the wetlands, streams, and rivers will be adhered to and consistent with the RMP for the respective planning area.

Within the administrative boundaries of the USFS Dakota Prairie Grasslands LMG2020-CSU-01, and LMG2020-LN-01 are applied to protect these resources.

Visual Resources: BLM is required to manage for visual resources on BLM owned surface lands. Each RMP contains Visual Resource Management (VRM) requirements and considerations specific for the geographical location to which they apply. VRM practices and standards will be implemented consistent with the respective RMP they are subject to. New oil and gas development would implement, as appropriate for the site, Best Management Practices (BMP's) to maintain visual qualities where possible. This includes, but would not be limited to, proper site selection, reduction of visibility, minimizing disturbance selecting color(s)/color schemes that blend with the background and reclaiming areas that are not in active use. Repetition of form, line, color, and texture when designing projects would reduce contrasts between landscape and development.

The application of Standard Lease Stipulation (Standard 16-3), Controlled Surface Use Stipulations (CSU 12-64, CSU 12-33, CSU 12-64) and Lease Notice (LN 14-14) would be sufficient at the leasing stage to notify operators that additional measures may be necessary to reduce visual impacts from potential future development (at the APD stage). This provides for the protection and conservation of the visual resources on public lands. BLM visual resource classifications are only applied to BLM surface. For non-federal surface lands where there are federal minerals (commonly referred to as split estate), BLM does not have the authority to manage for VRM.

Recreation: The Standard Lease Stipulation (Standard 16-3) has been applied to all parcels and No Surface Occupancy Stipulation (NSO 11-81) has been applied to some parcels to mitigate any impacts associated with leasing or development of these parcels. The leasing action would be considered in compliance with all relevant recreation regulations, protocols, and policies. Impacts on recreation from potential future exploration and development would be analyzed at the APD stage and included design features, and mitigation would be integrated to avoid or minimize potential impacts to recreation consistent with the RMP for the respective planning area.

Wildlife:

Aquatic Species and Terrestrial Wildlife: The BLM screened parcels for sensitive species and species of concern and applied timing limit, controlled surface use, and no surface occupancy lease stipulations to avoid/minimize impacts to species. Within the administrative boundaries of the USFS Dakota Prairie Grasslands, LMG2020-NSO-07 and LMG2020-TL-01 are applied to protect these resources.

Big Game North Dakota Game and Fish has documented ungulate migration areas in western North Dakota; there is no doubt that the species are present, however without the identification or location of specific habitats of concern this environmental assessment will use current and future available data to identify habitats that may be affected by oil and gas lease sales. Montana Fish, Wildlife, and Parks had commented and identified Big Game Winter Range for Parcels MT-2024-07-0367 and recommended TL 13-48. The BLM has screened parcels for sensitive species and species of concern and applied timing limitations, controlled surface use stipulations, and no surface occupancy lease stipulations to avoid/minimize impacts to species. The BLM placed various lease notices on parcels that provides a notice to a lessee that the BLM may require wildlife surveys at the APD stage, and that protective measures may be necessary. The BLM applied stipulations CSU 12-25 and TL 13-48 to parcels MT-2024-07-0367, -0270, -0401, -6946, -6947, -0403, -0402 and added Lease Notice 14-40 to all MCFO parcels to protect lands that could contain big game winter range and migration corridors and the USFS applied stipulation LMG2020-CSU-04 to parcels all or part of parcels ND-2024-04-0268 and ND-2024-04-6838 to protect Bighorn Sheep Lambing Areas.

Threatened and Endangered Species: The BLM placed stipulation HQ-TES-1 (Endangered Species Act (ESA)Section 7 Consultation) on all parcels, which states that 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. Within the administrative boundaries of the USFS Dakota Prairie Grasslands LMG2020-LN-02 is also applied to protect these resources.

These notices state that a biological evaluation of the leased lands may be required prior to surface disturbance to determine if endangered, threatened, proposed, candidate or sensitive plant or animal species or their habitat are present within the administrative boundaries of the DPG. 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. The BLM completed a screen for threatened and endangered species and habitat presence in proposed parcels and identified applicable stipulations if the species or habitat may be present. Refer to **Table 1** below.

Piping Plover and Dakota Skipper

During the scoping process, commenters indicated that Dunn, McKenzie, Mountrail, Richland and Roosevelt counties contain suitable habitat for piping plover (*Charadrius melodus*) and Dakota skipper (*Hesperia dacotae*). In addition to the stipulation HQ-TES-1, the USFWS would coordinate with the BLM Dakota Field Office to implement appropriate conservation measures for future site-specific development to ensure development is in compliance with the ESA. Including compliance with the Migratory Bird Act, there are other stipulations including the Standard 16-3 applied to the parcels known to contain moderate to high suitability habitat for Piping Plovers and Dakota Skipper. Applied stipulations can be found in Appendix A and would be enforced during the APD process to address migratory birds and other species with surveys, monitoring, and timing limitations for ground disturbance. These activities often involve collaboration and coordination with agencies and can provide appropriate mitigation for the listed species.

Table 1. USFWS Listed Species and Habitat occurrence in proposed MT/Dakotas July 2024 Oil and Gas Lease Sale

Scientific Name	Common Name	Status	Species Present in Lease Parcels	Suitable Habitat Present	If species and/or habitat are present, identify stipulations that would avoid/minimize impacts to the species.
Dunn County, ND					
<i>Calidris canutus rufa</i>	Rufa Red Knot	LT	No	No	HQ-TES-1
<i>Charadrius melodus</i>	Piping Plover	LT, CH	No	Unlikely	HQ-TES-1
<i>Danaus plexippus</i>	Monarch Butterfly	C	Unknown	Unlikely	HQ-TES-1
<i>Grus americana</i>	Whooping Crane	LE	Unknown	Unlikely	HQ-TES-1, COA attached to the APD at project level
<i>Herperia dacotae</i>	Dakota Skipper	LT	Unknown	Unlikely	HQ-TES-1
<i>Myotis septentrionalis</i>	Northern Long-eared Bat	LE	Unknown	Unlikely	HQ-TES-1
<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE	Unknown	Unlikely	HQ-TES-1
McKenzie County, ND					
<i>Calidris canutus rufa</i>	Rufa Red Knot	LT	Unknown	Unlikely	HQ-TES-1
<i>Charadrius melodus</i>	Piping Plover	LT, CH	Unknown	Unlikely	HQ-TES-1
<i>Danaus plexippus</i>	Monarch Butterfly	C	Unknown	Yes	HQ-TES-1
<i>Grus americana</i>	Whooping Crane	LE	Unknown	Unlikely	HQ-TES-1, COA attached to the APD at project level
<i>Herperia dacotae</i>	Dakota Skipper	LT, CH	Unknown	Unlikely	HQ-TES-1
<i>Myotis septentrionalis</i>	Northern Long-eared Bat	LE	Unknown	Unlikely	HQ-TES-1
<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE	No	No	HQ-TES-1
Mountrail County, ND					
<i>Calidris canutus rufa</i>	Rufa Red Knot	LT	Unknown	Yes	HQ-TES-1
<i>Charadrius melodus</i>	Piping Plover	LT, CH	Unknown	Yes	HQ-TES-1
<i>Danaus plexippus</i>	Monarch Butterfly	C	Unknown	Unlikely	HQ-TES-1
<i>Grus americana</i>	Whooping Crane	LE	Unknown	Unlikely	HQ-TES-1, COA attached to the APD at project level
<i>Herperia dacotae</i>	Dakota Skipper	LT	Unknown	Unlikely	HQ-TES-1
<i>Myotis septentrionalis</i>	Northern Long-eared Bat	LT	No	No	HQ-TES-1
<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE	Unknown	Unlikely	HQ-TES-1
Slope County, ND					
<i>Myotis septentrionalis</i>	Northern Long-eared Bat	LT	Unknown	Unlikely	HQ-TES-1
<i>Grus americana</i>	Whooping Crane	LE	Unknown	Unlikely	HQ-TES-1, COA attached to the APD at project level
<i>Danaus plexippus</i>	Monarch Butterfly	C	Unknown	Unlikely	HQ-TES-1
Blaine County, MT					
<i>Mustela nigripes</i>	Black-footed Ferret	LE	No	No	HQ-TES-1
<i>Charadrius melodus</i>	Piping Plover	LT	No	No	HQ-TES-1
<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE	No	No	HQ-TES-1
<i>Danaus plexippus</i>	Monarch Butterfly	C	Unknown	Yes	HQ-TES-1
Big Horn County, MT					
<i>Ursus arctos horribilis</i>	Grizzly Bear	LT	Unknown	Unlikely	HQ-TES-1
<i>Danaus plexippus</i>	Monarch Butterfly	C	Unknown	Yes	HQ-TES-1
<i>Myotis septentrionalis</i>	Northern Long-eared Bat	LT	No	Unlikely	HQ-TES-1
<i>Mustela nigripes</i>	Black-footed Ferret	LE	No	No	HQ-TES-1
Liberty County, MT					

<i>Ursus arctos horribilis</i>	Grizzly Bear	LT	Unknown	Unlikely	HQ-TES-1
<i>Calidris canutus rufa</i>	Rufa Red Knot	LT	Unknown	Yes	HQ-TES-1
<i>Danaus plexippus</i>	Monarch Butterfly	C	Unknown	Yes	HQ-TES-1
<i>Pinus albicaulis</i>	Whitebark Pine	LT	No	No	HQ-TES-1
Rosebud County, MT					
<i>Danaus plexippus</i>	Monarch Butterfly	C	Unknown	Unlikely	HQ-TES-1
<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE	No	No	HQ-TES-1
<i>Myotis septentrionalis</i>	Northern Long-eared Bat	LT	No	Unlikely	HQ-TES-1
Roosevelt County, MT					
<i>Myotis septentrionalis</i>	Northern Long-eared Bat	LT	Unknown	Unlikely	HQ-TES-1
<i>Charadrius melodus</i>	Piping Plover	LT, CH	Unknown	Yes	HQ-TES-1
<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE	Unknown	Yes	HQ-TES-1
<i>Calidris canutus rufa</i>	Rufa Red Knot	LT	Unknown	Unlikely	HQ-TES-1
<i>Grus americana</i>	Whooping Crane	LE	Unknown	Unlikely	HQ-TES-1, COA attached to the APD at project level
<i>Danaus plexippus</i>	Monarch Butterfly	C	Unknown	Yes	HQ-TES-1
Richland County, MT					
<i>Myotis septentrionalis</i>	Northern Long-eared Bat	LT	Unknown	Unlikely	HQ-TES-1
<i>Charadrius melodus</i>	Piping Plover	LT, CH	No	No	HQ-TES-1
<i>Grus americana</i>	Whooping Crane	LE	Unknown	Unlikely	HQ-TES-1, COA attached to the APD at project level
<i>Scaphirhynchus albus</i>	Pallid Sturgeon	LE	No	No	HQ-TES-1
<i>Danaus plexippus</i>	Monarch Butterfly	C	Unknown	Yes	HQ-TES-1
C = Candidate PCH = Proposed Critical Habitat LT = Listed Threatened CH = Designated Critical Habitat LE = Listed Endangered P = Proposed XN = Experimental non-essential population					

2 Alternatives

This EA considers the effects of two alternatives: Alternative A – No Action and Alternative B – Proposed Action. The Proposed Action is based upon Expressions of Interest (EOIs) that were submitted to the BLM for the July 2024 lease sale.

2.1 Alternative A – No Action Alternative

Under the No Action alternative, none of the EOIs to lease (parcel nominations) would be offered for sale. The No Action Alternative would exclude all parcels from the competitive oil and gas lease sale. No additional natural gas or crude oil would enter the public markets, and no royalties would accrue to the federal or state treasuries from the proposed parcel lands. The No Action Alternative would result in the continuation of the current land and resource uses on the lease parcels and would remain the same as the affected environment described in Chapter 3. Existing Federal leases for oil and gas properties would continue to generate rental income.

2.2 Alternative B - Proposed Action Alternative

The BLM would offer 27 lease parcels encompassing approximately 5,574.46 Federal mineral acres as part of a competitive oil and gas lease sale tentatively scheduled to occur on July 16, 2024, in conformance with the existing land use planning decisions.

- Dakota Prairie-Grasslands Administrative Boundary: five (5) parcels on USFS surface in Slope County, North Dakota (935.38 acres).
- U.S. Army Corps of Engineers – Garrison Dam/Lake Sakakawea Project Administrative Boundary: five (4) parcels on USACE surface in Mountrail and Dunn Counties, North Dakota (287.5 acres).
- Bureau of Land Management Surface: five (5) parcels on BLM surface in Richland and Roosevelt counties in Montana (887.34)
- Fee (Private) surface otherwise known as split-estate: eleven (11) parcels on Fee surface in Big Horn, Blaine, Liberty, Richland, Rosebud and Roosevelt counties in Montana (3,155.33 acres). Two (2) parcels are on Fee surface in McKenzie and Mountrail counties in North Dakota (308.91 acres).

A BLM, USFS, and USACE interdisciplinary team reviewed all parcels and applied stipulations and lease notices designed to avoid or minimize impacts to resources. The broad definitions of No Surface Occupancy, Controlled Surface Use, and Lease Notices are listed here:

No Surface Occupancy Stipulations (NSO):

Use or occupancy of the land surface for fluid minerals exploration or development and all activities associated with fluid minerals leasing are prohibited to protect identified resource values. The NSO stipulation is a category of major constraints. NSO areas are open to fluid minerals leasing, but surface occupancy or surface disturbing activities associated with fluid minerals leasing cannot be conducted on the surface of the land. Access to fluid mineral deposits would require directional drilling or drilling from outside the boundaries of the NSO area. This differs from areas identified as closed to leasing in which neither the surface area nor mineral estate is available for fluid minerals leasing.

Controlled Surface Use Stipulations (CSU):

CSU is a category of moderate constraint stipulations that allows some use and occupancy of public land while protecting identified resources or values. CSU areas are open to fluid minerals leasing, but the

stipulation allows the BLM to require special operation constraints.

Timing Limitation Stipulations (TL):

Areas identified for TL, a moderate constraint, are closed to fluid minerals exploration and development, surface-disturbing activities for periods that may exceed 60 days. This stipulation does not apply to operation and basic maintenance.

Lease Notices

A lease notice (LN) provides more-detailed information concerning limitations that already exist in law, lease terms, regulations, or operational orders. An LN also addresses special considerations for lessees when they plan their operations, but it does not impose additional restrictions. LNs are not an RMP-level decision, and new LNs may be added to fluid minerals leases at the time of sale.

The application and definitions of all stipulations can be found in **Appendix A** and **B**.

Based upon calculations made in the Reasonably Foreseeable Development Scenarios, the BLM estimates that 5 new oil well could be drilled in the North Dakota Field Office, 1-2 new oil wells could be drilled in the Miles City Field Office, and 1 new oil well could be drilled in the Havre Field Office from this lease sale. Refer to **Table 2** and **Appendix D**.

2.3 Alternatives Considered but not Analyzed in Detail

NEPA requires the BLM to consider a reasonable range of alternatives to the proposed action. In this EA, the BLM considers one Action alternative and the No Action alternative. The alternatives would lease, or not lease parcels based upon specific resource concerns identified during analysis. The BLM received scoping comments asking for alternatives that did not fall within the range of alternatives already analyzed in the EA, including:

- An alternative that protects groundwater.

The BLM frequently receives comments asking for an alternative that would protect usable groundwater, defined under the Safe Drinking Water Act as an aquifer with water that contains less than 10,000 mg/L (10,000 ppm) of total dissolved solids. However, a separate alternative to protect usable groundwater is not warranted because protection of groundwater would be required for any APD that is approved on a lease parcel. Authorization of proposed projects would require full compliance with local, state, and federal directives and stipulations that relate to surface and groundwater protection, and the BLM would deny any APD that proposes drilling and/or completion processes that are insufficient to protect usable water, as required by 43 CFR §3162.5-2(d). Any proposed drilling/completion activities would have to comply with 43 CFR §3160 regulations and not result in a violation of a Federal and/or State laws that prohibit degradation of surface or groundwater quality.

- An alternative that that minimizes methane waste through both technology and regulatory authority.

Lease Notice 14-18 is applied to every BLM-administered parcel, which provides: The lessee/operator is given notice that prior to project-specific approval, additional air resource analyses may be required in order to comply with the NEPA, FLPMA, and/or other applicable laws and regulations. Analyses may include equipment and operations information, emission inventory development, dispersion modeling or photochemical grid modeling for air quality and/or air quality related value impact analysis, and/or emission control determinations. These analyses may result in the imposition of additional project-specific control measures to protect air resources. Application of the lease notice allows the BLM to mandate site-specific analysis of impacts to air resources at the APD stage, and to require project-specific control measures to protect air resources, including methane reduction technologies. As the BLM cannot write additional

stipulations at the leasing stage, and methane reduction technologies may be required under LN 14-18, this alternative is therefore eliminated from further analysis.

2.4 General Information and Appendices

Appendix A provides a list of all the parcels by parcel number, and identifies the size, legal descriptions, and associated stipulations. **Appendix B** provides a description of Lease Stipulations and **Appendix C** identifies the location of each parcel.

Table 2 identifies the number of parcels that would be offered by field office and county, acres of federal minerals (public domain or acquired lands) and summarizes development potential and estimated acres of surface disturbance based upon a sale specific Reasonably Foreseeable Development (RFD) scenario (see **Appendix D**).

The terms and conditions of the standard federal lease and federal regulations would apply to the parcels offered for sale in the Proposed Action. Stipulations shown in **Appendix A** would be included with the identified parcel offered for sale. Standard operating procedures for oil and gas development include measures to protect the environment and resources such as groundwater, air, wildlife, cultural resource concerns, and others specified in the respective RMP or LUP for each planning area.

Lease stipulations would be attached to the parcels to address site specific concerns or new information not previously identified in the land use planning process. Once sold, the lease purchaser would have the right to use as much of the leased lands as is reasonably necessary to explore and drill for all the oil and gas within the lease boundaries, subject to the stipulations attached to the lease (43 CFR §3101.1-4).

Conditions of Approval (COAs) would be attached to permits issued to explore and develop the parcels to address site specific concerns or new information once an APD is analyzed in future NEPA documents.

Standard operating procedures, best management practices (BMPs), and COAs can change over time to meet RMP objectives, resource needs or land use compatibility.

A Federal oil and gas lease would be issued for a 10-year period and would remain valid for as long thereafter as oil or gas is produced in paying quantities, required payments are made and lease operations are conducted in compliance with regulations and approved permits. If a lessee fails to produce oil and gas by the end of the initial 10-year period, does not make annual rental payments, or does not comply with the terms and conditions of the lease, the BLM will terminate the lease. The lessee can relinquish the lease. The oil and gas resources could be offered for sale at a future lease sale.

Drilling of wells on a lease would not be permitted until the lessee or operator secures approval of a drilling permit and a surface use plan as specified in 43 CFR § 3162. This requires additional environmental reviews, by the BLM, at the time of application.

Upon cessation of lease operations, the BLM's regulations and the terms of the lease agreement require the lessee to plug the well(s) and abandon any facilities on the lease. The surface must be reclaimed to the satisfaction of the BLM authorized officer, in accordance with 43 CFR §3170 Onshore Oil and Gas Production.

Table 2. July 2024 Lease Sale: Parcels by County, Public Domain & Acquired Lands, Development Potential, and Estimated Surface Disturbance¹

County	Alternative B					Development Potential	Estimated # of Wells	Estimate Acres of Surface Disturbance (short/long term)
	# Parcels	BLM Surface	Non-Federal Surface (Split Estate)	USFS Surface	USACE Surface			
North Dakota Field Office								
Dunn	2	0.00	0.00	0.00	9.46	5 - Low 0 - Moderate 1 - High 5 - Very High	4 oil	5.2 acres ST 5.2 acres LT
McKenzie	1	0.00	40.00	0.00	0.00			
Mountrail	3	0.00	268.91	0.00	278.04			
Slope	5	0.00	0.00	935.38	0.00			
Total	11	0.00	308.91	935.38	287.5			
Havre Field Office								
Blaine	1	0.00	521.66	0.00	0.00	2 - Low	1 oil	5.2 acres ST .92 acres LT
Liberty	1	0.00	40.00	0.00	0.00			
Total	2	0.00	561.66	0.00	0.00			
Miles City Field Office								
Big Horn	2	0.00	1200.00	0.00	0.00	2 - Low 2 - Moderate 10 - High 0 - Very High	2 oil	4.5 acres ST 1.5 acres LT
Richland	6	879.57	812.63	0.00	0.00			
Rosebud	2	0.00	228.78	0.00	0.00			
Roosevelt	4	7.77	352.26	0.00	0.00			
Total	14	887.34	2593.67	0.00	0.00	9 - Low 2 - Moderate 11 - High 5 - Very High	7 oil	14.9 acres ST 7.62 acres LT
Grand Total	27	5,574.46 acres						
¹Total number of wells estimated based on the RFD and rounded to the nearest whole number								

¹Total number of wells estimated based on the RFD and rounded to the nearest whole number

3 Affected Environment and Environmental Consequences

This chapter describes the affected environment (i.e., the physical, biological, and socioeconomic values and resources) and environmental consequences to resources that could be affected by implementation of the proposed action. This analysis is tiered to the respective RMP for each geographic location of the nominated parcels, and the analysis of the reasonably foreseeable effects of oil and gas development contained in those RMPs are incorporated by reference into this analysis.

Each RMP determined which areas are available for oil and gas leasing and under what conditions those leases would be offered and sold. All the lease parcels included in the proposed action are within areas that are open to oil and gas leasing in their respective RMP.

The act of leasing parcels would not cause direct effects to resources because no surface disturbance would occur. The only direct effects of leasing are the creation of valid existing rights and impacts related to revenue generated by the lease sale receipts.

Future lease exploration and development activities proposed through individual APD submission would be subject to future BLM decision-making and NEPA analysis. Upon receipt of an Application for a Permit to Drill (APD), the BLM would initiate a site-specific NEPA analysis that considers the reasonably foreseeable effects of a specific action. At that time, detailed information about proposed wells and facilities would be provided for specific leases. In all potential exploration and development scenarios, the BLM would require the use of BMPs documented in “Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development” (USDOI 2007), also known as the *Gold Book*, available online at <https://www.blm.gov/programs/energy-and-minerals/oil-and-gas/operations-and->

[production/the-gold-book](#). The BLM could also identify Conditions of Approval (COAs), based on site-specific analysis that could include moving the well location, restrict timing of the project, or require other reasonable measures to minimize adverse impacts (43 CFR § 3101.1-2 Surface use rights; Lease Form 3100-11, Section 6) to protect sensitive resources, and to ensure compliance with laws, regulations, and land use plans.

BLM resource specialists prepared this EA to document the analysis of the lease parcels and recommended appropriate stipulations based upon professional knowledge of the areas involved, review of current databases, scientific literature, and file information. The analysis focuses on the resource impact indicator(s) identified for each resource issue in Chapter 1.

At the time of this review, it is unknown whether a particular parcel will be sold, and a lease issued. It is also unknown when, where, or if future well sites, roads, and facilities might be proposed. Therefore, the types, magnitude and duration of potential impacts cannot be precisely quantified at this time and would vary according to many factors.

The BLM analyzed potential impacts from oil and gas development in the Final Environmental Impact Statement (FEIS) for each of the applicable ARMPs based upon potential well densities discerned from the Reasonably Foreseeable Development (RFD) Scenario developed for each Field Office. The BLM utilized information from the RFD in the ARMP to estimate the number of possible oil and gas wells that could be drilled and produced on parcels in the July 2024 sale. The sale specific RFD was used to analyze effects of the proposed action. Refer to **Appendix D** for a detailed description of the sale specific RFD.

3.1 General Setting

The analysis area varies by resource, and generally includes the 27 lease parcels of Federal minerals for oil and gas leasing, covering approximately 5,574.46 Federal mineral acres in Big Horn, Blaine, Liberty, Richland, Roosevelt, and Rosebud counties in Montana and Dunn, McKenzie, Mountrail and Slope counties in North Dakota, as well as a larger area around the parcels to capture all reasonably foreseeable effects. The temporal scale of effects includes the 10-year period of a lease term, unless the lease is held by production, in which case the temporal scale is extended to the life of the producing well. If the lease parcels are developed, short-term impacts would be stabilized or mitigated rapidly (within two to five years). Long-term impacts are those that would substantially remain for more than five years.

Geologic Formations

Williston Basin

(Richland, Roosevelt counties in MT and Dunn, Mountrail, McKenzie, Slope counties in ND)

Parcels proposed in Richland, Roosevelt, Dunn, Mountrail, McKenzie, and Slope counties are located within the Williston Basin unconventional Bakken/Three Forks development area. The Williston Basin parcels are surrounded by horizontal Bakken/Three Forks development wells which have also been predominantly drilled in the past 10 years. The Bakken/Three Forks is a true unconventional reservoir where the wells target organic rich shale intervals.

Blaine County

There are numerous oil and gas fields in the surrounding acreage including Laredo, Tiger Ridge, Bowes, Rabbit Hills, Battle Creek, and a few more minor fields. Laredo, Tiger Ridge, Battle Creek are gas fields that produce from structural traps formed by thrust faults in the Cretaceous sand intervals. The producing intervals are shallow, structurally complex, and laterally discontinuous. It is common to find dry holes in the middle of the gas field. Vertical wells have been drilled since the 1960's with very limited recent

exploration due to the depressed price of natural gas.

The Bowes, and Rabbit Hills produce oil from the Jurassic Ellis Group including the Piper and Sawtooth formations. Both fields are structural traps and were initially developed with vertical wells. The Bowes field has been directionally drilled in the 2000's in an effort to increase production. The field is also currently undergoing secondary recovery with water injection.

In the last two years there has been 8 wells permitted into the Sawtooth formation in the surrounding acreage with two wells currently producing. The wells produce 500-1500 bbls/month with shallow declines making them economic wells and the likely development scenario for this group of leases given the higher oil prices for the last two years.

Liberty County

The area is defined by the Sweetgrass arch which is a large anticline that trends north and south through this area and results in numerous oil and gas fields that have continually produced since the early 1900's. There are numerous oil and gas fields producing from the Upper and Lower Cretaceous sands, Jurassic, and Upper Devonian across these lease parcels.

The most recent developments in the area focus on the Upper Devonian Nisku formation and deeper objectives. The Sweetgrass Arch is being considered as a potential target for helium accumulations above fractured basement rock. Thor Resources USA has spud and completed one well in the Utopia field adjacent to leases in southern Liberty County. Another company Avanti Helium has permitted wells in 36N 6E, and 37N 4E. The parcels in northern Liberty County are adjacent to these helium exploration projects. The likely development scenario for parcels in Liberty County are continued helium exploration in formations Nisku and deeper. Vertical helium development which does not involve large multistage hydraulic fractures found in unconventional oil wells and does not pose a significant risk to groundwater.

Big Horn County

Big Horn County exists on the Montana portion of the Powder River Basin multi-stack unconventional play that extends from North-East Wyoming into South-East Montana. The current development acreage exists almost exclusively on the Wyoming side of the border, where operators are testing 7+ different horizons in the basin. On the Montana side of the border multi-stage horizontal completions have been largely untested. Alta Vista Oil Corporation being the only operator to be drilling horizontal unconventional tests in the Powder River Basin in Montana. They have test wells in the Mowry and Niobrara formations. The closest being the Doc Holiday 1H (2500322952) which was drilled in 2018, and subsequently plugged in 2020 due to lack of production. The majority of current production on the Montana side is from conventional vertical wells drilled in the Shannon and Muddy sandstones. The surrounding fields to the two lease parcels available in this lease sale are Coal Bed Methane (CBM) fields including CX, Coal Creek, and Dietz among others. These fields were economic in the early 2000's when gas prices were over \$10/MCF. Recently gas prices have remained under \$3/MCF resulting in many of these wells being plugged or shut-in. The last two CBM exploratory units in Big Horn county were closed in 2020.

Rosebud County

Rosebud County is within the central Montana province, as defined for oil and gas appraisal, and contain portions of major structural features including the Sumatra Syncline, Porcupine Dome, and Ingomar Anticline. The majority of successful oil and gas development has been in the northern portion of the county where the Sumatra and Stensvad conventional oil and gas fields exist. They have produced out of the Tyler sands since the 1960's. More recently in the 2010's, the Heath unconventional play has been

tested with horizontal wells also in the northwestern portion of Rosebud County. The central portion of the county where the two lease parcels for this sale exist has been largely unsuccessful for oil and gas development. Wells that do produce are uneconomic and sold to local landowners for residential purposes or plugged.

3.2 Methodology and Assumptions

Analysis of issues brought forward in this assessment was completed using reasonably foreseeable development (RFD) scenarios created for the proposed lease parcels. RFD scenarios for the proposed lease parcels were developed using the Minerals Appendices from the RMPs for the respective field offices. The RMPs contain the number of potential oil and gas wells that could be drilled and produced in each field office area, and this was used to analyze the potential number of wells drilled for the nominated lease parcels. These well numbers are only an estimate based on historical drilling, geologic data, resource expertise, and current development in the area.

3.3 Issue 1 – Air Resources

3.3.1 *Affected Environment*

The Environmental Protection Agency (EPA) established primary and secondary National Ambient Air Quality Standards (NAAQS) for six principal air pollutants (or criteria air pollutants) which may be harmful to the public health and environment including: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM₁₀ and PM_{2.5}), sulfur dioxide (SO₂), and lead (Pb) ([EPA, 2023c](#)). Primary standards set limits to protect public health, including the health of at-risk populations such as people with pre-existing heart or lung disease, children, and older adults. Secondary standards, on the other hand, set limits to protect public welfare, including visibility impairment and damage to animals, crops, vegetation, and buildings.

Determining compliance with the NAAQS can be evaluated using a variety of methods such as ambient air quality monitoring stations, air quality design values, air diffusion modeling, and/or photochemical grid modeling. Pollutant concentrations that are below the NAAQS are designated as attainment or unclassifiable, and air quality is generally considered to be good. Locations in which monitored pollutant concentrations are higher than the NAAQS are designated nonattainment, and air quality is generally considered unhealthy. For this proposed action in Montana and North Dakota, an approximate 50 km (31.1 miles) radius around the lease parcels were used to help assess regulatory compliance because the maximum distance recommended to predict compliance of the NAAQS using the preferred EPA air diffusion modeling software is 50 km. Any evaluation and discussion outside the approximate 50 km radius around the parcels are provided as additional background information.

The EPA is the delegated authority, under the Clean Air Act (CAA), for individual states to complete various activities such as air quality permitting, compliance monitoring, and air quality monitoring. Similarly, Tribal governments have the authority to develop and implement air quality programs through the Tribal Authority Rule under the provisions of CAA. In Montana, the Montana Department of Environmental Quality (MT DEQ) implements air quality permitting and compliance programs, an oil or gas well registration program, and conducts ambient air quality monitoring throughout the state (MT DEQ, 2023). Similarly, in North Dakota, the Department of Environmental Quality (ND DEQ) Division of Air Quality (DoAQ) is responsible air quality permitting and compliance, oil or gas well registrations, and ambient air quality monitoring under the CAA (ND DoAQ, 2023). Both North Dakota and Montana have developed a network of ambient air quality monitoring sites to assess NAAQS compliance and **Table 3** provides air pollutant concentrations measured at the ambient air quality sites located near or within the proposed lease areas using design values. The design value is the annual arithmetic mean concentrations,

averaged over 3 years, and describes the air quality status of a given location relative to the NAAQS. Design values are used to designate and classify nonattainment areas, as well as assess progress towards meeting the NAAQS. For Montana and North Dakota, all lease parcels are in areas that are currently designated attainment or unclassifiable for each NAAQS. Counties without monitoring stations have an unclassifiable attainment status and are assumed to have good air quality with pollutant concentrations below the NAAQS. The Federal Land Manager (FLM) is responsible for defining Air Quality Related Values (AQRVs), including visual air quality (haze) and atmospheric deposition for an area, and establishing criteria to determine an adverse impact on the AQRVs. AQRVs are not threshold standards, but a FLM may identify levels of concern and provide recommendations to the permitting authority.

Table 3. Criteria Pollutant Design Values-2020-2022

Pollutant	Site Name/Monitor Location/County	Averaging Time	Design Value Concentration ⁽¹⁾	NAAQS	% NAAQS
PM _{2.5} (µg/m ³)	Malta, MT (Phillips County)	Annual	5.6	9	62%
PM _{2.5} (µg/m ³)	Lewistown, MT (Fergus County)	Annual	5.2	9	58%
PM _{2.5} (µg/m ³)	Sidney, MT (Richland County)	Annual	5.2	9	58%
PM _{2.5} (µg/m ³)	Miles City, MT ⁽²⁾ (Custer County)	Annual	5.2	9	58%
PM _{2.5} (µg/m ³)	Lostwood Nwr, ND (Burke)	Annual	6.4	9	71%
PM _{2.5} (µg/m ³)	Trnp-Nu Waterford City, ND (McKenzie)	Annual	5.4	9	60%
PM _{2.5} (µg/m ³)	Lake Ilo, ND (Dunn)	Annual	5.8	9	64%
PM _{2.5} (µg/m ³)	Painted Canyon, ND (Billings)	Annual	4.9	9	54%
PM _{2.5} (µg/m ³)	Malta, MT (Phillips County)	24-hour	24	35	69%
PM _{2.5} (µg/m ³)	Lewistown, MT (Fergus County)	24-hour	28	35	80%
PM _{2.5} (µg/m ³)	Sidney, MT (Richland County)	24-hour	19	35	54%
PM _{2.5} (µg/m ³)	Miles City, MT ⁽²⁾ (Custer County)	24-hour	13	35	37%
PM _{2.5} (µg/m ³)	Lostwood Nwr, ND (Burke)	24-hour	23	35	66%
PM _{2.5} (µg/m ³)	Lake Ilo, ND (Dunn)	24-hour	22	35	63%
PM _{2.5} (µg/m ³)	Trnp-Nu Waterford City, ND (McKenzie)	24-hour	22	35	63%
PM _{2.5} (µg/m ³)	Painted Canyon, ND (Billings)	24-hour	17	35	49%
O ₃ (ppm)	Malta, MT (Phillips County)	8-hour	0.055	0.070	79%
O ₃ (ppm)	Lewistown, MT (Fergus County)	8-hour	0.062	0.070	89%
O ₃ (ppm)	Sidney, MT (Richland County)	8-hour	0.059	0.070	84%
O ₃ (ppm)	Miles City, MT ⁽²⁾ (Custer County)	8-hour	0.058	0.070	83%
O ₃ (ppm)	Lake Ilo, ND (Dunn)	8-hour	0.058	0.070	83%

O ₃ (ppm)	Lostwood Nwr, ND (Burke)	8-hour	0.055	0.070	79%
O ₃ (ppm)	Trnp-Nu Waterford City, ND (McKenzie)	8-hour	0.056	0.070	80%
O ₃ (ppm)	Painted Canyon, ND (Billings)	8-hour	0.058	0.070	83%
NO ₂ (ppb)	Malta, MT (Phillips County)	1-hour	7	100	7%
NO ₂ (ppb)	Lewistown, MT (Fergus County)	1-hour	10	100	10%
NO ₂ (ppb)	Sidney, MT (Richland County)	1-hour	11	100	11%
NO ₂ (ppb)	Miles City, MT ⁽²⁾ (Custer County)	1-hour	29	100	29%
NO ₂ (ppb)	Lake Ilo, ND (Dunn)	1-hour	12	100	12%
NO ₂ (ppb)	Lostwood Nwr, ND (Burke)	1-hour	10	100	10%
NO ₂ (ppb)	Trnp-Nu Waterford City, ND (McKenzie)	1-hour	9	100	9%
SO ₂ (ppb)	Sidney, MT (Richland County)	1-hour	6	75	8%
SO ₂ (ppb)	Lake Ilo, ND (Dunn)	1-hour	6	75	8%
SO ₂ (ppb)	Lostwood Nwr, ND (Burke)	1-hour	19	75	25%
SO ₂ (ppb)	Trnp-Nu Waterford City, ND (McKenzie)	1-hour	4	75	5%
SO ₂ (ppb)	Painted Canyon, ND (Billings)	1-hour	5	75	7%
Source: EPA Design Values Air Quality Design Values US EPA Source: MDEQ State of Montana Air Quality Annual Monitoring Network Plan, July 2023. https://deq.mt.gov/files/Air/AirMonitoring/Documents/2023_ANMP.pdf (1) Dataset includes all values including flagged exceptional events. (2) The Miles City monitoring station began reporting data to AQS as of January 1, 2022. Therefore, these values represent only measurements conducted in 2022.					

Oil and gas development activities may impact ambient air concentrations of PM₁₀, PM_{2.5}, O₃, CO, NO_x, volatile organic compounds (VOC), hydrogen sulfide (H₂S), and SO₂. Particulate matter comes from a variety of sources such as construction activities, unpaved roads, cars, trucks, or other operations that burn fossil fuels. On the other hand, O₃ is not emitted directly into the air but created from pollutants such as NO_x and VOC that chemically react in the presence of sunlight. In addition, other particles may form in the atmosphere because of complex reactions from SO₂ and NO_x. Along with oil and gas well operations, pollutants SO₂ and NO_x are also emitted from power plants and automobiles whereas the most significant sources of CO are mostly from cars, trucks, or machinery that burn fossil fuels. Similarly, SO₂ emissions from oil and gas well facilities may also be created from the combustion (e.g., flaring) of gas containing H₂S. Although there is not a Federal NAAQS for H₂S, Montana and North Dakota do have an ambient air quality standard for H₂S. In North Dakota, the standard was developed in response to elevated sulfur content during petroleum production in the 1980s; however, emissions of H₂S have reduced over time as production from the older facilities declined. In addition, the Bakken Formation, which has been the focus of the most recent oil and gas activity in Montana and North Dakota, generally has low concentrations (if any) of H₂S compared to non-Bakken Formations. For Montana and North Dakota, the owner or operator of any oil or gas well production facility must install and maintain pollution controls necessary to ensure that emissions comply with both national and state ambient air quality standards.

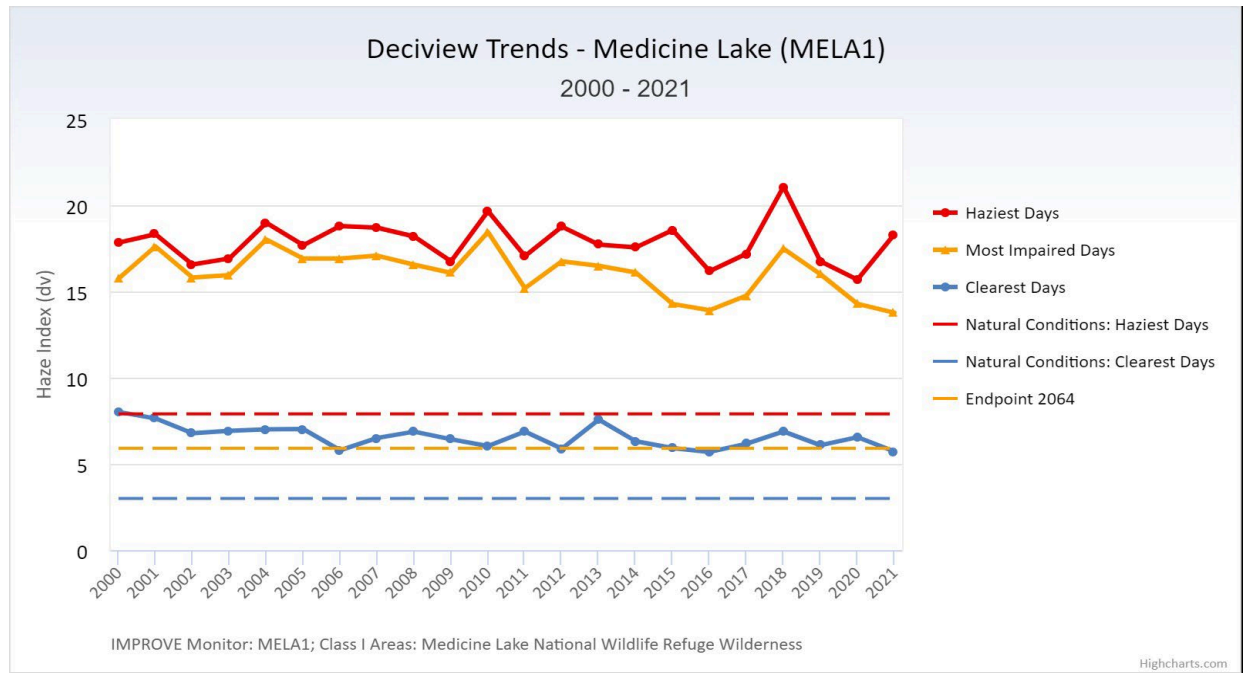
EPA also regulates emissions of hazardous air pollutants (HAPs) which includes a list of 188 air toxics. EPA is required to develop regulations to control emissions for all industries that emit one or more listed HAPs in substantial quantities (EPA, 2023b). Since 1990, EPA has issued regulations limiting emissions of air toxics from more than 174 categories of major industrial sources including crude oil and natural gas production sources. Because HAPs are released from oil and gas operations (including from well drilling, well completion, and operation), the EPA established technology-based emission standards to help control HAP emissions. HAPs associated with the oil and gas industry may include compounds such as formaldehyde, benzene, toluene, ethyl benzene, xylene, and normal-hexane (n-hexane). In 2016, New Source Performance Standards (NSPS) 40 CFR Part 60 Subpart OOOOa (Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015) created emission standards and compliance requirements for the control of VOC and SO₂ emissions from affected facilities. Similarly, on December 2, 2023, the EPA announced a final rule that will reduce emissions of methane and other harmful air pollution from oil and natural gas operations to reduce methane and volatile organic compounds (VOCs) from new, modified, and reconstructed sources. First, EPA finalized NSPS OOOOb regulating GHG (in the form of a limitation on emissions of methane) and VOCs emissions for the Crude Oil and Natural Gas source category pursuant to CAA section 111(b)(1)(B). Second, EPA finalized the presumptive standards in emission guidelines OOOOc to limit GHGs emissions (in the form of methane limitations) from designated facilities in the Crude Oil and Natural Gas source category. Third, EPA finalized requirements under the CAA section 111(d) for states to follow in developing, submitting, and implementing state plans to establish performance standards as well as finalized several related actions stemming from the joint resolution of Congress, adopted on June 30, 2021, under the congressional review act (CRA), disapproving the 2020 Policy Rule. Fourth, EPA finalized a protocol under the general provisions of 40 CFR part 60 related to optical gas imaging (OGI). The EPA also developed a National Toxics Assessment Tool (AirToxScreen) to evaluate impacts from existing HAP emissions across the nation. However, EPA AirToxScreen was not designed to assess specific risk values at local levels but best used as a tool to prioritize pollutants, emissions sources, and locations of interest for further investigation. Using the EPA AirToxScreen, the total cancer risk for Montana and North Dakota, was below the upper limit of acceptable lifetime risk of 100 in 1 million people to develop cancer, as described in 40 CFR § 300.430. Using the EPA AirToxScreen for Liberty County, Big Horn County, Richland County, Roosevelt County, and Rosebud County, in Montana, the total cancer risks were estimated to be 10 in 1 million people while in Mountrail, Dunn, McKenzie County, and Slope County in North Dakota, the total cancer risks were estimated to be between 10 to 30 in 1 million people. In addition, the noncancer hazard index for Montana and North Dakota below 1.0, indicating that air toxics will not likely cause adverse noncancer health effects.

The Federal Land Manager (FLM) is responsible for defining Air Quality Related Values (AQRVs), including visual air quality (haze) and atmospheric deposition for an area. Atmospheric visibility is a measure of how far and how well an observer can see a distant and varied scene. The visual range is the greatest distance in miles that a person can see a large dark object viewed against the horizon sky. Light extinction or attenuation is a nonlinear measure of visibility and occurs in the atmosphere as a result of scattering and absorption. Pollutants from natural and anthropogenic sources contribute to haze by scattering and absorbing light. A deciview (dv) is a unit of measurement used to quantify human perception of visibility and is calculated from the natural logarithm of atmospheric light extinction. One (1) deciview is roughly the smallest change in visibility (haze) that is barely perceptible. Because visibility at any one location is highly variable throughout the year, visibility is characterized by three groupings: 1.) clearest 20% days, 2.) average 20% days, and 3.) haziest 20% days. Average visual range is 60 to 90 miles (100 to 150 kilometers) in many Class I areas in the western United States, equivalent to 9.6 to 13.6 deciview (dv), or about 50 to 70 percent of the visual range that would exist without anthropogenic air pollution from stationary and mobile sources (64 Fed. Reg. 35714).

The Interagency Monitoring of Protected Visual Environments (IMPROVE) Program collects and identifies visibility and composition trends throughout the nation. The IMPROVE monitoring site located

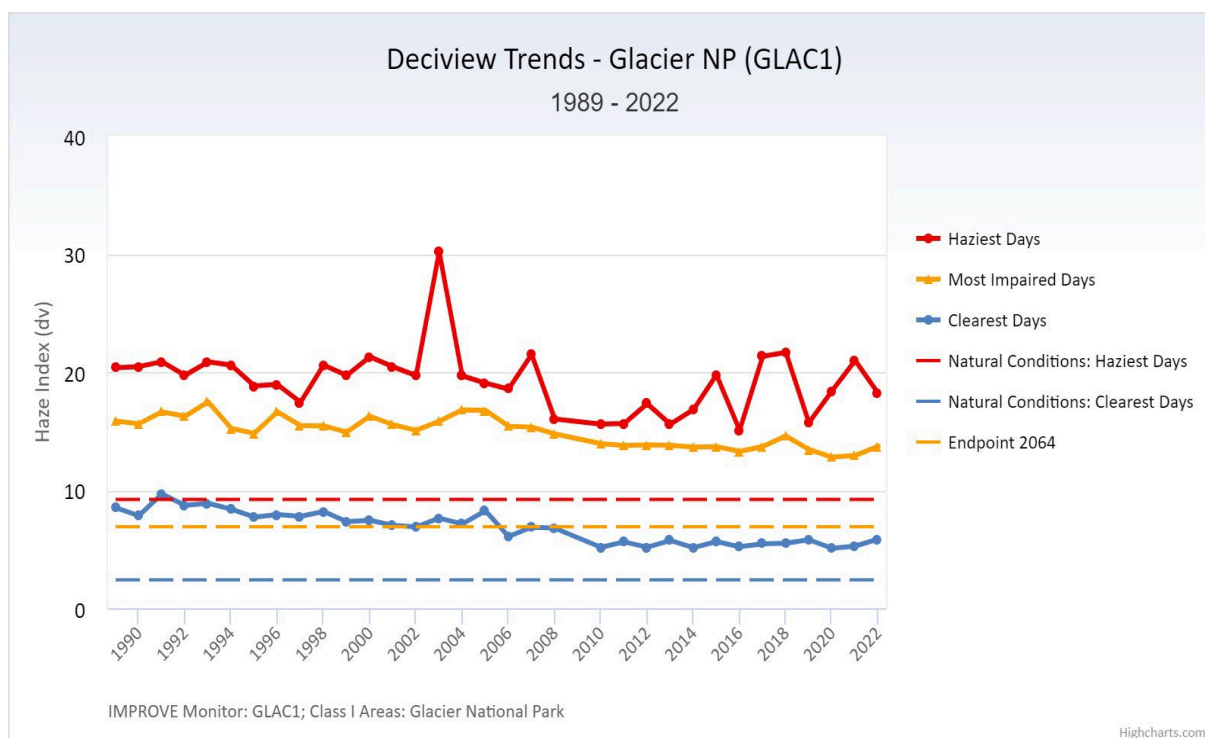
at Class I areas nearest the proposed lease sale parcels include the Medicine Lake Wilderness Area in Montana and Theodore Roosevelt National Park (TRNP) and Lostwood National Wildlife Refuge Wilderness (LOST1) in North Dakota. **Figures 1-4** provide a graphical representation of annual visibility trends for the period ranging from 2000 to 2022. Based on the data, visibility trends do not appear to have not changed significantly over the monitoring period; however, it does appear to reveal an overall improving trend for the clearest and most impaired days at the monitoring sites.

Figure 1. Medicine Lake (MELA1) - Visibility Trends at Medicine Lake National Park, Montana



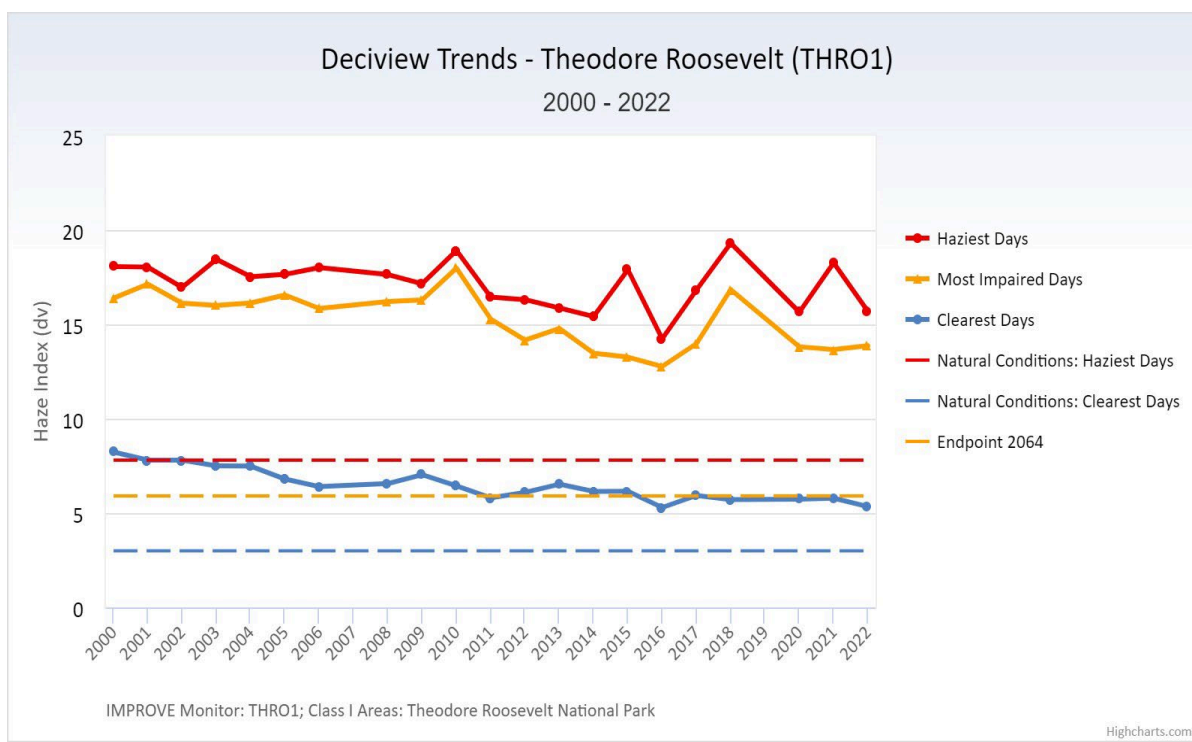
Source: Federal Land Manager Environmental Database, 2024

Figure 2. Glacier NP (GLAC1) - Visibility Trends at Glacier National Park, Montana



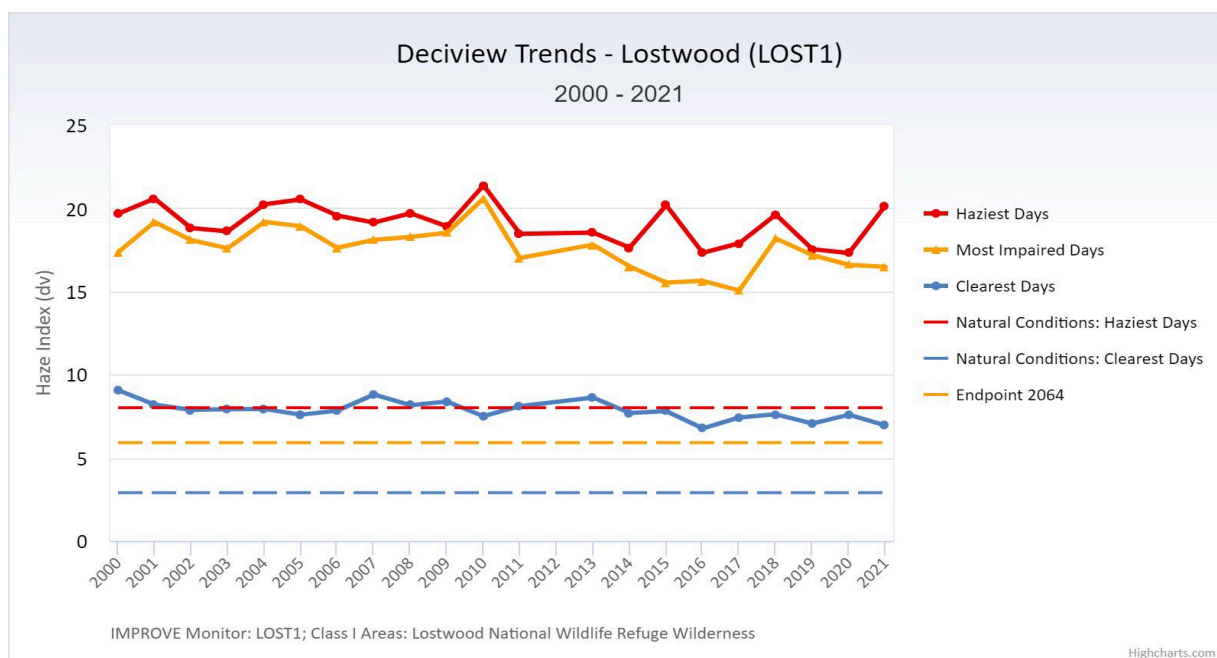
Source: Federal Land Manager Environmental Database, 2024

Figure 3. Theodore Roosevelt (THRO1) - Visibility Trends at Theodore Roosevelt National Park, North Dakota



Source: Federal Land Manager Environmental Database, 2024

Figure 4. Theodore Roosevelt (THRO1) - Visibility Trends at Theodore Roosevelt National Park, North Dakota



Source: Federal Land Manager Environmental Database, 2023

In addition to IMPROVE, the Western Regional Air Partnership (WRAP) Technical Support System (TSS) is an online portal that provides advanced data acquisition and analytical tools for the development of State and Tribal Implementation Plans to help track progress and improve visibility in Class I areas related to EPA's Regional Haze Rule ([TSS Home \(colostate.edu\)](https://www.colostate.edu/tss)). The TSS summarizes results and consolidates information about air quality monitoring; meteorological and receptor modeling data analyses; emissions inventories and models; and gridded air quality/visibility regional modeling simulations. The projected 2028 reasonable progress goal for the most impaired and clearest days for Medicine Lake Wilderness Area, UL Bend Wilderness (ULBE1), Theodore Roosevelt National Park (THRO1) and Lostwood National Wildlife Refuge Wilderness (LOST1) are provided in **Figures 5-7**. **Figures 5-7** illustrates the Uniform Rate of Progress (URP) Glidepath as defined by EPA guidance, compared to IMPROVE measurements for the period 2000-2018. The URP glidepath is constructed for the 20% most impaired days (MID) or clearest days using observations from the IMPROVE monitoring site. The URP glidepath starts with the IMPROVE MID for the 2000-2004 5-year baseline and draws a straight line to estimated natural conditions in 2064. For clearest days, the goal is no degradation of visibility from the 2000-2004 5-year baseline, therefore glidepath for clearest days is a straight line from the 2000-2004 baseline to 2064. In the second regional haze planning period, 2064 natural conditions estimates are the same as the 15-year average of natural conditions on most impaired days or clearest days in each year 2000-2014. IMPROVE annual average values are presented as points and 5-year average values are presented as solid lines covering the periods 2000-2004 and 2014-2018.

Figure 5. Projected Reasonable Progress Goals – Medicine Lake Wilderness Area (MELA1), Montana

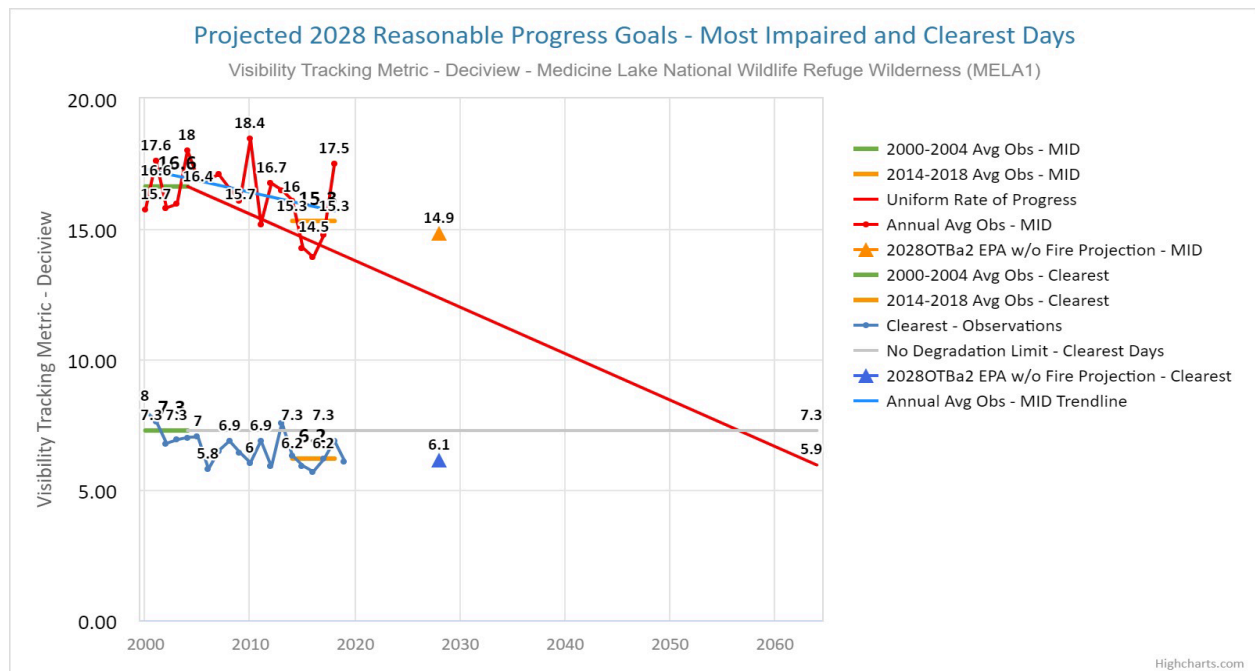


Figure 6. Projected Reasonable Progress Goals - Theodore Roosevelt National Part (THRO1), North Dakota

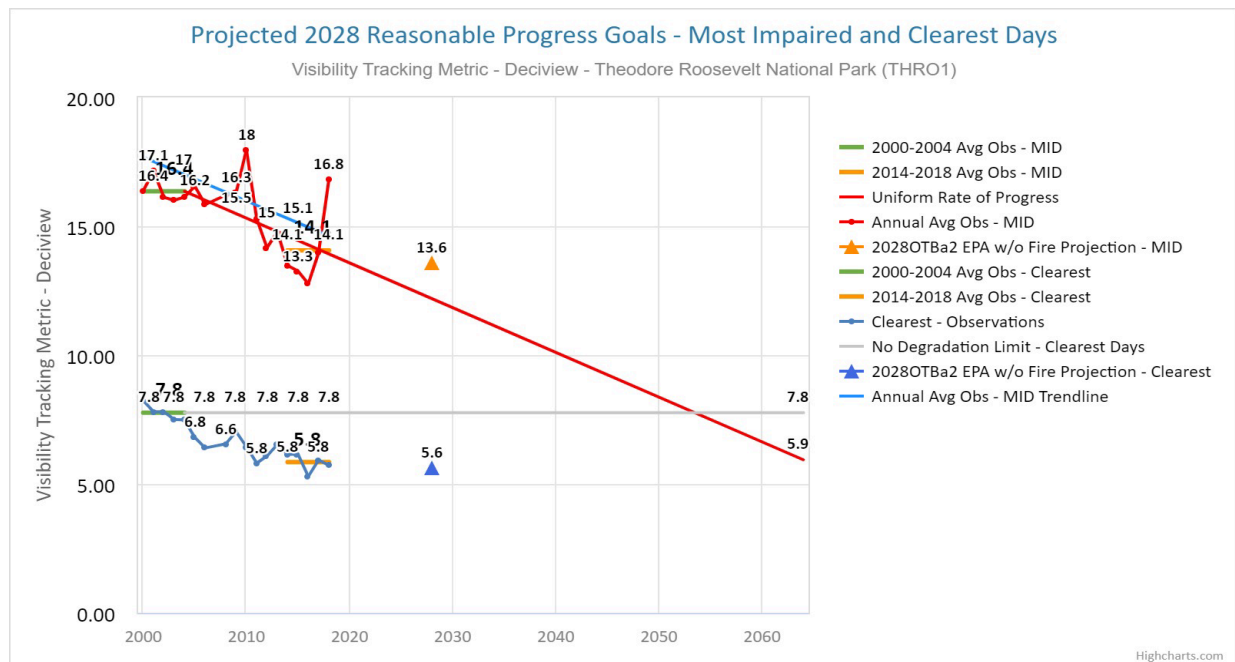
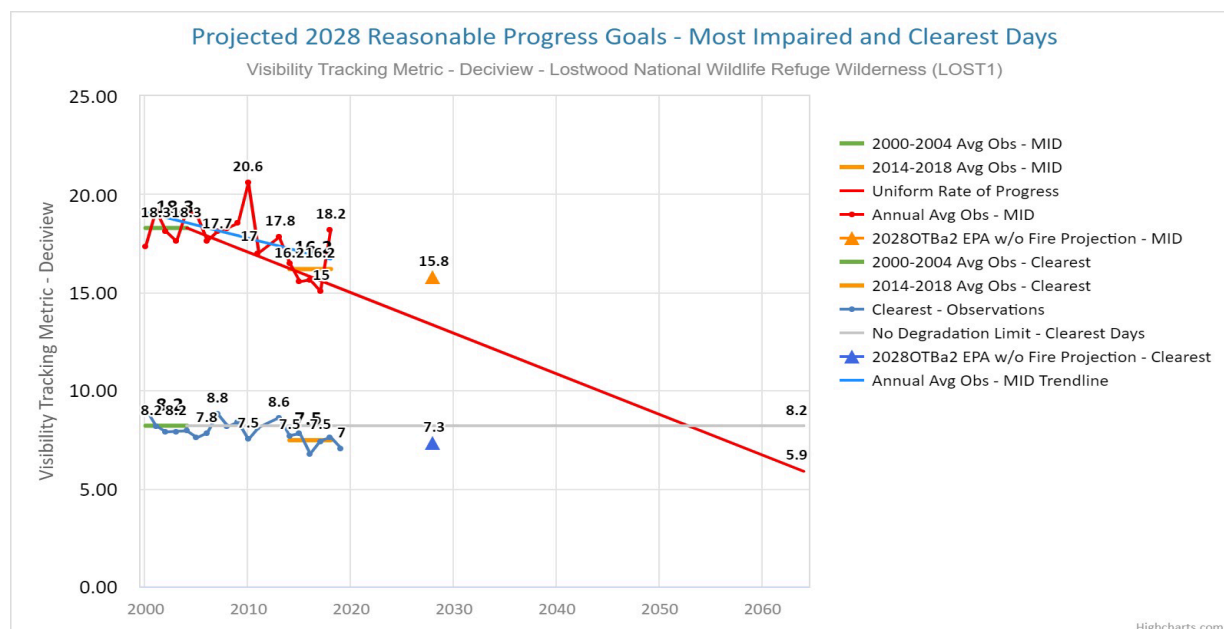


Figure 7. Projected Reasonable Progress Goals-Lostwood National Wildlife Refuge Wilderness (LOST1), North Dakota



Unlike visibility, atmospheric deposition occurs when gaseous and particulate air pollutants are deposited on the ground, water bodies, or vegetation. The pollutants may be deposited as dust or transported from the atmosphere in the form of rain, fog, or snow. When air pollutants such as sulfur and nitrogen are deposited into ecosystems, acidification or enrichment of soils and surface waters may occur. Atmospheric nitrogen and sulfur deposition may affect water chemistry, resulting in impacts to aquatic vegetation, invertebrate communities, amphibians, and fish. Deposition can also cause chemical changes in soils that alter soil microorganisms, plants, and trees. Although nitrogen is an essential plant nutrient, excess nitrogen from atmospheric deposition can stress ecosystems by favoring some plant species and inhibiting the growth of others. Information on wet and dry deposition at Class I areas within the analysis area can be found at EPA's Clean Air Status and Trends Network monitoring program at [Clean Air Status and Trends Network \(CASTNET\) | US EPA](#). The National Park Service air quality data collection and analysis efforts are also provided for a variety of sites across the country ([Air Quality in Parks - Air \(U.S. National Park Service\) \(nps.gov\)](#)). For example, the overall air quality at Theodore Roosevelt National Park is classified as "fair" with a varied trend. Air quality conditions for visibility (10.1 dv) and O₃ (57.8 ppb) were described as "fair" with unchanging trends while conditions related to nitrogen deposition was also "fair" (2.6 kilograms per hectare per year (kg/ha/yr)) with a degrading trend. However, sulfur and mercury deposition for the area was described as "good" with a relatively unchanging trend or no trend available.

In addition to oil and gas emissions sources, air quality and AQRVs are influenced by industrial sources, motor vehicles, agricultural practices, long-range emissions transport, and natural sources such as wildfire smoke. Oil and gas processing and refining facilities are permitted by local, state, tribal, and/or federal agencies and report pollutant air emissions annually to the EPA. Each proposed new and modified facility is required to demonstrate compliance with NAAQS. The compliance requirements and air monitoring network throughout Montana and North Dakota help ensure that an area remains in compliance with the NAAQS. The criteria pollutant emissions from oil and gas operations, including from lease sales, can be found in the EPA's National Emission Inventory. In addition, projections of regional air quality resulting from oil and gas development on BLM lands is documented in several BLM reports such as the 2015 Miles City Field Office (MCFO) Air Resource Management Plan (BLM, 2015), 2016 Montana/Dakotas State Office Photochemical Grid Modeling (PGM) Modeling Study Air

Resources Impact Assessment–Final Report (BLM, 2016), 2023 Draft MCFO Supplemental Environmental Impact Statement (SEIS), and North Dakota Field Office Draft Resource Management Plan (RMP) and Environmental Impact Statement (EIS) (BLM, 2023).

The 2015 and 2023 MCFO RMPs evaluated impacts to air quality from oil and gas development as well as projections of visibility within the region and assessed regional impacts to air quality from future oil and gas development on BLM administered mineral estate in Montana, North Dakota, and South Dakota. The 2015 MCFO RMP conducted a near-field assessment of impacts on ambient air quality to evaluate maximum pollutant impacts within the MCFO planning area resulting from oil and gas activities. Air pollutant dispersion modeling was performed to quantify maximum potential criteria pollutant (CO, NO₂, SO₂, PM₁₀, and PM_{2.5}) and HAP (benzene, toluene, ethyl benzene, xylenes, n-hexane, and formaldehyde) impacts from development and production. AERMOD was used to model the maximum potential emissions of CO, NO₂, SO₂, PM₁₀, and PM_{2.5} and HAPs that could occur from well pad/road construction, drilling/completion, and production sources. When maximum modeled concentrations of criteria pollutant (CO, NO₂, SO₂, PM₁₀, and PM_{2.5}) impacts from the modeled scenarios were added to representative background concentrations, it was demonstrated that the total ambient air concentrations were less than the applicable NAAQS. In addition, direct modeled concentrations resulting from production activities were below the applicable PSD Class II increments for production activities. Maximum modeled HAP impacts (benzene, toluene, ethyl benzene, xylenes, n-hexane, and formaldehyde) were shown to be well below applicable RELs and RFCs. In addition, incremental cancer risks were well below a one-in-one million risk for suspected or known carcinogens benzene, ethyl benzene and formaldehyde.

Similarly, the 2023 MCFO RMP modelled (i.e., emissions and impact) scenarios did not produce emissions more than the NAAQS or state ambient air quality standards for O₃, PM_{2.5}, PM₁₀, SO₂, NO₂ or CO. However, the modeling study predicted impacts to visibility at Class I areas in eastern Montana and western North Dakota in which a portion of the predicted impacts can be attributed to future federal oil and gas development (more than 0.5 and 1.0 dv thresholds) at the Theodore Roosevelt, Fort Peck, and Medicine Lake Class I areas as well as predicted the potential for minor impacts attributed to atmospheric deposition of nitrogen compounds in the same region. The 2023 Draft North Dakota Draft RMP/EIS reported modeled air quality contributions of new federal oil and gas development (i.e., 2020 onward) including ambient air concentrations of selected criteria pollutants and AQRV contributions for acidic deposition, visibility change, and the ozone W126 index. Peak modeled cumulative values, percent contribution of new federal oil and gas development and time period of the peak value, and peak contribution were discussed. According to the 2023 North Dakota Draft RMP, new federal oil and gas wells were expected to contribute between approximately 0.0 percent and 11 percent by pollutant to the maximum cumulative value across North Dakota. The largest fraction would be for hourly NO₂ in the Williston Basin caused primarily by NO_x emissions from drill rigs and off-road equipment. Class I areas would experience some air quality impact from federal oil and gas development with the highest impacts observed at the Fort Berthold Indian Reservation. Predicted concentrations for all modeled contaminants were below the NAAQS and NDAAQS; however, the peak cumulative modeled concentrations of 1-hour NO₂ and 24-hour PM₁₀ were close to the NAAQS and potential impact issues would be addressed through appropriate lease notices and stipulations and potentially requiring near-field air modeling for proposed drilling projects. Furthermore, modeled acute and chronic noncarcinogenic HAPs were below the Reference Exposure Levels (RELs) and the estimated incremental cancer risks were also below a one per one million for the carcinogenic HAPs benzene and formaldehyde.

3.3.2 Environmental Effects - No Action Alternative

Under the No Action Alternative, there would be no impact on air resources and greenhouse gas emissions compared to the proposed action. If the parcels are not available to be leased and potential development on the proposed parcels would not occur, then no increase in estimated emissions would be

expected from potential oil and gas development. The No Action Alternative would result in the continuation of already-approved land uses and would not result in new impacts related to exploration of the proposed oil and gas lease parcels.

3.3.3 Environmental Effects - Proposed Action Alternative

As previously described, the effects from oil and gas development on air resources in Montana and North Dakota have been analyzed and described in numerous documents such as the 2015 Miles City RMP (BLM, 2015), Montana/Dakotas (BLM-MT/DK) State Office Photochemical Grid Model (PGM) Modeling Study (BLM, 2016), 2023 Draft MCFO SEIS, and 2023 North Dakota Field Office Draft RMP/EIS.

Potential effects to air quality from the sale of lease parcels would only occur when the issued leases are developed and does not authorize or guarantee the number of wells described and analyzed in the EA. The drilling of wells on a lease parcel would not be permitted until the BLM approved an Application for Permit to Drill (APD). Any APDs received would be subject to site specific NEPA review; however, the EA would help inform the decision of the APD. In addition, there is a degree of uncertainty in estimating the amount of potential air emissions (including GHGs) for the EA. The oil properties, site geology, drilling and completion methodology, on-site equipment, project acreage, and construction plans are among several variables required to generate emissions estimates. Thus, the BLM may conduct additional air quality analysis during the APD process.

The analysis of air resources in this EA includes a discussion of short-term and long-term impact to air quality from potential oil and gas development on the lease parcels. Short-term impacts would occur from the construction of the well, well pad, access roads, pipelines, and other single occurrence activities. For example, motor vehicles would emit various pollutants such as CO, NO_x, HCs, and PM as well as increase fugitive dust through increase vehicle traffic and increase wind erosion in areas of soil disturbance. Drill rig and fracturing operation would result in an increase in NO₂, CO, HAP, VOC, and SO₂ emissions. Flaring or venting maybe necessary during drilling and well completion that would also result in increased emissions of NO₂, CO, VOC, and SO₂; however, it would be conducted in compliance with federal and state regulations. Similarly, throughout the long-term operation of the facility, NO₂, CO, VOC, and HAP emissions would result from various equipment such storage tanks, pumps, separators, flares, and other equipment as well as road dust produced by vehicles servicing the facilities. Potential emissions of PM₁₀, PM_{2.5}, NO_x, SO₂, CO, VOC, and HAPs are provided in **Table 4** and **Table 5**. The construction and production emissions are listed separately in the emission tables. The construction process is short-term and would be completed within a few months with intermittent emissions and production and maintenance emissions occur throughout the life of the well. Calculations are based on typical development and production scenarios as estimated for the MCFO RMP air analysis. The calculations for pollutant emissions use the number of wells that may be developed within 10 years if the parcels were leased. EPA Tier 4 engine emission factors are used based on previous air emissions modeling using AERMOD indicating potential exceedance of the 1-hour NO₂ NAAQS, but non-Tier 4 engines could be used if current No_x to NO₂ conversion factors and modeling demonstrate compliance with the NO₂ NAAQS.

Table 4. Estimated Air Pollutant Emissions from Well Development and Production

Activity	# of Wells ⁽¹⁾		PM ₁₀		PM _{2.5}		NO _x		SO ₂	
	Oil	Gas	Emission Factor ⁽²⁾ (tons/well)	Estimated Emissions (tons)	Emission Factor ⁽²⁾ (tons/well)	Estimated Emissions (tons)	Emission Factor ⁽²⁾ (tons/well)	Estimated Emissions (tons)	Emission Factor ⁽²⁾ (tons/well)	Estimated Emissions (tons)
Montana and North Dakota Field Office⁽³⁾										
Construction (short-term)	7	0	0.51	3.57	0.06	0.42	0.53	3.71	0.11	0.77
Operations (long-term)	7	0	0.08	0.56	0.03	0.21	0.36	2.52	0.0005	0.0035
Total Estimated Emissions:				4.13		0.63		6.23		0.7735

1. Well numbers based on RFD for this lease sale.
2. Emission factors used in estimated emission calculations developed for 2015 MCFO RMP.
3. Emission factors are consistent across all counties and presented by Field Office.

Table 5. Estimated Air Pollutant Emissions from Well Development and Production

Activity	# of wells ¹		CO		VOC		HAPs	
	Oil	Gas	Emission Factor ² (tons/well)	Estimated Emissions (tons)	Emission Factor ² (tons/well)	Estimated Emissions (tons)	Emission Factor ² (tons/well)	Estimated Emissions (tons)
Montana and North Dakota Field Office⁽³⁾								
Construction (short-term)	7	0	2.76	19.32	0.36	2.52	0.03	0.21
Operations (long-term)	7	0	1	7	0.95	6.65	0.08	0.56
Total Estimated Emissions:				26.32		9.17		0.77

1. Well numbers based on RFD for this lease sale.
2. Emission factors used in estimated emission calculations developed for 2015 MCFO RMP.
3. Emission factors are consistent across all counties

3.3.4 Reasonably Foreseeable Actions

The 2016 Montana/Dakotas PGM modeling study analyzed potential impacts from all reasonably foreseeable oil and gas development within the region over a 20-year period. These leases are not expected to occur contemporaneously and are not located next to each other. The lease sale would represent only a small fraction of the potential development that was included in the Montana/Dakotas PGM modeling study and would be expected to have little to no impact on air quality, visibility, or atmospheric deposition. Additional detailed information on estimated air pollutant emissions can be found in the Air Resource Technical Support Document (ARTSD) for emission inventories, near-field modeling, and visibility screening.

The 2015 MCFO RMP assessed visibility impacts from the exhaust from drill rig engines on Class I areas located approximately 1 km away. Predicted impacts on color difference and contrast were less than thresholds used to identify impacts. The 2015 MCFO RMP further analyzed far-field visibility impacts on Class I areas using the CALPUFF dispersion model. The CALPUFF model predicted visibility impacts are estimated to be below 0.5 change in deciviews (Δdv) at each Class I and Class II area analyzed. This threshold is included in guidance developed by the National Park Service, US Forest Service, and the FWS (FLAG 2010). At each receptor and for each year, zero days are predicted to occur when the 98th percentile change in deciviews would equal or exceed 0.5. Predicted impacts were 9-26 percent of the 0.5 threshold, much below the requirement for further analysis. Based on the results of the 2015 MCFO RMP modeling, oil and gas development is not considered to directly contribute to regional haze or result in visibility impairment.

Similarly, the 2023 Air Quality Technical Support Documents in the Miles City Field Office Draft SEIS and North Dakota RMP/EIS utilized PGM modelling within Montana and North Dakota for the future year circa 2028. Overall, for Montana, cumulative impacts for O_3 , $PM_{2.5}$, and PM_{10} only exceed the NAAQS in isolated areas of the state because of natural source groups such as fires, biogenic emissions, windblown dust, and lightning. The contributions from federal oil and gas development (and federal coal development) were less than 1 percent at the location of the exceedances. Modeled cumulative nitrogen deposition in Montana was below the lowest critical load (5 kg N/ha-year for herb/shrubs) except at Fort Peck Reservation, Lostwood Wilderness, Medicine Lake Wilderness, North Absaroka Wilderness, Theodore Roosevelt and Washakie Wilderness; however, contributions were minimal from Federal oil and gas, and never exceed more than 2 percent of the total deposition. Sulfur deposition was also below the critical load of 5 kg S/ha-year over Montana. Visibility impacts were higher than 1 Δdv at the Northern Cheyenne Reservation from the Federal coal sector but the visibility impacts never exceeded 1 Δdv for other sectors. For North Dakota, the modeling results indicated that no NAAQS or state ambient air quality standards would be exceeded across North Dakota from the cumulative total of all sources modeled with federal oil and gas development in North Dakota contributing approximately up to 4% of cumulative ozone, 11% of NO_2 , 2% of $PM_{2.5}$, 0.5% of PM_{10} and 10% of SO_2 . The largest cumulative concentrations for most pollutants would be impacted by either natural sources or anthropogenic sources other than federal oil and gas development and federal coal-related actions. However, because oil and gas emissions in North Dakota may be located close to Class I areas, elevated impacts were observed in visibility and deposition. For instance, tribal oil and gas sources located within Fort Berthold Indian Reservation revealed potential adverse impacts on nitrogen deposition and visibility in the area in which new federal oil and gas development has a maximum potential impact of 1 Δdv at the federal Class I areas at the Lostwood Wilderness and Theodore Roosevelt NP while the modeled maximum impact of new federal oil and gas was greater than 1 Δdv for 24 days at Fort Berthold Indian Reservation, 1 day at Lostwood Wilderness, and 0 days at all other Class I areas. Additional detailed information on estimated air pollutant emissions can be found in the air resource technical support documents. At the APD stage, site specific information such as well pad location and construction equipment specifications will be available to further analyze and mitigate potential impacts, if necessary.

3.3.5 Mitigation of Impacts

3.3.5.1 BLM Best Management Practices (BMPs)

The BLM encourages industry to incorporate and implement BMPs to reduce impacts to air quality by reducing emissions, surface disturbances, and dust from field production and operations. In addition, Lease Notice LN 14-18 would be applied to all parcels included in this proposed lease sale for conservation of air resources. The lease notice states, *“The lessee/operator is given notice that prior to project-specific approval, additional air resource analyses may be required in order to comply with the NEPA, FLPMA, and/or other applicable laws and regulations. Analyses may include equipment and operations information, emission inventory development, dispersion modeling or photochemical grid modeling for air quality and/or air quality related value impact analysis, and/or emission control determinations. These analyses may result in the imposition of additional project-specific control measures to protect air resources.”*

If NEPA review reveals air quality impacts, additional control measures may include:

- Use of a Tier 4 non-road diesel engine that meets EPA Nox emission standards or equivalent for each diesel-fueled non-road engine with greater than 200 horsepower design rating to be used during drilling or completion activities;
- Reduction in fugitive dust from roads and construction areas by using water, dust suppressants, surfacing, and other means;
- Develop strategies to minimize or eliminate venting using the most efficient means possible, using low or no bleed pneumatics, and promoting instrument air driven equipment, or equipment that is actuated by other means;
- Use of intelligent design and siting of dehydrators so that the number of distributed dehydrators can be reduced, and larger more efficient dehydrators can be used and promote designs that consider cost effective controls for dehydrator vents; and
- Capture for beneficial use or destruction of separated gas from the oil/condensate/produced water streams.

Similarly, one or more of the following measures could be imposed at the development/APD stage if NEPA review showed the potential for significant impacts to air quality:

- Emission control equipment with minimum 95 percent volatile organic compound (VOC) control efficiency;
- Low-emitting drill rig engines, such as Tier 4 diesel engines or natural gas or electric drill rig engines;
- Gas or electric turbines for compression rather than internal combustion engines;
- Replacement of older internal combustion engines with low-emitting engines that meet EPA New Source Performance Standards;
- Water or chemical suppressant application and reduced speed limits to control fugitive dust emissions;
- Multi-well pads to reduce surface disturbance and traffic;
- Replacement of diesel-fired pump jack engines with electrified engines;

- Reinjection of waste gas into no-producing wells or other underground formations;
- Infrared (FLIR) technology to detect fugitive VOC and methane emissions and repair leaking equipment quickly; and
- Additional technologies for reducing methane emissions as recommended by EPA's natural gas STAR program.

3.4 Issue 2 – Greenhouse Gases

Any subsequent development of lease parcels under consideration could lead to emissions of carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O); the three most common greenhouse gases associated with oil and gas development. These GHG emissions 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 effects of the proposed leasing action on climate change by estimating and analyzing potential GHG emissions from projected oil and gas development on the parcels proposed for leasing using estimates based on past oil and gas development and available information from existing development within the State.

Further discussion of climate change science and predicted impacts, as well as the reasonably foreseeable and cumulative GHG emissions associated with BLM's oil and gas leasing actions and methodologies are included in the *BLM Specialist Report on Annual Greenhouse Gas Emissions and Climate Trends* (BLM, 2023) (Annual GHG Report). This report presents the estimated emissions of greenhouse gases attributable to development and consumption of fossil fuels produced on lands and mineral estate managed by the BLM. The Annual GHG Report is incorporated by reference as an integral part of this analysis and is available at <https://www.blm.gov/content/ghg/2022>.

3.4.1 Affected Environment

Climate change is a global process that is affected by the sum total of GHGs in the Earth's atmosphere. GHGs act to contain solar energy loss by trapping longer wave radiation emitted from the Earth's surface and act as a positive radiative forcing component. GHGs influence the global climate by increasing the amount of solar energy retained by land, water bodies, and the atmosphere. GHGs can have long atmospheric lifetimes, which allows them to become well mixed and uniformly distributed over the entirety of the Earth's surface no matter their point of origin. The buildup of these gases has contributed to the current changing state of the climate equilibrium towards warming. A discussion of past, current, and projected future climate change impacts is described in Chapters 4, 8, and 9 of the Annual GHG Report. These chapters describe currently observed climate impacts globally, nationally, and in each State, and present a range of projected impact scenarios depending on future GHG emission levels.

The incremental contribution to global GHGs from a single proposed land management action cannot be

accurately translated into its potential effect on global climate change or any localized effects in the area specific to the action. Currently, global climate models are unable to forecast local or regional effects on resources resulting from a specific subset of emissions. However, there are general projections regarding potential impacts on natural resources and plant and animal species that may be attributed to climate change resulting from the accumulation of GHG emissions over time.

For the purposes of this EA, the projected emissions from the proposed action can be compared to modeled emissions that have been shown to have definitive or quantifiable impacts on the climate in order to provide context of their potential contribution to climate change. Table 6 shows the total estimated GHG emissions from fossil fuels at the global, national, and state scales over the last six years. Emissions are shown in megatonnes (Mt) per year of carbon dioxide equivalent (CO₂e). Chapter 3 of the Annual GHG Report contains additional information on GHGs and an explanation of CO₂e. State and national energy-related CO₂ 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.

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 cumulative GHG emissions is included in the Annual GHG Report (see Chapters 5,6, and 7).

Table 6. Global, U.S., North Dakota, and Montana GHG Emissions 2017 - 2022 (Mt CO₂/yr)

Scale	2017	2018	2019	2021	2022
Global	36,935.59	37,716.18	37,911.37	35,962.87	36,300 (est.)
U.S.	5,212.16	5,377.80	5,262.15	4,714.63	5,032.21
North Dakota	63.643	71.828	75.338	63.735	65.269
Montana	32.028	32.255	33.510	26.871	29.494
Source: Annual GHG Report, Chap. 6, Table 6-1 (Global and U.S.) and Table 6-3 (State). Source: State GHG Emissions and Removals U.S. EPA. Mt (megatonne) = 1 million metric tons NA = Not Available					

3.4.2 Environmental Effects - 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 resulting from new Federal oil and gas development would occur under the No Action Alternative, the national and global 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 United States (in which case the indirect 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 United States. 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 indirect 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, 2023). In the transportation sector, alternatives to oil are likely to be less carbon intensive.

Finally, 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. This would lead to a reduction in indirect GHG emissions. These three effects are likely to occur in some combination under the no action alternative, but the relative contribution of each is unknown. Regardless, GHG emissions under the no action alternative are not expected to be zero.

3.4.3 Environmental Effects - Proposed Action Alternative

While the leasing action does not directly result in development that will generate GHG emissions, emissions from potential future development of the leased parcels are reasonably foreseeable and can be estimated for the purposes of this lease sale. There are four general phases of post-lease development that would generate GHG emissions: 1) well development (well site construction, well drilling, and well completion), 2) well production operations (extraction, separation, gathering), 3) mid-stream (refining, processing, storage, and transport/distribution), and 4) end-use (combustion or other uses) of the fuels produced. BLM has program authority for on-lease well development and production operations but no authority for off-lease operations including mid-stream and end-use.

Emissions inventories at the leasing stage are 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. Because of these uncertainties, the BLM applies several assumptions to estimate emissions at the leasing stage. The number of estimated well numbers per parcel are based on State data for past lease development combined with per-well drilling, development, and operating emissions data from representative wells in the area. The amount of oil or gas that may be produced if the offered parcels are developed is unknown. For purposes of estimating production and end-use emissions, potential wells are assumed to produce oil and gas in similar amounts as existing nearby wells. 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 would be combusted (such as for domestic heating or energy production). The BLM acknowledges that there may be additional sources of GHG emissions along the distribution, storage, and processing chains (commonly referred to as midstream operations) associated with production from the lease parcels. These sources may include emissions of methane (a more potent GHG than CO₂ in the short term) from pipeline and equipment leaks, storage, and maintenance activities. 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) (NETL, 2019). Section 6 of the Annual GHG Report includes a more detailed discussion of the methodology for estimating midstream emissions.

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

- 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.
- Production 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.
- 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).
- For the purposes of this analysis, end-use emissions are calculated assuming all produced oil and gas is combusted for energy use. End-use emissions are estimated by multiplying the EUR of produced oil and gas with emissions factors for combustion established by the EPA (Tables C-1 and C-2 to Subpart C of 40 CFR §98). Additional information on emission factors and EUR factors can be found in the Annual GHG Report (Chapter 6).

Table 7 lists the estimated direct (well development and production operations) and indirect (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 Proposed Action could result in GHG emissions of approximately 1.9 MMt CO₂e over the life of the lease.

Table 7. Estimated Life of Lease Emissions from Well Development, Well Production Operations, Mid-stream, and End-use (tonnes)

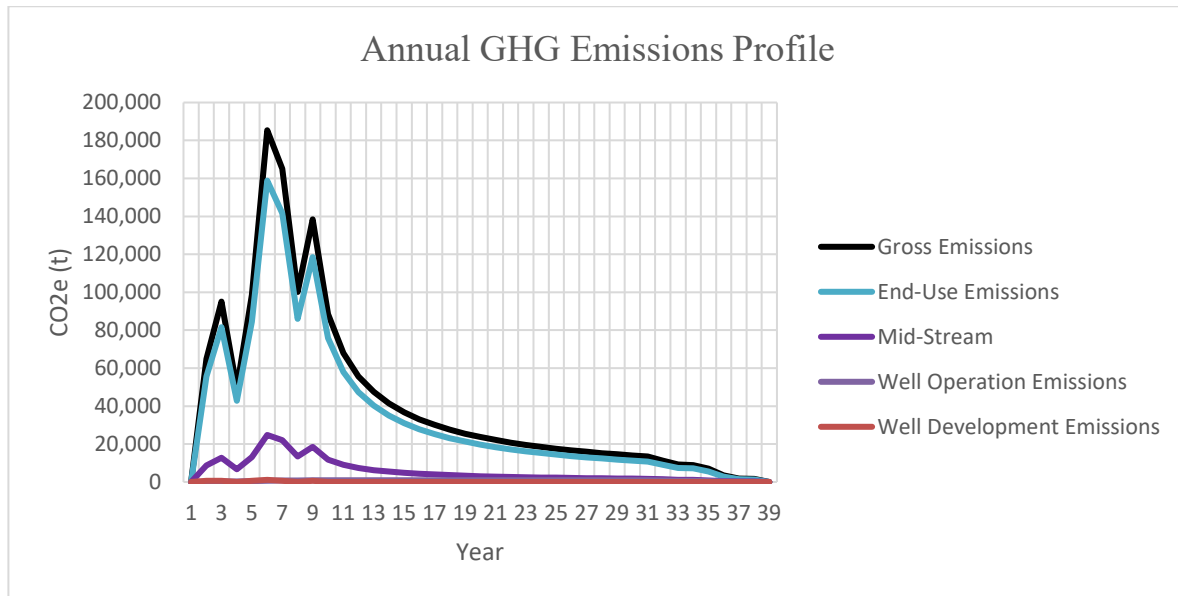
Activity	CO ₂	CH ₄	N ₂ O	CO ₂ e (100-yr)	CO ₂ e (20-yr)
Well Development	3,863	1.83	0.046	3,930	4,027
Well Production Operations	23,001	145.38	0.196	27,387	35,048
Mid-Stream	186,860	814.20	3.030	211,950	254,858
End-Use	1,359,095	49.60	9.470	1,363,158	1,365,772
Total	1,572,818	1,011.01	12.742	1,606,425	1,659,705
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 8 shows the estimated GHG emissions profile over the production life of a typical lease including well development, well production operations, mid-stream, end-use, and gross (total of well development, well

production, mid-stream, and end-use) emissions.

Figure 8. Estimated annual GHG emissions profile over the life of a lease.



Source: BLM Lease Sale Emissions Tool

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 , 2022) 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 from potential development of the subject lease are equivalent to 9,357 gasoline-fueled passenger vehicles driven for one year, or the emissions that could be avoided by operating 12 wind turbines as an alternative energy source or offset by the carbon sequestration of 51,687 acres of forest land.

3.4.4 Monetized Impacts from GHG Emissions

The social cost of greenhouse gases (SC-GHG), including carbon, nitrous oxide, and methane, are estimates of the monetized damages associated with incremental increases in GHG emissions each year. These numbers were monetized; however, they do not constitute a complete cost-benefit analysis, nor do the SC-GHG numbers present a direct comparison with other impacts analyzed in this document. SC-GHG is provided only as a useful measure of the benefits of GHG emissions reductions to inform agency decision-making. For Federal agencies, the best currently available estimates of the SC-GHG are the interim estimates of the social cost of carbon dioxide, methane, and nitrous oxide developed by the Interagency Working Group (IWG) on the SC-GHG.

Table 8 present the SC-GHGs associated with estimated emissions from future potential development of the lease parcels. The IWG’s SC-GHG estimates are based on complex models describing how GHG emissions affect global temperatures, sea level rise, and other biophysical processes; how these changes affect society through, for example, agricultural, health, or other effects; and monetary estimates of the market and nonmarket values of these effects. One key parameter in the models is the discount rate, which is used to estimate the present value of the stream of future damages associated with emissions in a particular year. A higher discount rate assumes that future benefits or costs are more heavily discounted

than benefits or costs occurring in the present (i.e., future benefits or costs are a less significant factor in present-day decisions). The current set of interim estimates of SC-GHG have been developed using three different annual discount rates: 2.5%, 3%, and 5% (IWG 2021).

To address uncertainty in the estimates, the IWG recommends reporting four SC-GHG estimates in any analysis. Three of the SC-GHG estimates reflect the average costs from the multiple simulations at each of the three discount rates. The fourth value represents higher-than-expected economic impacts from climate change. Specifically, it represents the 95th percentile of impacts estimated, applying a 3% annual discount rate for future economic effects. This is a low probability, but high impact scenario, and represents an upper bound of impacts within the 3% discount rate model.

The estimates below follow the IWG recommendations and represent the present value (from the perspective of 2021) of future market and nonmarket costs associated with CO₂, CH₄, and N₂O emissions from potential well development and operations and potential end-use. Estimates are calculated based on IWG estimates of social cost per metric ton of emissions for a given emissions year and BLM's estimates of emissions in each year, rounded to the nearest \$1,000.

Table 8. SC-GHGs Associated with Future Potential Development

	Social Cost of GHGs (\$)			
	Average Value, 5% discount rate	Average Value, 3% discount rate	Average Value, 2.5% discount rate	95 th Percentile Value, 3% discount rate
Development and Operations	\$378,000	\$1,412,000	\$2,125,000	\$4,227,000
Mid-Stream and End-Use	\$20,726,000	\$76,607,000	\$115,148,000	\$232,230,000
Total	\$21,104,000	\$78,019,000	\$117,273,000	\$236,457,000

3.4.5 *Estimated GHG Emissions for Reasonably Foreseeable Environmental Trends and Planned Actions*

The analysis of GHGs contained in the EA includes estimated emissions from the proposed leases. An assessment of GHG emissions from other BLM fossil fuel authorizations, including coal leasing and oil and gas leasing and development, is included in Chapter 7 the BLM Specialist Report on Annual GHG Emissions. The Annual Report includes estimates of reasonably foreseeable GHG emissions related to BLM lease sales anticipated during the fiscal year, as well as the best estimate of emissions from ongoing production, and development of parcels sold in previous lease sales. It is, therefore, an estimate of cumulative GHG emissions from the BLM fossil fuel leasing program based on actual production and statistical trends.

The Annual Report provides an estimate of short-term and long-term GHG emissions from activities across the BLM's oil and gas program. The short-term methodology presented in the Annual Report includes a trends analysis of (1) leased federal lands that are held-by-production ⁽¹⁾, (2) approved applications for permit

¹ [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 the property beyond the initial lease term.

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

Table 9 shows the aggregate GHG emissions estimate that would occur from Federal leases, existing and foreseeable, between the years 2022 and 2050, using the methodology described above. 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.

Table 9. GHG Emissions from Past, Present, and Reasonably Foreseeable Federal Onshore Lease Development (Mt CO₂e)

State	Existing Wells (Report Year)	Existing Wells (Projected)	Approved APDs	New Leasing	Short-Term Totals	Long-Term Totals
AL	0.51	7.56	0.00	0.18	7.74	15.28
AK	1.31	19.47	23.13	34.70	77.31	39.67
AZ	0.00	0.00	0.00	0.00	0.00	0.00
AR	0.55	8.72	0.24	0.24	9.19	16.63
CA	4.92	67.90	5.93	2.13	75.96	151.15
CO	46.16	399.35	30.80	23.95	454.10	1,395.90
ID	0.00	0.00	0.00	0.29	0.30	0.01
IL	0.01	0.11	0.00	0.02	0.13	0.26
IN	0.00	0.00	0.00	0.02	0.02	0.00
KS	0.26	3.81	0.00	0.11	3.92	7.80
KY	0.01	0.07	0.00	0.03	0.10	0.25
LA	3.84	48.54	44.95	13.11	106.60	115.95
MD	0.00	0.00	0.00	0.00	0.00	0.00
MI	0.07	1.36	0.00	0.58	1.94	2.11
MS	0.12	1.59	0.38	0.38	2.35	3.62
MT	2.52	25.68	0.42	12.63	38.73	77.12
NE	0.02	0.22	0.00	0.03	0.25	0.47
NV	0.13	1.01	0.01	0.19	1.22	4.07
NM	326.00	2,318.83	745.21	119.12	3,183.17	9,961.81
NY	0.00	0.01	0.00	0.00	0.01	0.01
ND	33.32	279.03	57.62	3.57	340.22	1,020.91
OH	0.40	3.83	0.00	4.64	8.47	12.20

State	Existing Wells (Report Year)	Existing Wells (Projected)	Approved APDs	New Leasing	Short-Term Totals	Long-Term Totals
OK	1.25	12.23	0.95	1.66	14.83	37.81
OR	0.00	0.00	0.00	0.12	0.12	0.00
PA	0.00	0.06	0.00	0.67	0.72	0.12
SD	0.11	1.77	0.11	0.11	1.98	3.23
TN	0.00	0.00	0.00	0.00	0.00	0.00
TX	3.31	36.52	19.00	1.97	57.49	99.95
UT	13.90	175.34	16.33	36.75	228.41	421.63
VA	0.01	0.14	0.00	0.03	0.16	0.27
WV	0.00	0.06	0.00	0.59	0.65	0.14
WY	103.34	920.76	178.16	317.98	1,416.91	3,134.55
Total Onshore Federal	542	4,334	1,123	576	6,033	16,523

Source: BLM Annual GHG Report, Section 7

As detailed in the 2022 Annual GHG Report, which the BLM has 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 change and related values for two climate change projection scenarios. These two scenarios were chosen because they most closely approximate or frame the desired outcomes of the Paris Climate Accord and would also reflect the greatest contribution as a percent of BLM's authorized cumulative emissions relative to the global emissions levels contained in the scenarios. IPCC's most optimistic scenario evaluates global CO₂ emissions cut to net zero around 2050. This is the only scenario that meets the Paris Agreement's goal of keeping global warming to around 1.5 degrees Celsius above pre-industrial temperatures. The second "middle of the road" scenario leaves global CO₂ emissions around current levels before starting to fall by 2050 but does not reach net-zero by 2100. In this scenario, temperatures rise 2.7 degrees C by the end of the century. 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.

As this is an assessment of what BLM has projected could come from the entire Federal fossil fuel program, including the projected emissions from the proposed action, over the next 30 years, the reasonably foreseeable lease sale emissions contemplated in this EA are not expected to substantially affect the rate of change in climate effects, bring forth impacts that are not already identified in existing literature, or cause a change in the magnitude of impacts from climate change at the state, national, or global scales.

The most recent short-term energy outlook (STEO) published by the EIA (<https://www.eia.gov/outlooks/steo/>) (EIA, 2023) predicts that the world's oil and gas supply and consumption will increase over the next 18-24 months. The latest STEO projections are useful for providing context for the cumulative discussion as the global forecast models used for the STEO are not dependent on whether the BLM issues onshore leases but are based on foreseeable short-term global supply and demand and include oil and gas development /operations on existing U.S. onshore leases. The most recent STEO includes the following projections for the next two years:

- U.S. liquid fuels consumption is projected to increase to 20.35 million barrels per day (b/d) in 2024 up from 20.15 million b/d in 2023.
- U.S. crude oil production is expected to average 12.9 million b/d in 2023 and rise to 13.5 million b/d in 2024.
- U.S. natural gas consumption is expected to average 89.42 Bcf/d in 2023, decreasing slightly to 89.0 Bcf/d in 2024.
- U.S. LNG exports are expected to increase from 11.8 billion cubic feet/day (Bcf/d) in 2023 to 12.29 Bcf/d in 2024.

Generation from renewable sources will make up an increasing share of total U.S. electricity generation, rising from 22% in 2023 to 24% in 2024. Recent events, both domestically and internationally, have resulted in abrupt changes to the global oil and gas supply. EIA studies and recent U.S. analyses (associated with weather impacts, etc.) regarding short-term domestic supply disruptions and shortages or sudden increases in demand demonstrate that reducing domestic supply (in the near-term under the current supply and demand scenario) will likely lead to the import of more oil and natural gas from other countries, including countries with lower environmental and emission control standards than the United States (EIA, 2023). Recent global supply disruptions have also led to multiple releases from the U.S. Strategic Petroleum Reserve in order to meet consumer demand and curb price surges.

The EIA 2023 Annual Energy Outlook (<https://www.eia.gov/outlooks/aeo/>) projects energy consumption increases through 2050 as population and economic growth outweighs efficiency gains. As a result, U.S. production of natural gas and petroleum and liquids will rise amid growing demand for exports and industrial uses. U.S. natural gas production is expected to increase by 15% from 2022 to 2050. However, renewable energy will be the fastest-growing U.S. energy source through 2050. As electricity generation shifts to using more renewable sources, domestic natural gas consumption for electricity generation is expected to decrease by 2050 relative to 2022. As a result, energy-related CO₂ emissions are expected to fall 25% to 38% below 2005 level, depending on economic growth factors. Further discussion of past, present and projected global and state GHG emissions can be found in Chapter 5 of the Annual GHG Report.

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

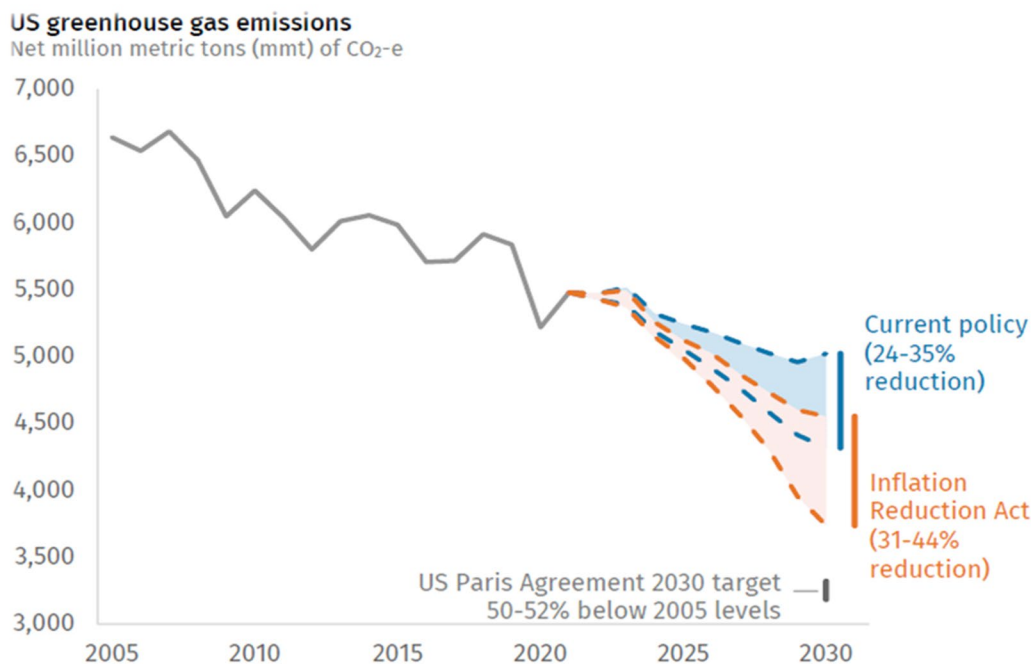
Carbon budgets are an estimate of the amount of additional GHGs that could be emitted into the atmosphere over time to reach carbon neutrality while still limiting global temperatures to no more than 5°C or 2°C above preindustrial levels (see section 9.1 of the Annual GHG Report (BLM, 2023)). The IPCC Special Report on Global Warming of 1.5°C is the most widely accepted authority on the development of a carbon budget to meet the goals of the Paris Agreement. None of the global carbon budgets or pledges that countries have committed to stay within as part of the Paris Agreement are binding. At present, no national or Federal agency carbon budgets have been established, primarily due to the lack of consensus on how to allocate the global budget to each nation, and as such the global budgets that limit warming to 1.5 °C or 2.0 °C are not useful for BLM decision making, particularly at the lease sale stage, as it is unclear what portion of the budget applies to emissions occurring in the United States.

The Council on Environmental Quality (CEQ) discourages Federal agencies from comparing emissions

from an action to global or domestic levels as “such comparisons and fractions also are not an appropriate method for characterizing the extent of a proposed action's and its alternatives' contributions to climate change because this approach does not reveal anything beyond the nature of the climate change challenge itself (CEQ, 2023).” However, 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 represents approximately 1.37 % of the remaining global carbon budget of 380 GtCO₂ needed to limit global warming to 1.5 C.

While continued fossil fuel authorizations will occur over the next decade to support energy demand and remain in compliance with the leasing mandates in the Inflation Reduction Act (IRA) passed in 2022, the U.S. Energy Information Administration International Energy Outlook expects renewable energy consumption to double between 2020 and 2050 and nearly equal liquid fuels consumption by 2050 (See Figure 9). The U.S. has committed to the expansion of renewable energy through infrastructure investments in clean energy transmission and grid upgrades include in the Bipartisan Infrastructure Investment and Jobs Act as well as clean energy investments and incentives included in the Inflation Reduction Act.

Figure 9. Projected Short-Term Emissions Reductions Associated with the IRA.



Source: Rhodium Group. The range reflects uncertainty around future fossil fuel prices, economic growth, and clean technology costs. It corresponds with high, central, and low emissions scenarios detailed in [Taking Stock 2022](#). Under the central scenario (not shown), the IRA accelerates emissions reductions to a 40% cut from 2005 levels.

3.4.6 Mitigation Strategies

The relationship between GHG emissions and climate impacts is complex, but a project’s potential to contribute to climate change is reduced as its net emissions are reduced. When net emissions approach zero, the project has little or no contribution to climate change. Net-zero emissions can be achieved through a combination of controlling and offsetting emissions. Emission controls (e.g., vapor recovery

devices, no-bleed pneumatics, leak detection and repair, etc.) can substantially limit the amount of GHGs emitted to the atmosphere, while offsets (e.g., sequestration, low carbon energy substitution, plugging abandoned or uneconomical wells, etc.) can remove GHGs from the atmosphere or reduce emissions in other areas. Chapter 10 of the Annual GHG Report provides a more detailed discussion of GHG mitigation strategies.

Several Federal agencies work in concert to implement climate change strategies and meet U.S. emissions reduction goals. 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 development related to the proposed leasing action. These regulations include the New Source Performance Standard (NSPS) for Crude Oil and Natural Gas Facilities (e.g., 49 CFR 60, subpart OOOOa) which imposes emission limits, equipment design standards, and monitoring requirements on oil and gas facilities. A detailed discussion of existing regulations and Executive Orders that apply to BLM management of federal lands as well as current Federal and state regulations that apply to oil and gas development and production can be found in Chapter 2 of the Annual Report.

In addition to these Federal regulations, states have also implemented air quality and greenhouse gas regulations for the oil and gas industry. The Montana Board of Oil and Gas Conservation (MBOGC) implements Montana's oil and gas laws by promoting conservation and waste prevention in the recovery of resources; and regulating oil and gas exploration and production. The Montana Department of Environmental Quality (MDEQ) also administers rules and regulations to implement the Montana Environmental Policy Act and the Montana Clean Air Act. MBOGC regulations related to air impacts from oil and gas operations can be found in Title 36, Chapter 22 of the Administrative Rules of Montana (ARM) and include regulation ARM 36.22.1207 which prohibits the storage of waste oil and oil sludge in pits and open vessels. MDEQ rules for oil and gas operations can be found in Title 17, Chapter 8 of the ARM with registration requirements for oil or gas well facilities that include controlling VOC vapors with a 95% or greater control efficiency, loading and unloading of hydrocarbon liquids using submerged fill technology, and equipping internal combustion engines with nonselective catalytic reduction or oxidation catalytic reduction.

The North Dakota Department of Mineral Resources - Oil and Gas Division, regulates the drilling and production of oil and gas including regulations that ban the venting of natural gas and require that vented casinghead gas be burned through a flare (North Dakota Administrative Code 43-02-03-45). The North Dakota Industrial Commission (NDIC) has jurisdiction over the volume of gas flared at a well site to conserve mineral resources and established Order No. 24665 for reducing gas flaring. The Order requires producers to submit a gas capture plan with every drilling permit application. The North Dakota Department of Environmental Quality – Division of Air Quality has established permitting and reporting requirement for oil and gas facilities under North Dakota Air Pollution Control Rules Chapter 33.1-15-20 and submerged fill and flare requirements in Chapter 33.1-15-07.

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 indirect 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. This decision authority is applicable when development is proposed on public lands and BLM assesses its specific location, design, and proposed operation. In carrying out its responsibilities under NEPA, the BLM has developed Best Management Practices (BMPs) designed to reduce emissions from field production and operations. BMPs may include limiting emissions on stationary combustion sources, mobile combustion sources, fugitive sources, and process emissions occurring on a lease parcel. Analysis and approval of future development may include application of BMPs within BLM's authority, as Conditions of Approval or Lease Stipulations, to reduce or

mitigate GHG emissions. Additional measures proposed at the project development stage may be incorporated as applicant-committed measures by the project proponent or added to necessary air quality permits. Additional information on mitigation strategies, including emissions controls and offset options, are provided in Chapter 10 of the Annual GHG Report.

3.5 Issue 3 – Socioeconomic Conditions, Environmental Justice, and Human Health

3.5.1 *Affected Environment*

Environmental Justice is an initiative that culminated with President Clinton’s February 11, 1994, Executive Order 12898 “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” and an accompanying Presidential memorandum. Executive Order 12898 requires the analysis of disproportionately high and adverse human health effects and environmental effects on environmental justice populations. Environmental effects may include “ecological, cultural, human health, economic, or social impacts on minority communities, low-income communities, or Indian tribes when those impacts are interrelated to impacts on the natural or physical environment” (CEQ 1997 page 26) and that each Federal agency consider environmental justice to be part of its mission. Specific to the NEPA process, the EO requires that proposed projects are evaluated for “disproportionately high adverse human health and environmental effects on minority populations and low-income populations.

The Environmental Protection Agency (EPA 2016) guidelines for evaluating the potential environmental effects of projects require specific identification of minority populations when either (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (CEQ 1997). Additionally, the EPA states that “A minority population exists “if there is more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds” (CEQ 1997). For minority populations, the BLM generally defines “meaningfully greater” as 10 percent above the minority population size of the comparison geography. A potential low-income population is identified by the BLM if either 1) low-income populations of the area of analysis exceed 50% of the population, or 2) the low-income population is less than or equal to twice (200%) of the federal “poverty level”. Indigenous communities of concern are present if the percentage of the population identified as indigenous, including non-tribal-affiliated persons who identify as indigenous or a combination of indigenous and another ethnicity, is equal to or greater than that of the reference population(s) (see Federal Interagency Working Group on Environmental Justice and NEPA Committee 2016; BLM 2022).

The social and economic environment of the counties containing the parcels proposed are described in detail in their associated RMP and FEIS. BLM [IM 2022-059](#) (Environmental Justice Implementation) provides minimum requirements for elevating EJ under the National Environmental Policy Act (NEPA). Consistent with BLM IM 2033-059 and the guidance, principles, and practices provided within: 1) EJ is being considered and incorporated in the reviews of all proposed actions, 2) screening is performed to identify minority populations, low-income populations, and Tribes, 3) determinations are made in regard to actions and alternatives that could adversely and disproportionately impact minority populations, low income populations, and Tribes, 4) provide opportunities for meaningful involvement of minority populations, low-income populations, and Tribes in BLM decision-making processes that affect their lives, livelihoods, and health, and 5) examination of EJ during NEPA development, reviews, alternative assessment and potential mitigation measures as part of a land use planning process. This

section provides updated estimates of environmental justice indicators within the study area, which includes all the counties containing the Federal parcels covered in this EA.

When evaluating potential EJ concerns under NEPA, one “may consider as a community either a group of individuals living in geographic proximity to one another, or a geographically dispersed/transient set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect” (CEQ 1997). The reference areas are the states of North Dakota and Montana.

The BLM used the EPA’s EJScreen tool, the headwaters Socioeconomic Profiling Tool (US DOC 2022), and the BLM Socioeconomic Profile (SEP) to collect data presented **Table 10**. Low-income, minority, and indigenous populations exist within the study area and may be disproportionately affected by project actions. Some populations identify as more than one environmental justice indicator and may warrant special attention, outreach, and meaningful involvement.

Table 10. Minority, Low-Income, and Total Populations

Headwaters Economic Profile System and BLM Socioeconomic Profile (SEC)** Data							EPA EJ Screen	
County	Pop. 2000 2022 % change	Race	Pop. By race	% of total pop by race	% total minority population **	% low-income**	% People of color ND average = 16% MT average = 15%	% Low-income ND average = 26% MT average= 32%
North Dakota								
Dunn	3,605 4,015 +11.4%	W	3,282	81.1%	21.7%	18.5%	22%	20%
		B/AA	30	0.7%				
		AI	464	11.5%				
		A	8	0.2%				
		NH/OPI	2	0.0%				
		O	59	1.5%				
		2+	204	5.0%				
		HoLH	253	6.2%				
McKenzie	6,625 13,908 +143.1%	W	11,236	79.8%	24.7%	32.3%	25%	30%
		B/AA	303	2.2%				
		AI	1,507	10.7%				
		A	78	0.6%				
		NH/OPI	0	0.0%				
		O	200	1.4%				
		2+	757	5.4%				
		HoLH	1,488	10.6%				
Mountrail	6,625 9,290 +40.2%	W	5,752	59.6%	43.0%	31.3%	43%	30%
		B/AA	179	1.9%				
		AI	2,946	30.5%				
		A	69	0.7%				
		NH/OPI	12	0.1%				
		O	255	2.6%				
		2+	435	4.5%				
		HoLH	880	9.1%				
Slope	760 672 -11.6%	W	800	95.6%	4.4%	26.6%	4%	23%
		B/AA	0	0.0%				
		AI	9	1.1%				
		A	0	0.0%				
		NH/OPI	0	0.0%				
		O	0	0.0%				
		2+	28	3.3%				
		HoLH	1	0.1%				
Montana								
Big Horn	12,669 12,851 +1.4%	W	3,835	29.3%	73.8%	54.4%	74%	58%
		B/AA	0	0.0%				
		AI	8,525	65.1%				
		A	28	0.2%				
		NH/OPI	0	0.0%				
		O	0	0.0%				
		2+	702	5.4%				
		HoLH	820	6.3%				
Blaine	6,968 6,936 -0.5%	W	3,060	43.5%	56.9%	44.2%	57%	45%
		B/AA	56	0.8%				
		AI	3,636	51.7%				

		A	3	0.0%				
		NH/OPI	0	0.0%				
		O	19	0.3%				
		2+	256	3.6%				
		HoLH	253	3.6%				
Liberty	2,168 1,972 -9.0%	W	1,947	97.7%	2.9%	49.9%	2%	40%
		B/AA	0	0.0%				
		AI	7	0.4%				
		A	0	0.0%				
		NH/OPI	0	0.0%				
		O	7	0.4%				
		2+	32	1.6%				
		HoLH	11	0.6%				
Roosevelt	10,623 10,572 -0.5%	W	3,586	33.2%	67.6%	54.5%	67%	54%
		B/AA	35	0.3%				
		AI	6,298	58.3%				
		A	79	0.7%				
		NH/OPI	1	0.0%				
		O	39	0.4%				
		2+	761	7.0%				
		HoLH	396	3.7%				
Richland	9,619 11,237 +16.8	W	10,278	90.4%	12.3%	26.5%	12%	26%
		B/AA	22	0.2%				
		AI	18	0.2%				
		A	13	0.1%				
		NH/OPI	109	1.0%				
		O	340	3.0%				
		2+	586	5.2%				
		HoLH	658	5.8%				
Rosebud	9,399 8,088 -13.9%	W	4,463	53.7%	48.5%	43.9%	49%	43%
		B/AA	10	0.1%				
		AI	3,176	38.2%				
		A	49	0.6%				
		NH/OPI	1	0.0%				
		O	130	1.6%				
		2+	481	5.8%				
		HoLH	443	5.3%				

W = White alone B/AA = Black or African American alone AI = American Indian alone A = Asian alone NH/OPI = Native Hawaiian or Other Pacific Is. Alone O = Some other race 2+ = 2 or more races HoLH = Hispanic or Latino Heritage
 **For the purposes of this analysis, SEP data does not include Hispanic or Latino Heritage in the percentage of total minority population. See Appendix O

Source: <https://headwaterseconomics.org/apps/economic-profile-system/>, ejsscreen.epa.gov/mapper/, and headwaterseconomics.org/tools/blm-profiles/
 Accessed 11.1.2023.

The counties with proposed parcels in North Dakota have an estimated population of 27,885, counties in Montana have an estimated population of 51,656 as shown on **Table 10** for a combined estimated population of 79,541 (Appendix L). In North Dakota, Mountrail County is the home for American Indian populations that meet the criteria for Environmental Justice populations. In North Dakota 30.5% of the population of Mountrail County are American Indian while North Dakota's overall population of American Indian's represents 4.7% of the total statewide population. Furthermore, the next largest American Indian population existing in the project area resides in Dunn County at 11.5%. Note, the Fort Berthold Reservation of the Three Affiliated Tribes takes in land within the boundaries of McLean, McKenzie, Mountrail, and Dunn counties. Similarly, 10.6% of McKenzie County's population is Hispanic or Latino Heritage (any race), while the percentage of North Dakota's overall population from this cohort is 4.3%. (Appendix O).

In Montana, Big Horn, Blaine, Roosevelt, and Richland Counties are home for American Indian populations

that meet the criteria for Environmental Justice populations. In Big Horn County 65% of the population is American Indian, followed by Roosevelt at 58.3%, Blaine at 52%, and Rosebud at 38% while Montana's overall population of American Indian's represents 6% of the total statewide population. Note, The Crow Indian Reservation covers the majority of lands within the boundary of Big Horn County (64.2%) and the Northern Cheyenne Indian Reservation covers 6.5%; the remainder of Northern Cheyenne Reservation lands are in Rosebud County. The Fort Peck Reservation is within the boundary of Roosevelt County. The Fort Belknap Reservation takes in land within the boundaries of Blaine County and the Rocky Boy's Reservation is in Hill and Choteau counties, adjacent to Blaine County. Half of the counties existing in the project area in Montana have a Hispanic or Latino (any race) population that exceeds 5%, while the percentage of Montana's overall Hispanic or Latino population is 4%. (Appendix O).

Economic Conditions

The social and economic environment of the counties containing the parcels proposed are described in detail in their associated RMP and FEIS. This section focuses upon economic aspects related to the potential Federal oil and gas lease sales.

Mineral rights can be owned by private individuals, corporations, Indian tribes, or by local, State, or Federal Governments. Typically, companies specializing in the development and extraction of oil and gas lease the mineral rights for a particular parcel from the owner of the mineral rights. Federal oil and gas leases are generally issued for 10 years unless drilling activities result in one or more producing wells.

Once production has begun on a federal lease, the lease is held by production and the lessee is required to make royalty payments to the Federal Government.

Table 11. Total and Average Annual Bonus Bid and Rental Payments for Existing Oil and Gas Leases on Non-Indian Federal Mineral Estates (2019-2023)

County	Bonus Bids ¹	Rents	Total	Average Annual
Dunn, ND	\$194,482.00	\$10,152.00	\$204,634.00	\$40,926.80
McKenzie, ND	-\$337,898.10	\$83,327.19	-\$254,570.91	-\$50,914.18
Mountrail, ND	-\$4,851,306.00	\$22,475.00	-\$4,828,831.00	-\$965,766.20
Slope, ND	\$33,196.00	\$61,293.00	\$94,489.00	\$18,897.80
Big Horn, MT	\$41,449.00	\$425,876.91	\$467,325.91	\$193,153.24
Blaine, MT	\$64,256.00	\$47,139.45	\$111,395.45	\$22,279.00
Rosebud, MT	\$469,479.00	\$279,341.70	\$748,820.70	\$149,764.14
Liberty, MT	\$0.00	\$2,880.00	\$2,880.00	\$576.00
Richland, MT	\$435,430.00	\$165,502.32	\$600,932.32	\$120,186.46
Roosevelt, MT	\$129,214.00	\$4,760.00	\$133,974.00	\$26,794.8
Grand Total	-\$3,821,698.10	\$1,102,747.57	-\$2,718,950.53	-\$444,102.14

Source: ONRR data, <https://revenue.data.doi.gov/downloads/federal-revenue-by-location/> accessed 10/11/2023.

¹ 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.

Table 11 provides information on rental and bonus bid revenue from existing oil and gas leases for the county that has parcels nominated for the proposed leasing action. Existing Federal oil and gas leases on Federal non-Indian properties located in these counties produced over \$1.1 million dollars in rental income between 2019 and 2023. 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 the jobs, income, and public revenue generated. Additional details on the economic contribution of Federal fluid minerals are discussed in the RMP and FEIS covering the location of the parcel.

Leasing mineral rights for the development of Federal minerals generates public revenue through the bonus bids paid at competitive lease auctions and annual rents collected on leased parcels not held by production. Nominated parcels approved for oil and gas leasing are offered by the BLM at a minimum bid rate of \$10 per acre at the competitive lease sale. In addition to bonus bids, lessees are required to pay rent annually until production begins on the leased parcel, or until the lease expires. These rent payments are equal to \$3.00 an acre for the first two years, \$5.00 an acre for years 3 through 8, and \$15.00 an acre for the years 9 and beyond (for a lease not held in production). Additionally, Federal oil and gas production in Montana is subject to production taxes or royalties. The Federal oil and gas royalties on production from public domain minerals equal 16.7 percent of the value of production (43 CFR § 3103.3.1).

A portion of these Federal revenues are distributed to the State and counties where the parcels are located. The amount that is distributed is determined by the Federal authority under which the Federal minerals are being managed. Forty-nine percent of Federal revenue associated with oil and gas from public domain lands are distributed to the State. For example, in Montana, 25% of the rental and bonus bid revenues that the State receives are redistributed to the counties of production (Title 17-3-240, MCA). Twenty-five percent of bonus bid, and rental revenues associated with oil and gas development from Bankhead-Jones lands are distributed to counties where the parcels are located. Distribution of Federal royalties and leasing revenues to the State for oil and gas development on other Federal acquired lands differs based upon the authority associated with those lands. Generally, the revenue associated with oil and gas leasing and development that is received by the State and counties help fund traditional county functions such as enforcing laws, administering justice, collecting, and disbursing tax funds, providing for orderly elections, maintaining roads and highways, providing fire protection, and/or keeping records. Other county functions that may be funded include administering primary and secondary education and operating clinics/hospitals, county libraries, county airports, local landfills, and county health systems.

Environmental Justice Populations

Based on **Table 10**, we can determine that Big Horn, Blaine, Liberty, Roosevelt, Rosebud, McKenzie, Mountrail, and Slope counties have a percentage of low-income populations, the percentages are slightly higher than the state average. The low-income, minority, and indigenous communities of potential concern within the analysis area constitute potential populations at risk for adverse health outcomes due to demographic or socioeconomic factors (Headwaters Economics 2024). The EPA has also concluded that the most severe harms from climate change fall disproportionately upon historically underserved communities (EPA 2021b). Aside from ethnicity and poverty status, other factors contributing to increased health risks for potential communities of concern in the analysis area include, but are not limited to, age, education, and employment.

While the determination of potential adverse and disproportionate historical effects from specific previous actions may initially be the assessment of the BLM, this assessment should not be assumed to be the position of specific, potentially affected communities of concern. The BLM realizes that additional adverse impacts may be identified by local communities as specific development locations and types that are proposed. Identified communities of potential concern would also be provided opportunities to identify any perceived adverse environmental and socioeconomic impacts at the time of site-specific analysis during the APD stage. This discussion addresses only the effects for the

issues identified by the BLM during scoping and public comment periods of this specific lease sale. The BLM would continue to work with potentially affected communities of concern to identify and address additional environmental justice issues as they arise.

Potential Populations at Risk for Disproportionate Impacts in the Project Area

Per headwaterseconomics.org, some populations are more likely to experience adverse social, health, and economic outcomes due to their race, age, gender, socioeconomic status, and other indicators, such as language proficiency. The North Dakota and Montana indicators analyzed, in addition to minority and low-income data presented previously, (see Appendix L, N, O) include educational attainment, language proficiency, households receiving public assistance, labor participation, housing affordability, potentially vulnerable households (elderly living alone, single female households, single female households with children), and potentially vulnerable people (noninstitutionalized and disabled or those without health insurance).

While low-income and minority indicators were analyzed to establish an environmental justice baseline for populations in the project area, impacts to these populations can be further exacerbated by other, concurrently present population risk indicators. For example, low-income populations are more likely to have inadequate housing, live and/or work in areas with greater exposure to environmental hazards, have an overall lack of access to resources that leads to poorer health outcomes and a lesser likelihood of having health insurance. Taking the example further, low-income households receiving public assistance may use a larger amount of their household budget to meet the basic necessities of life, including housing, food, and transportation. Housing affordability data is also a useful population indicator for potential disproportionate impacts, as housing affordability typically does not affect all populations equally given variable ratios of monthly income vs. rent or mortgage costs in an area. Last, households with potentially vulnerable populations (including people over the age of 65, single females, and households with children under the age of 18) are more likely to live in poverty, experience food insecurity, tend to be less educated, and are typically disproportionately affected by heat-related illnesses and social isolation. (**Appendix M Populations at Risk**)

Table 12 shows us that potential populations at risk for some disproportionate impacts exist where risk indicator values are greater than respective state averages for educational attainment, labor participation, affordable housing, and potentially vulnerable households and people in nearly all counties within the project area. In all counties excluding Richland the risk indicator values for Educational Attainment exceed North Dakota and Montana's averages of 6.5% and 5.5% respectively. In the category of Language Proficiency Dunn, McKenzie, Mountrail, and Rosebud counties exceed their respective states averages of 0.7% and 0.3%. Dunn, McKenzie, Mountrail, Slope, Blaine, Liberty, Roosevelt, and Rosebud counties exceed the state average in the Supplemental Security Income category. The Labor Participation risk indicator values are greater than the state average in all counties within the project area excluding Richland. Regarding Housing Affordability Dunn, McKenzie, Slope, Big Horn, Blaine, Liberty and Roosevelt counties values exceed the state average in their mortgage cost being greater than 30% of their household income. In the categories of Single female households with children younger than 18 years old McKenzie, Mountrail, Big Horn, Blaine, Liberty, Roosevelt, and Rosebud counties have values greater than the state average. Potentially Vulnerable People with disabilities values exceed the state average in Dunn, Mountrail, Slope, Blaine, Liberty, and Rosebud counties. Lastly, Potentially Vulnerable people without health insurance exceed the state average in Dunn, McKenzie, Mountrail, Big Horn, Blaine, Roosevelt, and Rosebud counties. As previously mentioned, this information can be found in Appendix M.

Table 12. Potential Populations at Risk for Disproportionate Impacts in the Project Area

	Potential Populations at Risk for Disproportionate Impacts in the Project Area			
	Educational Attainment	Language Proficiency	Households Receiving Public Assistance (SSI, Cash, SNAP)	Labor Participation
State Average	ND = 6.5% MT = 5.5%	ND = 0.7% MT = 0.3%	ND = 3.1%, 1.9%, 6.3% MT = 3.7%, 2.6%, 8.6%	ND = 14.0% MT = 18.5%
County				
Dunn	9.4%	2.7%	4.3%, 1.4%, 3.4%	20.0%
McKenzie	7.3%	1.2%	3.2%, 1.5%, 2.7%	19.6%
Mountrail	11.1%	1.8%	5.5%, 0.8%, 4.7%	25.0%
Slope	8.4%	0.0%	6.6%, 2.0%, 4.3%	22.6%
Big Horn	10.7%	0.0%	4.1%, 2.2%, 12.2%	36.7%
Blaine	10.9%	0.3%	7.9%, 8.3%, 13.9%	27.5%
Liberty	23.4%	0.3%	5.0%, 0.7%, 5.8%	31.4%
Roosevelt	6.8%	0.1%	7.0%, 7.5%, 11.1%	41.7%
Richland	4.3%	0.3%	3.0%, 2.5%, 4.7%	16.9%
Rosebud	10.3%	0.9%	5.5%, 5.8%, 10.1%	30.1%
	Housing Affordability	Potentially vulnerable households (>65yo, sf,<18yo)	Potentially Vulnerable People (N+ disabled, N+ no insurance)	
State Average	ND = 19.7%, 36.0% MT = 28.9%, 40.4%	ND = 11.8%, 7.5%, 5.5% MT = 13.4%, 7.8%, 5.1%	ND = 11.4%, 7.2% MT = 14.1%, 8.4%	
County				
Dunn	27.0%, 14.2%	15.8%, 3.8%, 3.1%	14.9%, 18.4%	
McKenzie	24.6%, 26.5%	7.7%, 7.0%, 5.6%	9.8%, 15.7%	
Mountrail	15.9%, 20.8%	7.8%, 8.8%, 6.2%	13.9%, 17.2%	
Slope	34.3%, 14.7%	12.8%, 4.0%, 1.7%	17.9%, 1.9%	
Big Horn	30.7%, 23.0%	10.3%, 17.3%, 12.6%	10.6%, 18.7%	
Blaine	31.0%, 21.1%	13.7%, 17.2%, 12.6%	19.9%, 17.4%	
Liberty	34.1%, 35.4%	26.9%, 7.9%, 5.9%	19.8%, 5.7%	
Roosevelt	33.9%, 28.1%	13.1%, 14.9%, 9.4%	13.8%, 31.3%	
Richland	25.4%, 30.2%	13.5%, 6.4%, 5.1%	13.2%, 7.1%	
Rosebud	25.8%, 26.4%	14.8%, 9.6%, 14.8%	17.9%, 16.4%	
*Educational Attainment - % of the population that <i>has not</i> achieved a high school education or equivalent				
*Language Proficiency - % of people who speak English “not well”				
*Households Receiving Public Assistance – Social Securing Income, Cash assistance, Supplemental Nutrition Assistance Program				
*Labor Participation - % of the population that did <i>not</i> work				
*Housing Affordability – Mortgage > 30% of household income, and Rent > 30% of household income				
*Potentially vulnerable households – greater than 65 years old living alone, Single female households, households with children under the age of 18				
*Potentially vulnerable people – noninstitutionalized and disabled, noninstitutionalized without health insurance				

Source: See Appendix M. Data sources US Department of Commerce, 2022. Census Bureau, American Community Survey Office, Washington DC. <https://headwaterseconomics.org/apps/economic-profile-system/> Accessed 07.10.2023.

Human Health

Literature has indicated that there are many effects to human health associated with oil and gas development, particularly (but not exclusively) in areas that are proximal to high development. Some of these effects are:

- Reproductive harms including birth defects, low birth weight, preterm births, and

miscarriages

- McKenzie et. al (2014) analyzed the associates between density and proximity of natural gas wells within a 10-mile radius of a maternal residence. The study suggested that there was an association between density of and proximity to natural gas wells and increased birth defects.
- Tran, et al (2021) monitored births to mothers in eight California counties between 2006 and 2015 where the individuals were exposed to hydraulic fracturing by at least one well within one kilometer of their residence during pregnancy. The study suggests that although hydraulic fracturing exposure may influence birth outcomes there are other factors involved including urban ambient air pollution that may affect the birth weight and size.
- Respiratory health effects including asthma, lung disease, and breathing difficulty
 - Outdoor air pollutants, including ozone, particulate matter, nitrogen dioxide, and sulfur dioxide, are recognized cause of asthma (Rasmussen et al. 2016).
- Possible disruption of the endocrine system
 - Kassotis, et al (2016) determined that the contamination of surface and groundwater was one source of Endocrine-disrupting chemicals to the human body via contamination of sources of drinking water, the other being air as the route of exposure for humans by means of inhalation exposure from surface spills and associated oil and gas infrastructure.
- Cancer (lung cancer and other types of cancer);
 - Carcinogens associated with oil and gas development include aromatic petroleum hydrocarbons (benzene, toluene, ethyl benzene, and xylenes (BTEX)) and diesel exhausts (Adgate et al 2014).
- Injuries
 - Motor vehicle injuries and fatalities, and other health and safety risks associated with increased vehicle traffic (and the air pollutants it emits) from oil and gas development;
 - The most common type of accident were traffic and single-vehicle rollovers (Adgate et. al 2014);
 - Fatalities from explosions, fires, spills, and leaks;
 - ...the fatality rate is 2.5 times the rate of the construction industry and 7x higher than the general industry rate from 2005 to 2009. Adgate et.al (2014)
- Trauma and psychological stress.
 - Malin (2020) indicates that stressors and mental health from the institutional mechanisms associated with fossil fuel development are associated with 1) uncertainty, due to inaccessible, untransparent information about environmental and public health risks and 2) powerlessness to meaningfully impact regulatory or zoning processes.
- Climate Change and Greenhouse Gases
 - Based on a 100-year global warming potential, future potential development of the nominated lease parcels is estimated to result in 57,565 metric tons of carbon dioxide equivalent (CO₂e) from construction and operation and 3,312,760 metric tons of CO₂e from downstream GHG emissions.

3.5.2 Environmental Effects - No Action Alternative

Economic Effects—No Action Alternative

Under the No Action Alternative, none of the nominated parcels would be offered for sale and no Federal bonus bid or rental incomes would be received for the parcels awarded leases. Existing Federal leases for oil and gas properties would continue to generate rental income.

Environmental Justice and Human Health Effects – No Action Alternative

Under the No Action Alternative, none of the nominated parcels would be offered for sale and no additional disturbance or effects would result from the lack of sale. Under the No Action alternative, it is not anticipated that there would be any specific disproportionate adverse impacts to EJ populations living within the analysis area.

3.5.3 Environmental Effects - Proposed Action Alternative

Economic Effects – Proposed Action Alternative

Under Alternative B, the complete set of proposed parcels would be offered for sale. Those parcels that are successfully leased will generate Federal bonus bid revenue and annual rents, which will be collected on leased parcels not held by production. As described in **Economic Conditions**, these revenues are collected by the Federal government, which then distributes a portion of the revenues collected to the State and counties. The amount that is distributed is determined by the Federal authority under which the Federal minerals are being managed.

Economic Model

The bidding process for the July 2024 lease sale are modeled to follow the minimum bonus bids (\$10 per acre) and rental prices (\$3 per acre in years 1-2, \$5 per acre in years 3-8, and \$15 per acre in years 9 and 10). It is assumed that all the offered parcels successfully sell for these minimum values. This is a conservative assertion. It is assumed that the winning bidder for a lease parcel must pay the first-year rental fees and the bonus bid, and continue to pay all rental fees for the full 10 years of a lease. Over the past several years the inflation-adjusted average bonus bid per acre at MT/DK lease sales has ranged from \$6 to over \$200. Most sales included multiple parcels with winning bonus bids below the new minimum of \$10 per acre and it is unclear how many of these parcels would have been bid on and leased under the updated price schedule.

Table 13. Alt B – Estimated Federal Revenue Associated with the July 2024 Lease Sale

Field Office	County	# Parcels	Total Acres	Rental over 10 Years	Bonus Bid (Min. \$10.00/acre)1,2	Federal	State	County/Local	Total
North Dakota	Dunn	2	9	\$624	\$95	\$367	\$266	\$86	\$719
	McKenzie	1	40	\$2,640	\$400	\$1,550	\$1,125	\$365	\$3,040
	Mountrail	4	547	\$36,103	\$5,470	\$21,202	\$15,382	\$4,989	\$41,573
	Slope	5	935	\$61,735	\$9,354	\$36,255	\$26,303	\$8,531	\$71,089
	FO/ND Total	12	1,532	\$101,102	\$15,319	\$59,375	\$43,076	\$13,970	\$116,421
Havre	Liberty	1	40	\$2,640	\$400	\$1,550	\$1,125	\$365	\$3,040
	Blaine	1	522	\$34,430	\$5,217	\$20,220	\$14,669	\$4,758	\$39,646
Miles City	Big Horn	2	1,200	\$79,200	\$12,000	\$46,512	\$33,744	\$10,944	\$91,200
	Roosevelt	6	1,692	\$111,685	\$16,922	\$65,590	\$47,585	\$15,433	\$128,607
	Richland	4	360	\$23,762	\$3,600	\$13,955	\$10,124	\$3,283	\$27,362
	Rosebud	2	229	\$15,099	\$2,288	\$8,868	\$6,433	\$2,086	\$17,387
	FO/MT Total	16	4,043	\$266,816	\$40,427	\$156,694	\$113,680	\$36,869	\$307,243
Total		28	5,575	\$367,918	\$55,745	\$216,068	\$156,756	\$50,840	\$423,664

In this analysis, Federal leasing revenue estimates (lease rent and bonus bids) are based upon the number of acres being offered. There are no guarantees that any of the parcels offered for lease will receive bids, and 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, in this analysis revenue estimates are limited to the direct effects of leasing and are calculated under the following assumptions:

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

The estimates based upon these assumptions are provided in **Table 13** Alternative B would generate bonus bids totaling \$55,745 and annual rental income totaling \$367,918. The total value of all rentals and bonus bids received over 10-year leases for all parcels would be \$423,664.

As noted above, Federal rental income and bonus bids from the lease sale described in Alternative B would be shared with the State and county where the parcel is located. During the term of these leases the Federal government would collect \$216 thousand in revenue while the states would collect \$207 thousand, and the analyzed ND and MT counties and local governments would receive a combined \$51 thousand from the new leasing. State and county revenues to ND total \$116 thousand while in MT state and local governments additional revenues total \$307 thousand.

Environmental Justice and Human Health Effects – Proposed Action Alternative

The reasonably foreseeable development (RFD) scenario for the proposed action is 8 oil and/or gas wells for all parcels nominated (See **Table 2** and **Appendix D**) for the North Dakota Field Office, Havre Field Office, Miles City Field Office, (Dunn, McKenzie, Mountrail, Slope, Blaine, Liberty, Big Horn, Richland, Rosebud, Roosevelt counties). Unique properties could exist near the proposed lease parcels. It is undetermined at this time if these properties are residences, and if so, if the residences are occupied as of the date of this analysis. For all parcels, an attempt to mitigate any disproportionately high and adverse human health and environmental effects of development near these residences is required through the application of 43 CFR § 3101.1-2. The setback requirement from residences or occupied dwellings of 500 feet (152.4m) stems from 43 CFR § 3101.1-2 Surface Use Rights, where the Authorized Officer may require reasonable measures to minimize adverse effects to other resource values, land uses, and uses not address in lease stipulations at the time operations are proposed. 43 CFR § 3101.1-2, Surface Use Rights, allows the authorized officer to move the proposed operations as far as 656 feet (200m) from the proposed action. This lease notice is also applicable to all related facilities. Additionally, Standard Lease Notice STD 16-3 specifies that development is generally restricted within a quarter mile of occupied dwellings and within 500 feet of riparian habitats and wetlands, perennial water sources (rivers, springs, water wells, etc.) and/or floodplains. Intensity of impact is likely dependent on the density of development and surrounding, proximal populations.

The likelihood of additional disproportionately high and/or adverse human health and environmental effects to the identified populations is quite low, based on the reasonably foreseeable development

scenarios for all parcels. Many of the human health issues identified above are associated with populations who live in close proximity to dense, long-term oil and natural gas development. The studies referenced analyzed rural populations that are comparable or larger than many of the largest cities in the states of North Dakota and Montana although the effects of living in close proximity to oil and natural gas development cannot be discounted, these scenarios may not be the case in this lease sale. Although the counties included in this sale have at-risk, low income, and minority populations (SEP data, **Table 10**), oil and natural gas development in these areas would affect only immediately proximal communities or residences for a short period of time to a likely smaller degree.

While the determination of potential adverse and disproportionate effects from specific actions may initially be the assessment of the BLM, this assessment should not be assumed to be the position of specific, potentially affected communities of concern. The BLM realizes that additional adverse impacts may be identified by local communities as specific development locations and types are proposed. Therefore, identified communities of concern would be provided opportunities to identify any perceived adverse environmental impacts at the time of site-specific analysis during the APD stage. As a result, this discussion assesses only the effects for the issues identified by the BLM. The BLM would continue to work with potentially affected communities of concern to identify and address additional EJ issues as they arise.

Potential adverse impacts associated with oil and gas developments can be different for different communities. As discussed previously, the populations displaying higher risk indicators (presented in **Table 12**) are more likely to experience adverse health outcomes due to the presence of these indicators including educational attainment, language proficiency, households receiving public assistance, labor participation, housing affordability, potentially vulnerable households, and potentially vulnerable people. Therefore, immediately proximal communities of potential concern may be more sensitive to the impacts from potential health and safety risks associated with future potential and proximal development of the lease parcels relative to immediately proximal non-EJ communities. Similarly, quality of life impacts could be greater for the residents or communities in close proximity to future potential development. As stated above, it is possible that there are unique properties near of the proposed lease parcels. It is undetermined if these properties are residences, and if so, if the residences are occupied as of the date of this analysis. It should be noted that the proposed lease parcels are located in remote rural areas.

Air quality, greenhouse gases, climate change, and water use and availability are all issues that could potentially disproportionately affect the populations identified in **Table 10** and **Table 12**. Fugitive dust and diesel exhaust emissions from construction would result in criteria pollutant, VOC, and HAP emissions in the short-term. These emissions would occur for 30-60 days and would most likely impact locations near where these activities occur. Air quality impacts and associated health impacts can disproportionately affect potential populations of concern in the analysis area who are already socially vulnerable and likely have greater difficulty accessing healthcare facilities, paying for medical treatment, and typically have a higher propensity for pre-existing health conditions (EPA 2021b). While any climate change-related effects from the future potential development of the parcels themselves would be minimal, climate change is the result of collective and global actions. Any climate change-related impact would be regional in nature but may still disproportionately affect individuals within potential communities of concern in the analysis area who are already vulnerable (EPA 2021b). While any climate change-related effects from the future potential development of the parcels themselves would be minimal, climate change is the result of collective and global actions. Any climate change-related impact would be regional in nature but may still disproportionately affect individuals within potential communities of concern in the analysis area who are already vulnerable (EPA 2021b).

Groundwater resources are also regional in nature and water withdrawals are not anticipated to affect domestic water sources (see section 3.6 for water resources discussion). Any impacts to local water

wells (for example, a spill that affects groundwater) could force residents to find other means of supplying water for domestic or agricultural use. Best Management Practices (BMPs) and Conditions of Approval (COAs) to an APD would be implemented to minimize this risk. Should a spill occur, the BLM would work with operators to immediately remediate spills in accordance with federal and state standards. See appendices A and B for applied stipulations.

Additional analysis of potential disproportionately adverse impacts, including to human health and safety, would be conducted at the time of proposed lease development. When evaluating placement of wells at the lease development stage, standard design features, standard terms, BMPs, and COAs applied at the time of APD approval could include additional measures to reduce health and safety effects on nearby communities of potential concern. Future potential development would also be subject to relevant rules and regulations (federal and state) regarding public health and safety.

3.6 Issue 4 – Water Resources

What are the direct, indirect, and cumulative effects of potential oil and gas development, including hydraulic fracturing, on parcels that may be offered for lease on surface and groundwater quality and quantity?

BLM Montana/Dakotas developed a hydraulic fracturing (fracking) white paper that describes industry practices commonly associated with fracking, as well as regulations designed to protect water resources. This white paper is included as **Appendix F** to this EA, and the information is incorporated by reference into this water resources analysis.

Montana Department of Natural Resources and Conservation and North Dakota Office of the State Engineer & State Water Commission regulate the right to use surface and groundwater in their respective states. State laws require that water rights be established for all beneficial uses of water, including that used for oil well development (drilling and hydraulic fracturing). Depending on location, new water rights or changes to existing water rights may apply (http://dnrc.mt.gov/divisions/water/water-rights/docs/oil-gas/water_options_oil_development.pdf).

In addition, the states administer 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 Antidegradation 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 CFR Section 131.12(a)). Waste water will be disposed of in accordance with state, local and federal regulations, including HB1409-38-11.2-07 (North Dakota) and [ARM Rules 36.22.1005 & 36.22.1226](#) (Montana).

BLM surface and split estate parcels would be subject to management decisions contained in their applicable Land Use Plan or Resource Management Plan including the 1988 North Dakota RMP, the 2015 Rocky Mountain Region Record of Decisions and the applicable Approved Resource Management Plans, the HiLine ARMP and FEIS of September 2015, the Miles City ARMP and FEIS of September 2015, and the 2023 Draft MCFO SEIS. These RMPs designate areas open or closed to fluid mineral leasing and assigns standard terms and conditions as well as stipulations to conserve water resource values.

3.6.1 *Affected Environment*

Surface Landcover

The 27 lease parcels (5,574.46 acres) associated with the July 2024 lease sale are located in McKenzie,

Mountrail, Slope, and Dunn counties in North Dakota (11 parcels), and Rosebud, Richland, Roosevelt, Liberty, Blaine and Big Horn counties in Montana (16 parcels).

Dunn, McKenzie, Mountrail, Slope Counties

The 12 parcels in North Dakota are located in the Little Missouri National Grassland (LMG) that encompasses about 1.0 million acres in the western region of North Dakota. The LMG is divided into two ranger districts: the McKenzie District in the north and the Medora District in the south. The applicable lease parcels on the July 2024 lease sale are located in the McKenzie District, and all are within the two Geographic Areas: the Badlands Geographic Area and the Rolling Prairie Geographic Area. The semi-arid continental climate of both geographic areas consist of erratic precipitation, but averages about 15 inches per year, with about half of that precipitation falling from May through July. Short but intense thunderstorms, sometimes accompanied by hail, are a frequent occurrence between April and September. Moisture deficits are critical during the summer months. Drought cycles are typical, some lasting as long as 10 to 15 years. Yearly temperatures range between -35°F to 100°F. Snowfall averages about 30 inches per year, but winds, averaging about 10 miles per hour, usually create deep accumulations in draws.

The topography of the Badlands Geographic area includes intricately dissected drainages and draws dropping from grassy ridgelines or butte-like hills and color-banded mounds typical of a badlands landscape. Large slumps and earth flows, typical of a highly erodible landscape, can also be identified. Small inclusions of rolling prairie are also typical of this geographic area. Multi-layered soils are extensively exposed as are soft rock or rock-like substances such as siltstones, clay stones, shale, and sandstones. Other erosion-resistant rocks, such as lignite seams and scoria, are also prevalent. “True” badlands, characterized by largely unvegetated slopes greater than 40 percent are found within this geographic area. Butte escarpments provide unique locations of biologic, geologic, cultural, and archaeological resources.

The topography of the Rolling Prairie Geographic area is characterized as nearly level to rolling hills with some inclusions of scattered buttes and badlands landscapes. The soils are quite well developed and stable and occur beneath a fairly consistent mosaic of grass cover. Butte escarpments provide unique locations of biologic, geologic, cultural, and archaeological resources. Elevations for both geographic areas range from about 1,800 feet above sea level near Lake Sakakawea to about 3,500 feet above sea level atop some of the more prominent buttes.

The desired landscape condition is to maintain the undeveloped character and scenic integrity of the badlands and maintain streams in properly functioning condition or in an upward trend. Long-term soil productivity and properly functioning water cycles are maintained. Properly functioning water cycles are characterized by high infiltration rates, low soil compaction, and minimal overland flows. Energy flow and nutrient cycling are functioning properly to maintain diverse, native plant and animal communities.

Richland and Roosevelt Counties

Richland and Roosevelt Counties border North Dakota in northeastern Montana. Elevations ranges from 1,800 feet near the Yellowstone and Missouri Rivers to about 2,900 feet. The Yellowstone river runs north and east across the county and the Missouri River marks the northern border of Richland County; The Missouri River is the southern border of Roosevelt County. Average temperature is 44°F, and precipitation averages 14 inches per year. Snowfall accumulates November through April and averages 24 inches.

The land in these counties can be described as Great Plains mixed-grass Prairie, as there are rolling hills intermittent with vast, wide, glaciated plains. Grasses that typically comprise this area include western wheatgrass, thickspike wheatgrass, green needlegrass, blue grama, and needle and thread. Forb diversity is typically high. In areas where sagebrush steppe borders the mixed grass prairie, common plant associations include Wyoming big sagebrush. Wooded draws are found closer to steep slopes or canyon bottoms and

support deciduous trees like green ash and chokecherry. These wooded areas provide habitat for several bird species, small mammals, and deer.

Soils are generally smectitic, well drained, clayey or loamy. Many of the coarse textured soils have exposed caprock sandstone formations; These soils can be highly erodible, leading to badland-type landscapes that have highly eroded, rugged landforms with sparse vegetation.

Blaine and Liberty Counties

The planning area associated with the Hilina RMP consists of mainly grassland ecosystems that have, in places, been converted to agriculture. Known as the Northwestern Glaciated Plains ecoregion, and more specifically the North Central Brown Glaciated Plains (Liberty and Hill counties) and the Glaciated Northern Grasslands (Blaine and Toole counties), about 60% of the lands on the Hilina remain in native vegetation, with approximately 25% of these lands being managed by the BLM.

The topography of the Northwestern Glaciated Plains region is generally level towards the east and irregular towards the south as this area represents the southern boundary of the continental glaciation and soils are derived from glacial drift. Hummocky moraines locally occur and are characterized by seasonal and semi-permanent ponds and wetlands. Land use is devoted to cattle ranching and farming.

Although changes in terrain, land use, surficial deposits, and soils are evident throughout the Northwestern Glaciated Plains region, it is understood that the general ecoregion extends eastward from the foothills of the Rocky Mountains for hundreds of miles. Dark brown soils are used for crops and range, important for grain farming and grazing. Groundwater can be taken from glacial alluvial deposits and bedrock. (gaftp.epa.gov).

Linear features on the Hilina include roads, railroads, trails, and irrigation systems, including flood control reservoirs and associated water distribution systems. Many of the smaller flood control reservoirs are part of a larger prairie river system that are usually direct tributaries of the Missouri and Yellowstone rivers. Low to mid elevation locations channel rivers with a low gradient into long runs and continuous pools, where many creeks and streams appear to be ephemeral. Substrate characteristics are typically cobble/pebble riffles, when present, and can include large woody debris, deep pools, and undercut banks. ([MT Field Guide, Medium Prairie River](#))

Big Horn and Rosebud Counties

Big Horn and Rosebud Counties are in the southeastern portion of the state and are associated with Great Plains mixed-grass Prairie and northern Rocky Mountain foothills (south-central and southwest areas of Big Horn County). Average precipitation for this area is 12 inches, and snowfall is an average of 28 inches. The Big Horn River is the largest river in Big Horn County, and begins near Fort Smith and continues north/northeast where it joins with the Yellowstone River which is the largest river in Rosebud County..

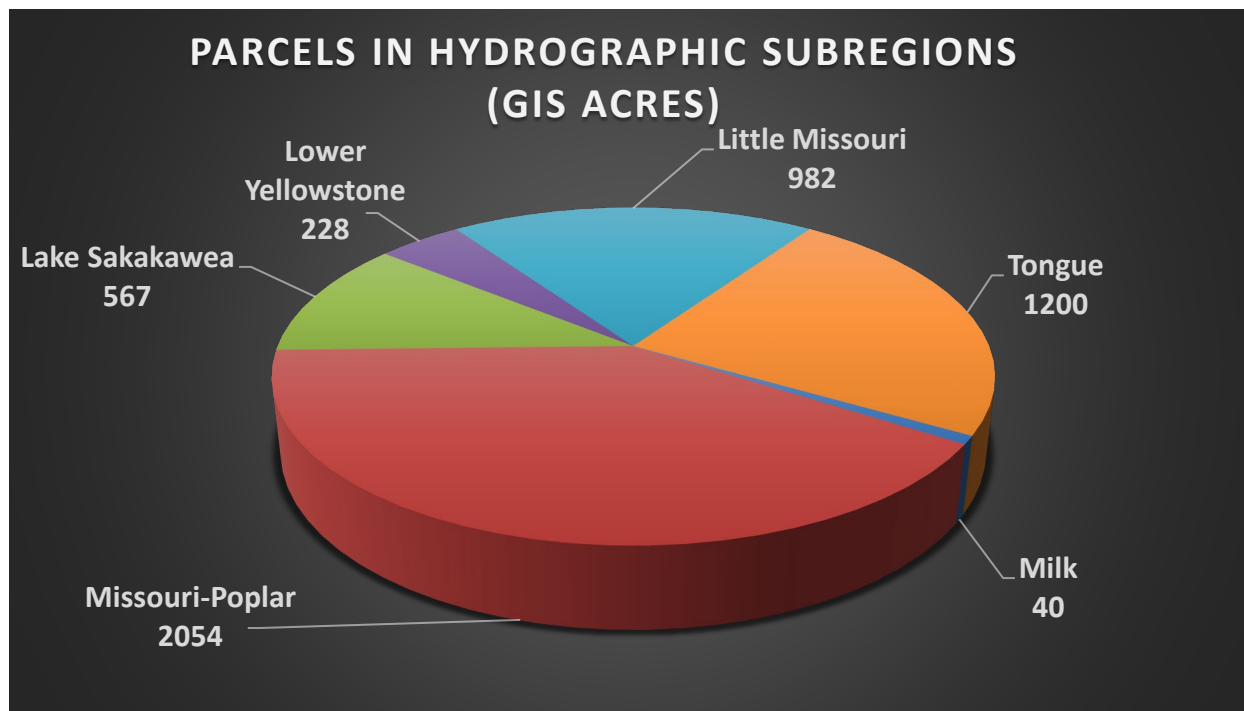
The majority of the county's natural historic plant communities are dominated by western and thickspike wheatgrass, bluebunch wheatgrass, green needlegrass, little bluestem, big sagebrush, and various forbs. Herbaceous shrubbery in bottomlands or subirrigated sites include willow, rose, chokecherry, and buffaloberry.

The topography of these counties varies, as the lands can be gently sloping to very steep coulees or canyons. Soils are considered to be well drained, sandy, loamy, and clayey textured. These soils were formed in semi-consolidated sedimentary beds, baked sandstone, loamy textured, and derived mainly from limestone or dolomite on hillslopes.

Surface Water

Lease parcels associated with the July 2024 lease sale are distributed throughout the hydrographic subregions (HUC-6) identified in **Figure 6** below. Of these subregions, 40% percent of the leasable area is located in the Missouri-Poplar subregion, 24% percent is in the Tongue subregion, 19% percent is in the Little Missouri subregion, 11% is in the Lake Sakakawea subregion, 4% in the Lower Yellowstone subregion, and less than 1% is in the Milk subregion.

Figure 10: Distribution of Lease Parcels throughout the Hydrographic Subregions associated with the July 2024 lease sale. (Note: Subregions represent the 4-digit hydrologic unit codes associated with the USGS' Watershed Boundary Dataset, 2017)



Most of the consumptive water use in the region comes from surface water, which is especially critical for agricultural operations. According to the National Hydrography Dataset (NHD High_92V.210), the parcels contain approximately:

- 0 miles of perennial streams
- 20.3 miles of intermittent/ephemeral streams
- 3.2 mile of canals and ditches
- 1.2 acres of intermittent lakes/ponds
- 549 acres of perennial lakes/ponds
- 0 springs and seeps
- 0 acres of swamp/marsh

Numerous lease parcels in North Dakota and Montana ND-2024-07-6850, 0734, 0735, 6871, 6870, MT-2024-07-0402, and 0401 are within the high-water marks of the Missouri River, Cottonwood Lake, or Lake Sakakawea. Access to mineral interests on this lease parcel will have to be accessed by directional or horizontal wells that are already commonly used in the surrounding acreage. The remaining lease parcels are not within the 100-year floodplain as mapped by the FEMA flood hazard maps or within the high-water marks of the Missouri River. All parcels are within areas defined as “Areas of Minimal Flood Hazard” or in areas

that have not been mapped for flood hazards by FEMA. Mapping by FEMA is incomplete across the majority of these leases, especially in remote areas where impacts to life and property are limited (relative to areas with more substantial human development). Site specific assessments of flood hazard would be completed for any subsequent Surface Use Plan of Operations.

The BLM has identified project area surface waters, including streams, tributaries, lakes, and emergent wetlands; the lands are reflected in **Appendix P** in association with each parcel. Riverine systems include wetlands contained within a channel with the exception of those wetlands dominated by trees, shrubs, persistent emergent, emergent mosses, or lichens. Water is usually, but not always, flowing in the riverine systems. Emergent wetlands, scrub-shrub wetlands, and forested wetlands may occur adjacent to the riverine system. (FWS.gov)

Stressors and impairments

Streamflow in the area varies seasonally, with the largest flows commonly occurring in the spring or early summer. Water quality is often indirectly tied to streamflow, as it is largely dependent on the relative contributions of runoff and groundwater. Water quality affects the degree to which water can be used for a beneficial use and monitoring indicates that water quality in the region has been affected by a suite of factors; While the sources of water quality impairment vary considerably among waterbodies, nonpoint source pollution, nutrients, stream alteration, total suspended solids and metals are often listed as the primary causal factors, 2020; *North Dakota Integrated Section 305(b) Water Quality Assessment Report, 2018. Montana DEQ 2020 Final Water Quality Integrated Report.*

Groundwater and Consumptive Uses

Groundwater plays an important role in meeting regional demands for water and the type, source, and volume of water varies within and between hydrographic subregions. For example, while less than three percent of water diverted in Montana for beneficial uses in calendar year 2000 was from groundwater, 95 percent of the rural, self-supplied domestic systems operate on groundwater sources (Montana Department of Natural Resources, *Water Fact Sheet #4*). Local groundwater conditions within the vicinity of the lease parcels are highly variable and the quality and availability of groundwater varies greatly across the region. Residents commonly get their groundwater from aquifers consisting of unconsolidated, alluvial valley-fill materials, glacial outwash, consolidated sedimentary rock formations, and some coal beds.

Aquifers in Western Montana are typically in unconsolidated, alluvial valley-fill materials within intermontane valleys. These intermontane valley aquifers often yield relatively large quantities of high-quality water to relatively shallow water wells. Conversely, within the Northern Great Plains (eastern Montana & Western North/South Dakota), bedrock aquifers are often an important source of groundwater (especially in the non-glaciated zone). These aquifers generally support low-producing domestic and stock water wells that have relatively poor water quality from deep beneath the earth's surface (100's of feet).

Aquifers associated with preglacial alluvial channels, however, are also an important source of water, especially in the non-glaciated areas of the Northern Great Plains. Similarly, alluvial terrace deposits associated with modern streams often provide groundwater for nearby domestic, stock, and municipal uses, especially along the Yellowstone and other larger rivers in the region. In fact, across the lease area, groundwater stored in modern alluvial stream deposits often represents the most reliably productive aquifers. This is noteworthy, as unconfined aquifers are also among the most susceptible to contamination because they tend to lack confining layers that would otherwise slow/halt the transmission of contaminants from the surface and shallow subsurface directly into the aquifer.

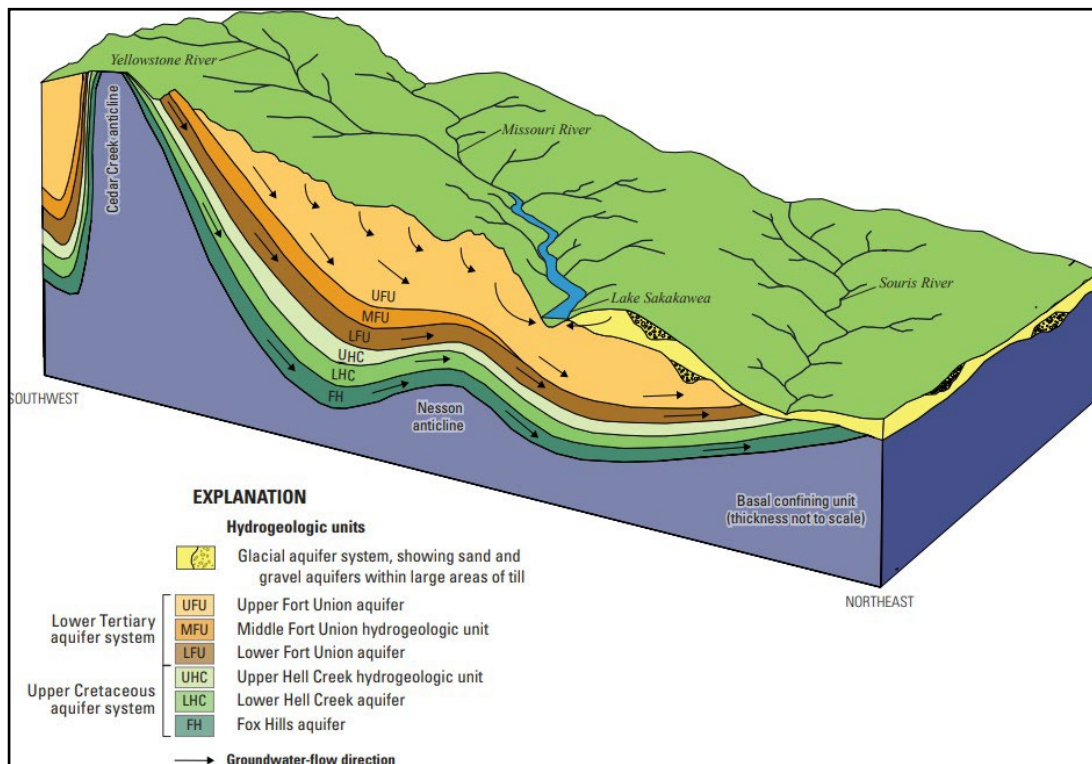
The Williston Basin aquifer is often divided into three units; the uppermost glacial till, lower Tertiary, and the Upper Cretaceous. These three aquifer systems cover 91,000 square miles throughout the Williston Basin

with a maximum thickness of 2,900 feet deep in the center and thinning towards the edge of the basin. It is underlain by 800 – 3,000 feet of relatively impermeable marine shales that serve as the basal confining unit. The main components of recharge to groundwater are precipitation and infiltration from streams and reservoirs. Most groundwater discharge is to streams and reservoirs, groundwater pumping is a small part (less than 5 percent) but increasing withdrawals from 1960-2005 have caused groundwater levels to drop locally. (USGS Groundwater availability of the Williston Basin, 2018), (Potential effects of energy development on environmental resources of the Williston Basin in Montana, North Dakota, and South Dakota — Water resources: U.S. Geological Survey Scientific Investigations Report 2017–5070–C). (Potential effects of energy development on environmental resources of the Williston Basin in Montana, North Dakota, and South Dakota — Water resources: U.S. Geological Survey Scientific Investigations Report 2017–5070–C).

Most water used in hydraulic fracturing comes from surface water sources such as lakes, rivers, and municipal supplies. As of 2018 industrial water use which includes hydraulic stimulation made up 10.1% of all consumptive water use within North Dakota. North Dakota's Office of the State Engineer is responsible for managing the State's water resources as directed under Chapter 61-04 of North Dakota's Century Code, and Article 89-03 of the State Administrative Code. Water intended for hydraulic stimulation requires a temporary water permit which necessitates a point of diversion review by a state hydrologist which is either granted or denied based on Chapter 61-04-06. Temporary water permits and reviews are publicly available under the ND.GOV website (https://www.swc.nd.gov/reg_approp/waterpermits/)

The amount of water used in hydraulic fracturing, particularly in shale gas formations, may appear substantial but is often small when compared to other water uses such as agriculture and municipal supply. Groundwater can be used to augment surface water supplies where it is available in sufficient quantities; however, in 2013 the North Dakota office of the State Engineer formalized a policy that restricted industrial uses from utilizing groundwater from the Fox Hills Aquifer. This policy had already been enforced on a case- by-case basis since the early 1980's. (Wanek 2009; pg.90) This aquifer has sufficient hydraulic head to naturally flow to the surface without the use of pumps and ranchers have drilled approximately 500 wells into this aquifer to water livestock in the western part of North Dakota, allowing the watering of livestock in areas with no electrical infrastructure. The rate of decline of hydraulic head has decreased at 1.5-3ft per year since 1995 centered in McKenzie County North Dakota (Wanek 2009). In the next 100 years it is expected that the majority of these naturally flowing wells will cease to flow.

Figure 11. Groundwater aquifers and flow in the Williston Basin region (From Long et al., 2018)



The BLM frequently receives comments asking for an alternative that would protect usable groundwater, defined under the Safe Drinking Water Act as an aquifer with water that contains less than 10,000 mg/L (10,000 ppm) of total dissolved solids. However, a separate alternative to protect usable groundwater is not warranted because protection of groundwater would be required for any APD that is approved on a lease parcel. Authorization of proposed projects would require full compliance with local, state, and federal directives and stipulations that relate to surface and groundwater protection, and the BLM would deny any APD that proposes drilling and/or completion processes that are insufficient to protect of usable water, as required by 43 CFR § 3162.5-2(d). Any proposed drilling/completion activities would have to comply with Onshore Order No. 2, 43 CFR § 3160 regulations, and not result in a violation of a Federal and/or State laws that prohibit degradation of surface or groundwater quality.

Lease parcels for the July 2024 lease sale parcels within Richland, Roosevelt, Mountrail, McKenzie, Slope, and Dunn counties are within the Williston Basin development area. The parcels in Slope County are likely intended for horizontal well development in the Bakken, Three Forks, or Red River formations. The lone parcel in Liberty County is likely related to vertical helium exploratory development. The parcel in Rosebud County is being leased due to administrative purposes. The parcels in southern Big Horn County will likely be used for Niobrara or deeper horizontal well development.

Williston Basin:

Parcels for the July 2024 lease sale within Richland, Roosevelt, Mountrail, McKenzie, Slope, and Dunn counties are part of the Williston Basin unconventional Bakken/Three Forks development area. The probable development scenario is continued horizontal well development within the Bakken and Three Forks formations.

Due to the large number of wells and increasing activity in this area; only well data after 2014 was used to display in the graph. Older data was considered and looked at but the amount of development and focus on

the Bakken and Red River since 2010 has not changed and we don't foresee it to change in the immediate future. **Figure 12** shows a large number of wells at >10,000ft measure depth. These are all horizontal Bakken Oil and Gas (OG), Three Forks, or Red River wells. There have also been wells drilled to ~5000ft that are used as saltwater disposal injection (SWD) wells into the Cretaceous sand intervals.

Figure 12. Graph of total depth of Oil and Gas wells within 5 miles of July 2024 North Dakota parcels colored by use. Saltwater disposal wells start at approximately 5000'ft or deeper. Wells 10,000ft or deeper are targeting the Bakken and Three Forks formation

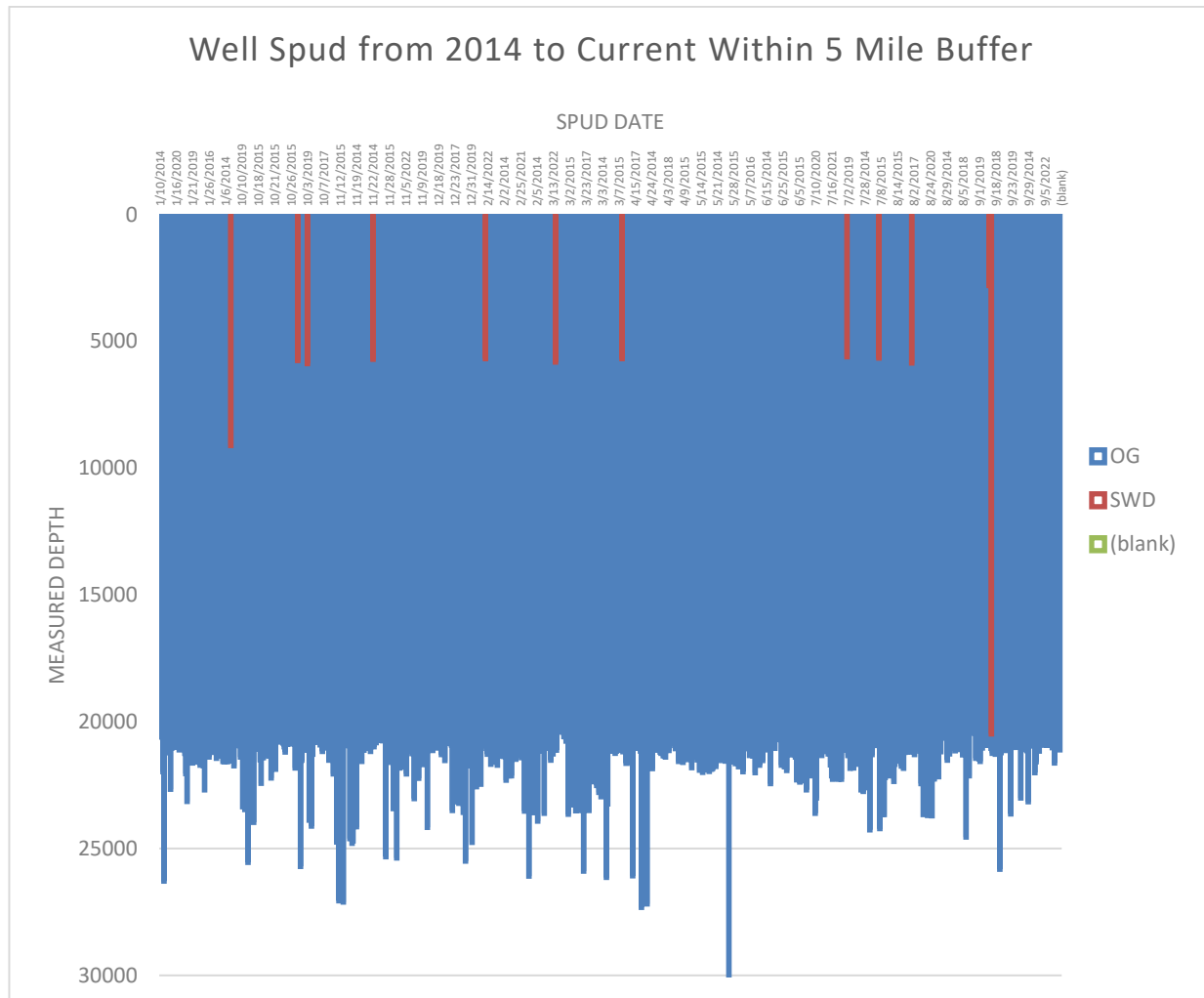
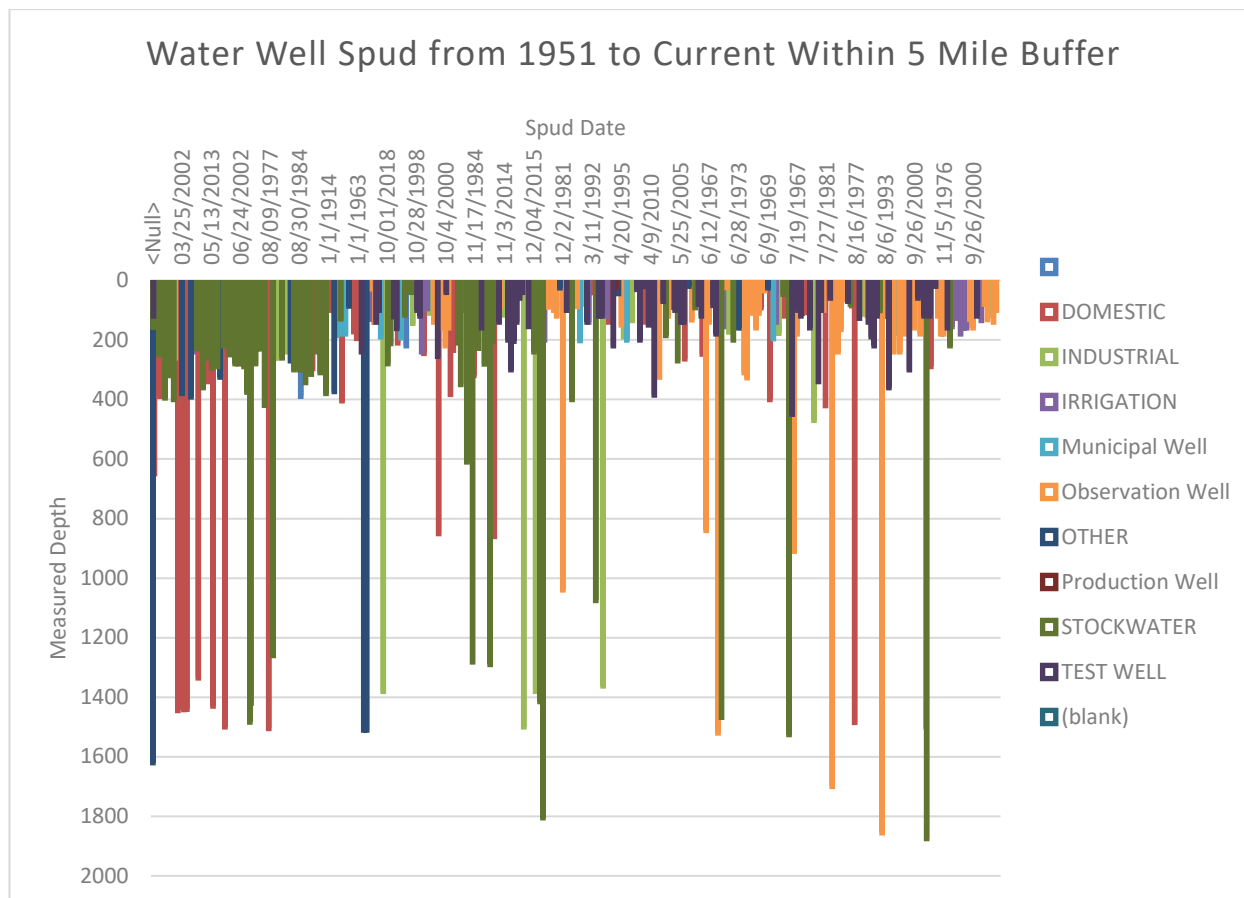


Figure 13 shows surrounding consumptive use groundwater wells that are 1000's of feet shallower than the horizontal well development in Williston Basin. Water wells within 5 miles of these lease parcels are all <2000ft deep.

Figure 13. Graph of total depth of water wells within 5 miles of July 2024 North Dakota lease parcels colored by use.



Slope County:

The parcels in Slope County are on the western edge of the Williston Basin outside of the likely development area. These parcels are also east of the Cedar Creek anticline which produces from the Charles, Mission Canyon, Duperow, and Red River formations. There are 3 oil fields that are within 3 miles of these lease parcels. The fields all produce from the Red River formation, contain 1-3 wells, and were generally not economically successful.

Bull Run Field: Drilled in the early 1980's with conventional vertical oil wells. Produced from the Red River formation. Total of 3 producing oil wells that have been plugged since 2012.

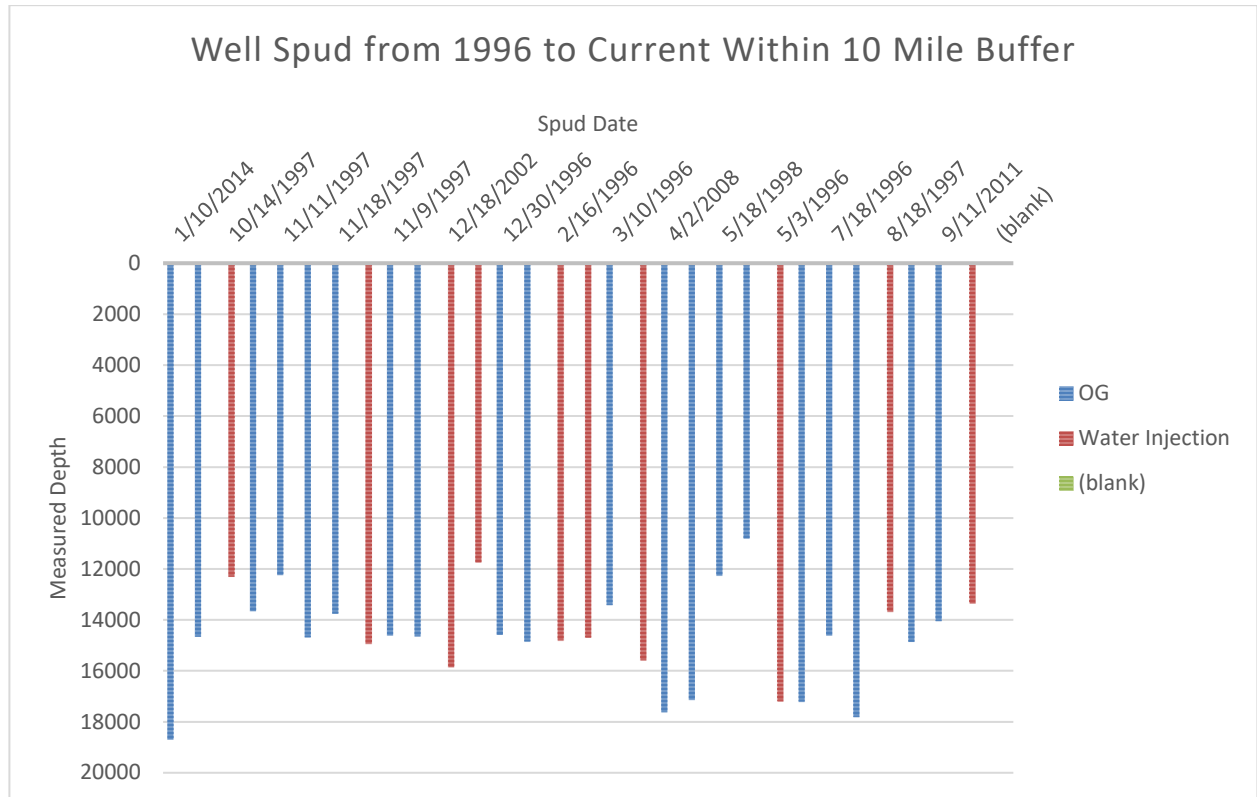
Cash Field: Drilled in the early 1980's with conventional vertical oil wells. Produced from the Red River formation. Single producing well that was plugged in 1999.

Cannonball Field: Drilled in the early 1980's with conventional vertical oil wells. Produced from the Red River formation. Single producing well that was plugged in 1984.

Probable development scenario for parcels in Slope County will likely be into the Red River based on the surrounding development with either vertical or horizontal wells. The Cedar Creek anticline was initially developed with vertical wells and have since been drilled with horizontal wells as the technology has allowed. The Red River formation is well below any useable groundwater wells in the area.

Due to the lack of well data in the area, all wells after 1996 were looked at within a 10-mile radius. **Figure 14** shows oil wells at >10,000ft measure depth. These are all horizontal Bakken Oil and Gas (OG), Three Forks, or Red River wells, either for Oil & Gas production or secondary injection.

Figure 14. Graph of total depth of Oil and Gas wells within 10 miles of July 2024 parcels colored by use. Wells 10,000ft or deeper are targeting the Bakken/Three Forks formations or Red River dolomites.



Water wells within 5 miles of these lease parcels are all <2500ft deep. **Figure 15** shows surrounding consumptive use groundwater wells are 1000's of feet shallower than the horizontal well development in Williston Basin.

Water Well Spud from 1955 to Current Within 10 Mile Buffer

Measured Depth

Spud Date

1/1/1905 1/1/1967 10/12/2011 10/24/1966 10/5/1964 11/17/1972 12/30/1972 5/15/1964 6/16/1960 6/22/1970 6/24/1971 6/29/1964 6/5/1964 7/14/1977 7/18/1972 7/30/1976 7/5/1966 7/8/1975 8/3/1976 9/19/1967 (blank)

Domestic Well
Observation Well
Production Well
Stock Well
Test Hole
Unknown
(blank)

Parcels MT-2024-07-0403 and MT-2024-07-0270 are located in Rosebud County, 7N 39E Section 30. These lease parcels exist on the flank of the Ingomar Anticline. There are approximately 20 wells that trend in a NW-SW direction that were drilled in 2002 by True Oil LLC within ~8 miles of this lease parcel. These wells targeted Shallow Cretaceous Sand intervals ~2000ft of depth for natural gas. They were not economic and shut-in after showing 100's of MCF production per 24 hours during their initial well tests. Within the last couple years the operator has begun to plug or sell this group of wells. One well the Pindell 33-30 (25-087-21681) which is also in 7N 39E Section 30 was sold to a local landowner that has converted the well for domestic use through the Montana Board of Oil and Gas (MBOGC). Administrative Rule of Montana 36.22.702 dictates that standard spacing for a gas well is 640 acres or one governmental section. The operator of this well submitted communitization agreement CA MTM 112176 to communitize the unleased federal minerals in section 30 to comply with the state spacing orders on 2/8/2021. Unleased federal minerals that are within a communitization agreement fall under MS-3160 Drainage Protection Manual as a drainage case. Wells that are subject to drainage are leased to prevent loss of unpaid royalties within the public oil and gas domain. The BLM self-nominated this parcel to protect the federal mineral interest. The leasing of this parcel complies with pooling and well spacing requirements within the state of Montana and is not likely to result in the drilling of any new wells.

There is one parcel available for lease in the July 2024 lease sale within Liberty County. This area is defined by the Sweetgrass arch which is a large anticline that trends north and south through this area and results in numerous oil and gas fields that have continually produced since the early 1900's. There are numerous oil

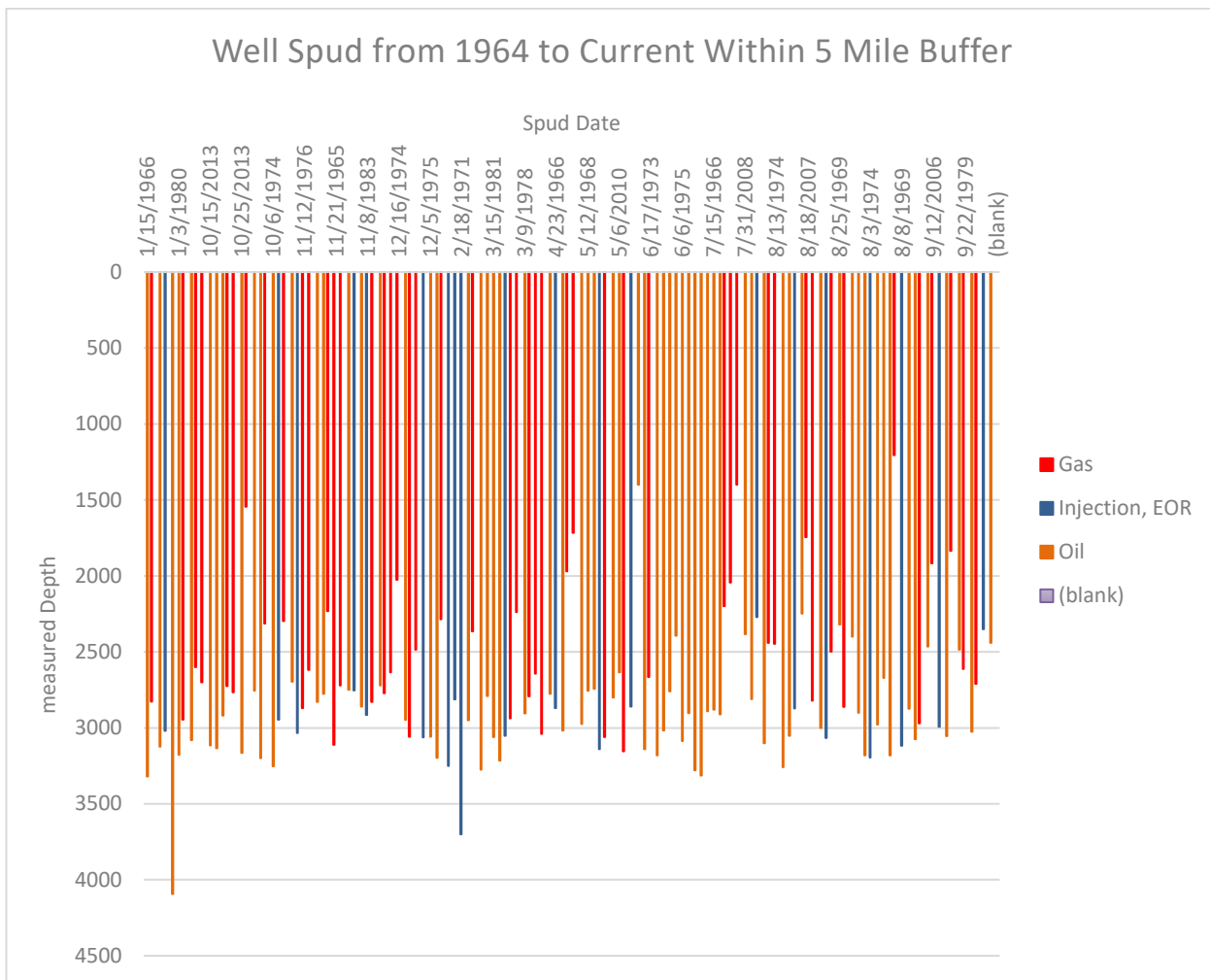
and gas fields producing from the Upper and Lower Cretaceous sands, Jurassic, and Upper Devonian in fields adjacent to this parcel.

The most recent developments in the area focus on the Upper Devonian Nisku formation and deeper objectives. The Sweetgrass Arch is being considered as a potential target for helium accumulations above fractured basement rock. Thor Resources USA has spud and completed one well in the Utopia field south of this parcel also in Liberty County. Another company Avanti Helium has permitted wells in 36N 6E, and 37N 4E. This parcel in northern Liberty County is adjacent to these helium exploration projects. The likely development scenario for the parcel in Liberty County is continued helium exploration in formations Nisku and deeper based on surrounding recent permits. Vertical helium development does not involve large multistage hydraulic fractures found in unconventional oil wells and does not pose a significant risk to groundwater. The shallowest target for this type of development would be the Nisku formation at ~3000ft across this township which is deeper than the majority of surrounding oil and gas development. Figure 16 shows the depths of surrounding oil and gas wells.

https://www.fairfieldsuntimes.com/news/national/fractured-basement-rocks-targeted-at-kevin-sunburst/article_7e8d8424-97bd-11ea-ad7f-77f47f65270c.html

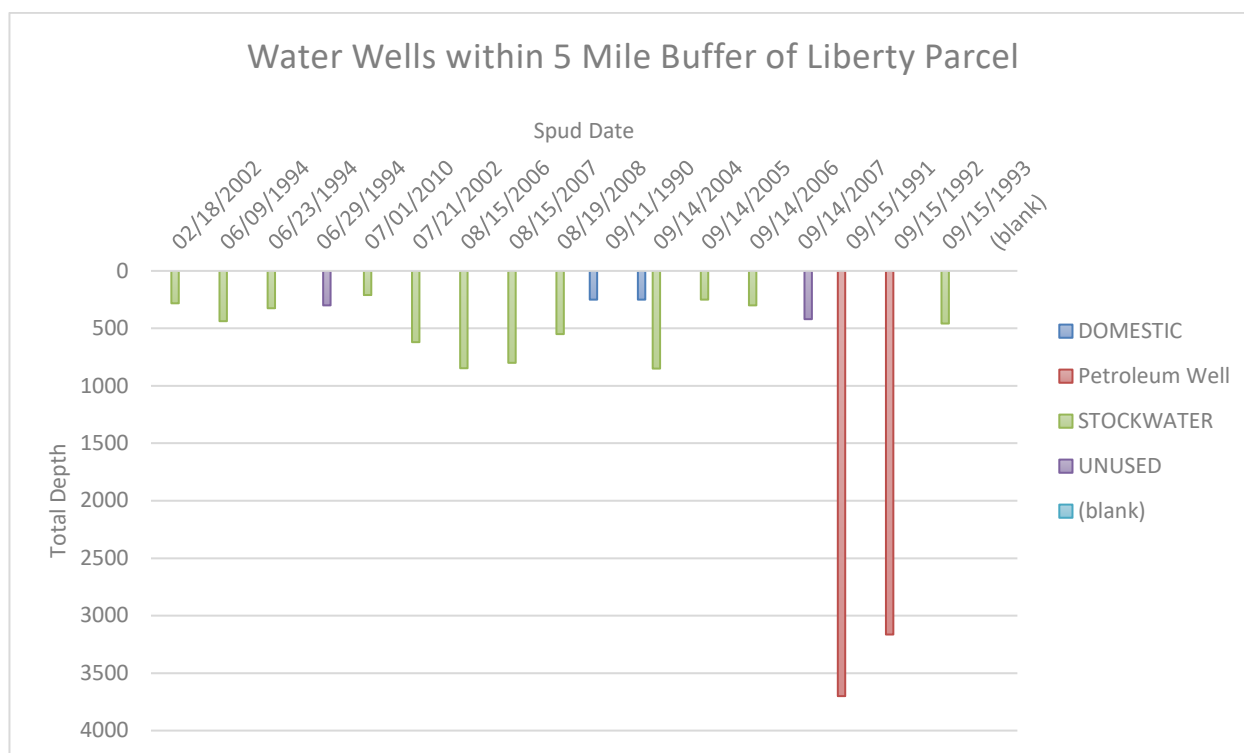
<https://avantihelium.com/news/avanti-helium-announces-significant-updated-resource-estimate-for-greater-knapen/>

Figure 16. Graph showing oil and gas wells from 1964 to current within 5 miles of the Liberty County lease parcel.



Water wells within 5 miles of these lease parcels are all <1000ft deep. **Figure 17** shows surrounding consumptive use groundwater wells are 1000's of feet shallower than the surrounding oil and gas development wells and shallower than any proposed helium well.

Figure 17. Graph of total depth of Water wells within 5 miles of Liberty lease parcels colored by use.



Blaine County:

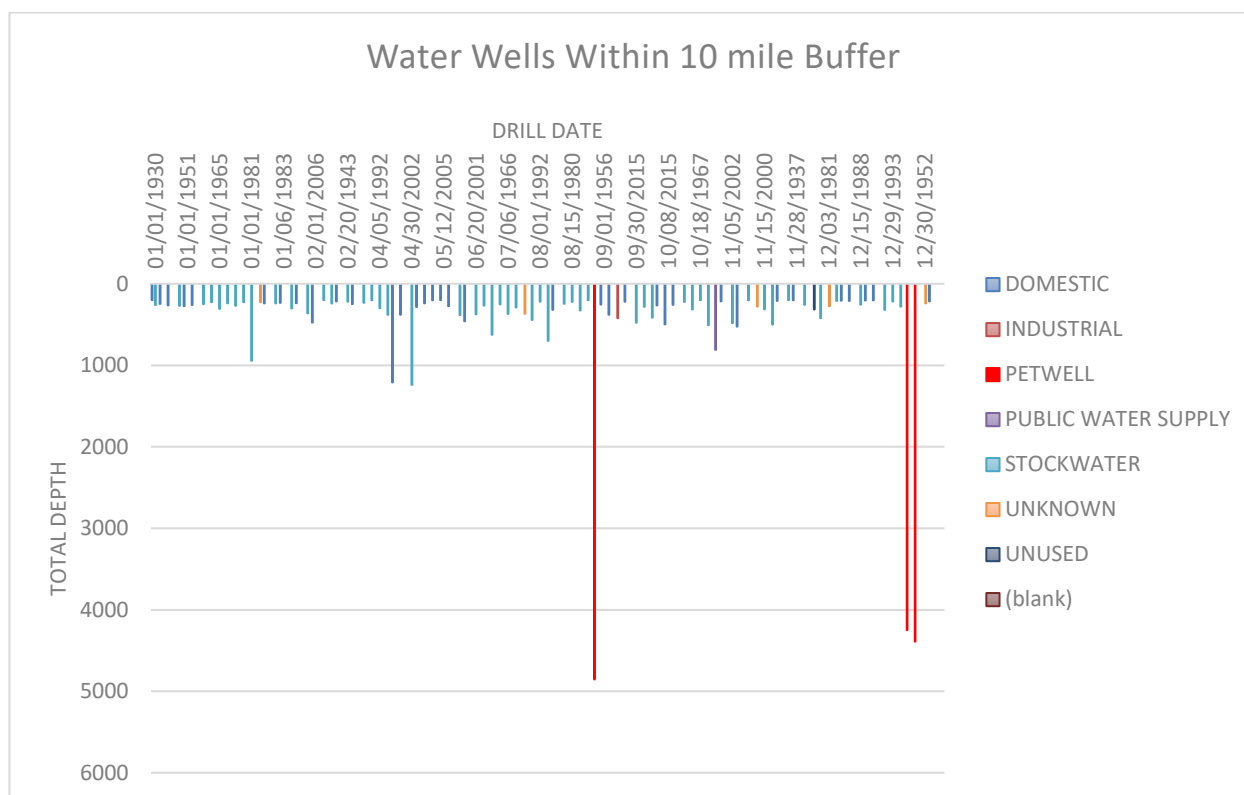
There is a parcel available for lease in Blaine County for the July 2024 lease sale. There are numerous oil and gas fields in the surrounding acreage including Tiger Ridge, Rabbit Hills, Bowes, Battle Creek, Lohman and a few more minor fields.

Laredo, Tiger Ridge, Battle Creek are gas fields that produce from structural traps formed by thrust faults in the Cretaceous sand intervals. The producing intervals are shallow, structurally complex, and laterally discontinuous. It is common to find dry holes in the middle of the gas field. Vertical wells have been drilled since the 1960's with very limited recent exploration due to the depressed price of natural gas.

The Bowes, and Rabbit Hills produce oil from the Jurassic Ellis Group including the Piper and Sawtooth formations. Both fields are structural traps and were initially developed with vertical wells. The Bowes field has been directionally drilled in the 2000's in an effort to increase production. The field is also currently undergoing secondary recovery with water injection.

In the last two years there has been 8 wells permitted into the Sawtooth formation in the surrounding acreage with two wells currently producing. The wells produce 500-1500 bbls/month with shallow declines making them economic wells and the likely development scenario for this group of leases given the higher oil prices for the last two years.

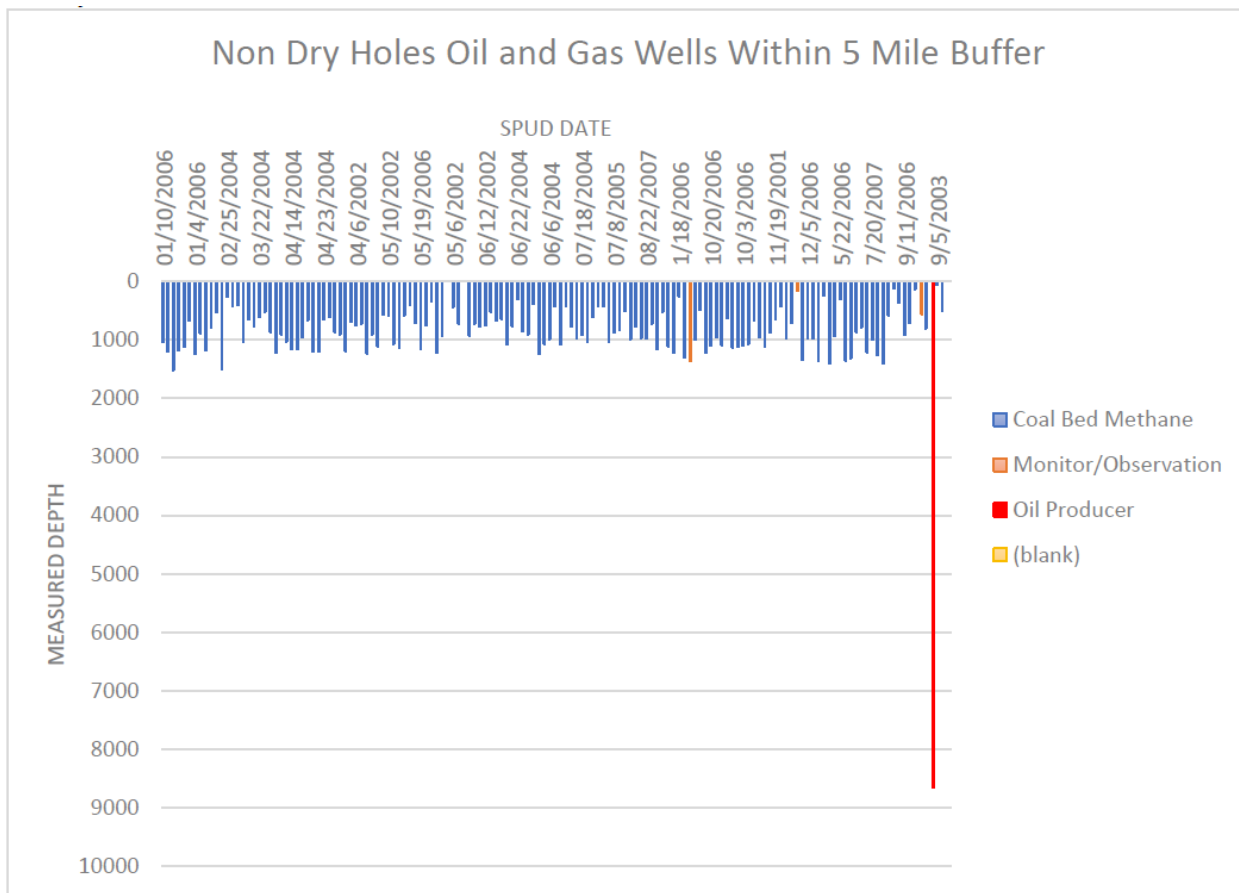
Water wells within 5 miles of these lease parcels are all <1700ft deep. **Figure 15.** shows surrounding consumptive use groundwater wells are 1000's of feet shallower than the Sawtooth formation which is between 3500' and 4500'ft deep across the Blaine County Parcel.



Big Horn County:

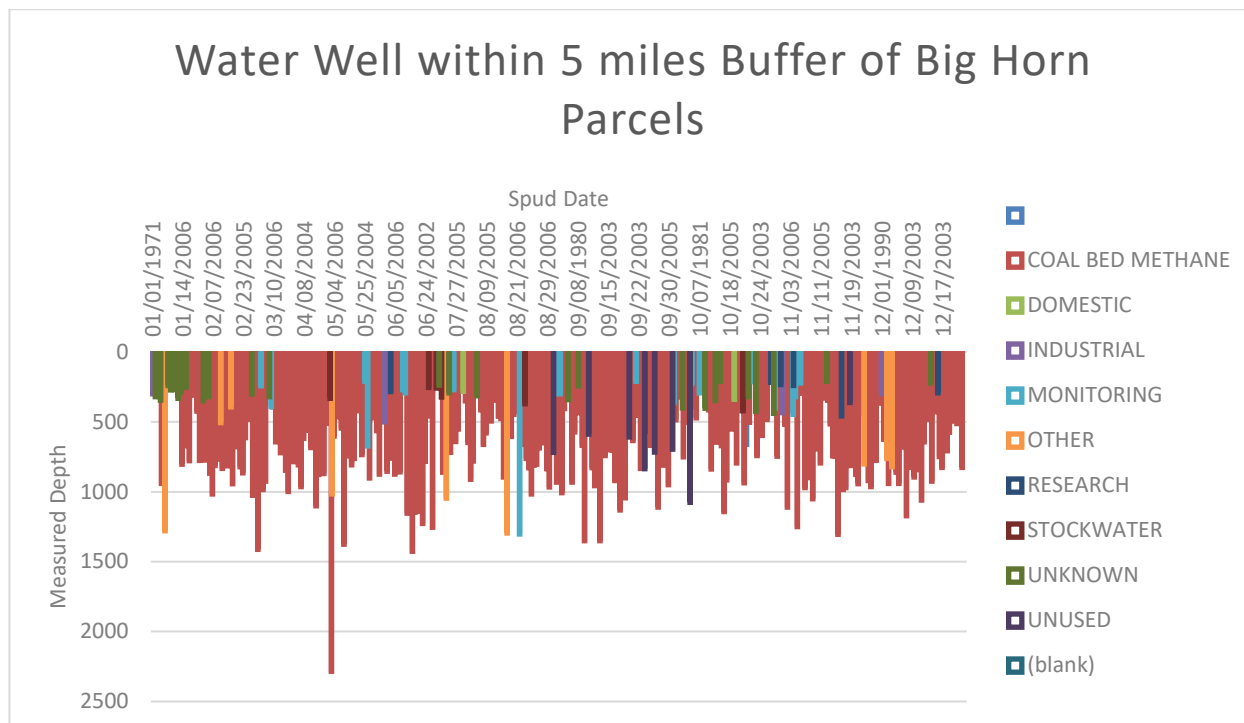
There are two lease parcels MT-2024-07-6947, 6946 located in the southern portion of Big Horn County. There has not been much activity in the surrounding acreage since the late 2000's. The surrounding townships have numerous coal bed methane federal units that were closed in 2020. There are numerous CBM wells in the surrounding acreage that have all been plugged or shut-in on both the Montana and Wyoming side of the border. The lack of recent success of CBM, expiration of the CBM units, and continued depressed natural gas prices when compared to 2007 makes it unlikely that the intended target would be coal bed methane deposits. These leases are in the center of the Montana portion of the Powder River Basin multi-stack unconventional play that extends from North-East Wyoming into South-East Montana. The current development acreage exists almost exclusively on the Wyoming side of the border, where operators are testing 7+ different horizons in the basin. On the Montana side of the border multi-stage horizontal completions have been largely untested. Alta Vista Oil Corporation being the only operator to be drilling horizontal unconventional tests in the Powder River Basin in Montana. They have test wells in the Mowry and Niobrara formations. The closest being the Doc Holiday 1H (2500322952) which was drilled in 2018, and subsequently plugged in 2020 due to lack of production. The majority of current production on the Montana side is from conventional vertical wells drilled in the Shannon and Muddy sandstones. **Figure 18** shows the adject oil and gas wells.

Figure 18. Graph of total depth of oil and gas wells within 5 miles of Big Horn lease parcels colored by use.



Water wells within 5 miles of these lease parcels are all <2500ft deep. **Figure 19** shows surrounding consumptive use groundwater wells are 1000's of feet shallower than a well targeting the Niobrara which is at approximately 6500ft deep across the Big Horn lease parcels.

Figure 19. Graph of total depth of water wells within 5 miles of Big Horn lease parcels colored by use.



Summary:

Lease parcels for the July 2024 lease sale parcels within Richland, Roosevelt, Mountrail, McKenzie, Slope, and Dunn counties are within the Williston Basin development area. The parcels in Slope County are likely intended for horizontal well development in the Bakken, Three Forks, or Red River formations. The lone parcel in Liberty County is likely related to vertical helium exploratory development. The parcel in Rosebud County is being leased due to administrative purposes. The parcels in southern Big Horn County will likely be used for Niobrara or deeper horizontal well development.

The probable development scenario for the July 2024 lease sale parcels within Richland, Roosevelt, Mountrail, McKenzie, Slope and Dunn Counties are horizontal unconventional wells into the Bakken, and Three Forks formations. This has been the predominate development scenario for the last 13 years and will likely continue. The Bakken and Three Forks formations are all greater than 9000 feet deep while all the water wells used for consumptive use are shallower than 2500 feet deep. Between the water wells and oil producing horizons are layers Cretaceous sands that are often used for saltwater disposal wells.

While there is sufficient vertical separation between existing groundwater wells and horizontal wells to make vertical fracture growth between the two zones highly unlikely, the higher permeability sands between the two zones makes the vertical propagation of hydraulic fluid past this zone even less likely. There is not a conflict between groundwater aquifers and horizontal well development due to hydraulic vertical fractures in this group of lease parcels.

Slope County parcels are between Red River development to the southwest and Bakken/Three Forks development to the northeast. The likely development scenario would be horizontal wells into on the before mentioned formations which are thousands of feet deeper than an existing groundwater wells.

The parcels in Rosebud County are being leased due to administrative rules around the spacing of gas wells.

The lone parcel in Liberty County is adjacent to parcels that are being permitted for helium gas development targeting the Upper Devonian Nisku, Duperow, and Souris River formations. Well development has been vertical or directional targeting structural closures. The likely development scenario will be continued vertical helium wells in the Nisku and deeper which does not conflict with existing groundwater usage.

There is 1 parcel in Blaine County available for lease in the July 2024 lease sale. There are numerous oil and gas fields in the surrounding acreage including Laredo, Tiger Ridge, Bowes, Rabbit Hills, Battle Creek, and a few more minor fields. In the last two years there has been 8 wells permitted into the Sawtooth formation in the surrounding acreage with two wells currently producing. The wells produce 500-1500 bbls/month with shallow declines making them economic wells and the likely development scenario for this group of leases given the higher oil prices for the last two years.

Water wells within 5 miles of these lease parcels are all <1700ft deep. **Figure 15.** shows surrounding consumptive use groundwater wells are 1000's of feet shallower than the Sawtooth formation which is between 3500' and 4500'ft deep across the Blaine and Hill County Parcels.

The parcels in southern Big Horn County are likely intended for horizontal exploration wells into the multi-stack Powder River Basin which will not conflict with existing groundwater or Coal Bed Methane water wells.

3.6.2 Environmental Effects - No Action Alternative

There would be no impacts to groundwater or surface water resources from the No Action Alternative because no parcels would be offered for sale.

3.6.3 Environmental Effects - Proposed Action Alternative

Surface Water

Future oil and gas exploration and development of a lease parcel could affect surface water resources by causing the removal of vegetation, soil compaction, and soil disturbance in uplands within the watershed. The potential effects from this are accelerated erosion, increased overland flow, decreased infiltration, increased water temperature, channelization, and water quality degradation associated with increased sedimentation, turbidity, nutrients, metals, and other pollutants. Erosion potential can be further increased in the long term by soil compaction and low permeability surfacing (e.g., roads and well pads), which increases the energy and amount of overland flow by decreasing infiltration, and in turn changes flow characteristics, reduces groundwater recharge, and increases sedimentation and erosion. As acres of surface disturbance increase within a watershed, effects on water resources could correspondingly increase. However, due to the footprint of disturbance associated with the RFD (17.7 acres short term disturbance, and 9.42 acres long-term disturbance over 28 parcels), these potential impacts to water resources are expected to be minor. Furthermore, site specific effects would be more fully analyzed upon receipt of an APD and minimized through vegetation reestablishment and the application of BMPs and other conditions of approval to mitigate impacts of development.

Future oil and gas exploration and development of a lease parcel could also result in spills or produced fluids that could potentially affect surface and/or groundwater resources in the short and/or long term. These spills from oil and gas exploration/development have the potential to contaminate aquifers with salts, drilling fluids, fluids and gases from other formations, detergents, solvents, hydrocarbons, metals, naturally occurring radioactive materials, and nutrients; change vertical and horizontal aquifer permeability; and increase

hydrologic communication with adjacent aquifers (EPA 2004).

From January 2022 through April 2023, ND Department of Environmental Quality reported 461 incidents that were not contained, for example, an overflow of the facility boundaries or a leak from a facility pipeline. The Department reported another 1,006 incidents that were contained within the boundaries of the production or exploration facility during the same time period. The ND Department of Environmental Quality receives their data was from the Oil and Gas Division whenever Oilfield Environmental Incident Report is filed. All spills are reported; volumes from 3 gallons to >300 bbls are listed. Spill materials include fluids (diesel, oil, produced water, frac fluids, fresh water), solids (bentonite), and gases (propane). Not all spills may reach or impact a drinking water resource. For example, on 10/03/2021, 220 barrels of brine spilled onto a cultivated field 1,320 feet from the nearest water well. Actions were taken to recover the fluid, and it was removed for disposal. The incident report notes that the produced water pooled within the field and that the area had been flagged for monitoring. The area was excavated and follow up readings will be taken as necessary to determine if any other actions will be needed (incident 764). All of these incident reports are available online at: <https://northdakota.hazconnect.com/ListIncidentPublic.aspx>.

The size of the spill and site characteristics will influence whether a spill reaches a drinking water resource. Sandier soils and more permeable rock can increase the potential for spills to reach groundwater or migrate into surface water bodies. Spill prevention and response factors would be incorporated as COAs at the APD stage and may reduce the frequency and severity of impacts to surface water resources.

Some surface waters associated with the lease parcels are currently impaired from natural and anthropogenic features **Appendix H** and are discussed in the Affected Environment section. Fluid mineral development could additionally affect water resources during exploration, drilling, production, and/or abandonment. The magnitude of these impacts would depend largely on the specific activity, season, proximity to waterbodies, location in the watershed, density of development, hydrogeologic characteristics of the affected area, effectiveness of mitigation, time until reclamation success, and characteristics of any hydrologically connected aquifers. Adherence to applicable regulations (i.e., 43 CFR §3171 – §3177; wastewater disposal, water right, and water quality laws, etc.), as well as stipulations regarding steep slopes, erosive soils, streams, waterbodies, floodplains, and wetlands would minimize impacts that may be associated with future development (see Appendix A and B).

Alterations in watershed hydrology outside of the no surface occupancy zones could affect the water resources in these systems relative to the size of the watershed in which the disturbance were to occur. Produced water from conventional oil and gas development could impact the quality of surface water and groundwater through impoundments, injection, and discharge. Left untreated, produced water discharge and infiltration, or leaking produced water disposal pits could reach stream channels via subsurface flow, which could decrease water quality. However, use of produced water/waste pits are rigorously regulated for use in the State of North Dakota and since 2012 pits as a form of disposal are seldom used and must be approved by the Director (North Dakota Century Code 38-12-02). Proper wastewater disposal methods, including siting and design of disposal pits in accordance with state and federal regulations, would minimize or avoid these impacts.

Groundwater

Potential effects to deeper aquifers may include cross-aquifer mixing through the wellbore or along fractures that extend between aquifers. All wells would be cased and cemented pursuant to North Dakota Department of Health (NDDH) rules, Montana Board of Oil and Gas (MBOGC) 36.22, Montana Code Annotated (MCA) Title 82, Montana Department of Environmental Quality (MDEQ), and 43 CFR § 3171, and 43 CFR § 3172. All wells also would be constructed according to relevant NDDH regulations to prevent cross-aquifer contamination. There would be minor potential for commingling of waters during well construction if proper well drilling procedures and completion techniques are employed. Refer to **Appendix F**, Fracking White

Paper, and **Appendix F2** (Bakken) for further discussion.

BLM reviewed existing groundwater and oil/gas well data to identify any multiple use conflicts between groundwater use and petroleum development around the lease acreage that is scheduled to be made available for fluid minerals development in the July 2024 lease auction. The large caveat to this assessment is that prior to lease sale, it cannot be guaranteed which geologic formation will be targeted in any one area. However, BLM can make an educated guess based on prior petroleum activity in the area.

BLM produced a series of maps for the proposed lease parcels showing the true vertical depth of surrounding oil and gas wells. There are points on each of these maps representing the location and depth of surrounding water wells. Refer to **Appendix G**. Furthermore, Underground injection control regulations would isolate injection zones from potentially useable aquifers, which would limit the potential for adverse impacts to surface or groundwater resources.

The use of any specific water source on a federally administered well requires review and analysis of the proposal through the NEPA process, which will be completed at the APD stage. The Gold Book, Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (BLM and USFS 2007) would be followed, and site-specific mitigation measures, BMPs, design features, and reclamation standards would be implemented and monitored to minimize effects to water resources. All proposed actions must comply with local, state, and federal regulations, including North Dakota water laws.

Water Quality

Offering the parcels for lease would have no direct impact to surface or groundwater resources. Any potential effects on water from the sale of lease parcels would occur at the time the leases are developed (at the APD stage) and could be both short and long-term. Potential indirect and cumulative impacts from oil and gas leasing on water resources are also discussed in the applicable ARMP and FEIS for each field office and incorporated here by reference.

Pursuant to CWA section 303(d)(1), 33 U.S.C. § 1313(d)(1), each state is further required to identify those waters that do not meet water quality standards—called the “303(d)(1) list.” The 303(d) list is short for a state’s list of impaired and threatened waters. States are required to submit their list for EPA approval every two years. For each water on the list, the state identifies the pollutant causing the impairment, when known. Natural impairment features include Nitrogen, total dissolved solids (TDS), mercury, and an increase or decrease in specific conductivity because of background soil characteristics. Anthropogenic features include highways, roads, bridges; dams and impoundments that impact hydrostructure flow; agriculture, which contributed nutrients (**Appendix H, P**) to a water body; grazing, which can introduce pathogens (E. Coli) and/or physical alterations to a water body; and crop production that can affect the salinity, TDS, and sulfate levels of a water body.

The BLM is required to comply with state water quality standards and utilizes BMPs and design features to avoid, minimize, or mitigate potential impacts that could contribute to water quality impairment; Therefore, the BLM has identified, through the EPA WATERS Geoviewer website, which parcels nominated for this lease sale have proximity to impaired water bodies (See **Appendix H**):

Parcels ND-2024-07-6850, 6871, 6869, and 6870 are within Lake Sakakawea which is 303D impaired due to methylmercury. The contamination is due to burning of materials that contain mercury including coal, oil, and wood.

https://deq.nd.gov/publications/WQ/3_WM/TMDL/1_IntegratedReports/2018_Final_ND_Integrated_Report_20190426.pdf

(Final 2020 Water Quality Integrated Report)

There are no Hydromodifications associated with the lease parcels or in proximity to the waters associated with the lease parcels. There are no state-designated source-water protection areas or municipal supply watersheds associated with the nominated parcels of this lease sale. There are no public supply water wells associated with the nominated parcels of this lease sale. There are no sensitive areas and no areas of critical environmental concern, or other valued areas where important aquatic resources may be impacted associated with the nominated parcels of this lease sale.

A Reasonably Foreseeable Development (RFD) scenario for oil and gas leasing at the plan level was analyzed in the RMP for the North Dakota field office. The BLM used the plan level RFD to develop an RFD for this lease sale, which is summarized in Table 1 below, and further described in **Appendix D**. The associated estimates of surface disturbance relate to the potential scope and magnitude of impacts to surface hydrology and are used to provide context in this EA. The RFD for this lease sale estimates surface disturbance over the 10-year leases associated with the July 2024 lease sale as 7.62 acres.

Table 14. Reasonable Foreseeable Development Scenario

County	Alternative B					Development Potential	Estimated # of Wells	Estimate Acres of Surface Disturbance (short/long term)
	# Parcels	BLM Surface	Non-Federal Surface (Split Estate)	USFS Surface	USACE Surface			
North Dakota Field Office								
Dunn	2	0.00	0.00	0.00	9.46	5 - Low 0 - Moderate 1 - High 5 - Very High	4 oil	5.2 acres ST 5.2 acres LT
McKenzie	1	0.00	40.00	0.00	0.00			
Mountrail	3	0.00	268.91	0.00	278.04			
Slope	5	0.00	0.00	935.38	0.00			
Total	11	0.00	308.91	935.38	287.5			
Havre Field Office								
Blaine	1	0.00	521.66	0.00	0.00	2 - Low	1 oil	5.2 acres ST .92 acres LT
Liberty	1	0.00	40.00	0.00	0.00			
Total	2	0.00	561.66	0.00	0.00			
Miles City Field Office								
Big Horn	2	0.00	1200.00	0.00	0.00	2 - Low 2 - Moderate 10 - High 0 - Very High	2 oil	4.5 acres ST 1.5 acres LT
Richland	6	879.57	812.63	0.00	0.00			
Rosebud	2	0.00	228.78	0.00	0.00			
Roosevelt	4	7.77	352.26	0.00	0.00			
Total	14	887.34	2593.67	0.00	0.00	9 - Low 2 - Moderate 11 - High 5 - Very High	7 oil	14.9 acres ST 7.62 acres LT
Grand Total	27	5,574.46 acres						
¹Total number of wells estimated based on the RFD and rounded to the nearest whole number								

¹Total number of wells estimated based on the RFD and rounded to the nearest whole number

Produced water from conventional oil and gas development could impact the quality of surface water and groundwater through impoundments, injection, and discharge. Left untreated, produced water discharge and infiltration, or leaking produced water disposal pits could reach stream channels via subsurface flow, which could decrease water quality. Proper wastewater disposal methods, including siting and design of disposal pits in accordance with state and federal regulations, would minimize or avoid these impacts. Underground injection control regulations would isolate injection zones from potentially useable aquifers, which would limit the potential for adverse impacts to surface or groundwater resources.

Standard stipulation 16-3 requires the Agency to furnish data on any special areas, which may include domestic water supplies within 1,000 feet of parcels and stipulates that surface use or occupancy will be

controlled to prevent damage to surface or other resources.

The use of any specific water source on a federally administered well requires review and analysis of the proposal through the NEPA process, which will be completed at the APD stage. The Gold Book, Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development (BLM and USFS 2007) would be followed, and site-specific mitigation measures, BMPs, and reclamation standards would be implemented and monitored in order to minimize effects to water resources. All proposed actions must comply with local, state, and federal regulations, including Montana and North Dakota water laws.

Water Quantity

Oil and gas drilling operations could affect available quantities of surface water and groundwater. Hydraulic fracturing uses billions of gallons of water every year at the national and state scales however, when expressed relative to total water use or consumption, hydraulic fracturing generally accounts for only a small percentage, usually less than 1%. (USEPA, 2016, page 4-46).

The BLM estimated future water consumption associated with the July 2024 lease sale based on the sale specific RFD. The estimates were made with the following assumptions: (1) all wells ultimately put into production as a result of this lease sale utilize hydraulic fracturing, (2) the underlying factors used to estimate future development under the sale specific RFD scenario persist, and (3) actual water use per well is similar to the state median water use estimates as noted in **Appendix F**, Fracking White Paper. All estimates are approximate and could vary substantially based on site characteristics and other factors like the length of horizontal laterals and hydrocarbon extraction intensity.

- North Dakota: 1,531.79 lease acres = 4 projected wells. 4 wells * 5 million gallons/well = 20 million gallons
- Montana: 4,042.7 lease acres = 3 projected wells. 3 wells * 5 million gallons/well = 15 million gallons

If drilling technology improves and economic considerations increase the average lateral length of horizontal wells and hydrocarbon extraction intensity, future water use and wastewater production would likely correspondingly increase, as would the potential for adverse impacts to water resources.

While many areas within the lease sale are experiencing low or medium to high water stress and estimated water consumption associated with the RFD scenario is minor (relative to existing uses & available supply), some areas are experiencing high Baseline Water Stress. Areas with higher baseline water stress would be more likely to experience depletion of surface and groundwater resources and/or competition among users from additional future development than areas with lower baseline water stress.

The potential for impacts associated with future development depends on the combination of water withdrawals and water availability at a given withdrawal location, as well as factors such as wastewater disposal methods and amounts. For example, where water withdrawals are relatively low compared to water availability, adverse impacts are unlikely to occur. Where water withdrawals are relatively high compared to water availability, impacts are more likely. Areas reliant on declining groundwater are particularly vulnerable to more frequent and severe impacts from cumulative water withdrawals, including withdrawals for hydraulic fracturing. Among surface water sources, smaller streams are more vulnerable to frequent and severe impacts from withdrawals. Seasonal or long-term drought can also make impacts more frequent and severe for surface water and groundwater sources.

Water withdrawals could lead to reduced aquifer water levels, reduced streamflow (through direct withdrawals or drawdown of aquifers that are hydraulically connected to nearby streams or springs), altered hydroperiods, and impacts to water quality parameters associated with stream flow. Typically, produced water

from conventional oil and gas wells would originate from a depth below useable aquifers or coal seams and would be unlikely to adversely affect freshwater resources.

Potential site-specific effects would be analyzed at the time of a receipt of an Application for a Permit to Drill. In the event of exploration or development, site-specific mitigation measures would be identified to avoid or minimize potential impacts to water resources prior to land disturbance. Compliance with state regulations and implementation of BMPs, operator committed measures, design features, and COAs at the APD stage would help minimize the impacts of water withdrawals on surface and groundwater by ensuring that water rights are established for all beneficial uses of water, ensuring that water resources are not over-appropriated, and considering the impacts of water withdrawals to groundwater wells and hydraulically connected surface waters. A lessee/operator would be required to obtain valid water rights from the states prior to operation, which would help to minimize the potential for impacts to the hydrologic system, other water users, and related ecological processes. Additional information on water rights and the availability of water resources in the project area can be obtained at the local North Dakota State Water Commission (NDSWC).

Application and implementation of lease stipulations

The applied lease stipulations provide guidance and parameters for the development of each lease. Lease stipulations described here and in Appendices A and B are specific for the protection of surface and groundwaters. Oil and gas lease stipulations are established for erosion control, soil, and water preservation specifically include: The BLM's Standard 16-3 stipulation which is an overarching, general stipulation applied to all of the leases being analyzed. Standard 16-3 includes sections for esthetics, erosion control, controlled or limited surface use, APDs, cultural and paleontological resources, and endangered and threatened species. The stipulations that specifically impact surface water (and soils) would include erosion control measures and controlled surface use (CSU).

During the commencement of the APD process the project and proposed location, to include all surface disturbing activity, is assessed for potential impacts to the site. Controlled surface use is utilized if the lease and proposed project location includes a special area with special values and require special attention for certain resources that includes surface water. There are specific setbacks in the Standard 16-3 stipulation for all waterbodies, rivers, streams, domestic water supplies and flood plains including 500 feet within the 25-year flood plain from reservoirs, lakes, and ponds and intermittent, ephemeral, or small perennial streams; 1,000 feet within the 100-year flood plain from larger perennial streams, rivers, and domestic water supplies. This stipulation allows for project placement to be strictly controlled and even excluded. Further, modifications can be made for those restrictions for the maintenance and operations of oil and gas wells.

Much like the BLM stipulations, other Surface Management Agencies (SMA), such as the USFS provide stipulations for parcels within their jurisdictional boundaries. In conjunction with the erosion control and setback authorities listed in the Standard 16-3, the USFS stipulations mitigate for erosion by prohibiting projects on slopes of greater than 40%. Stipulation LMG2020-NSO-01 states "Surface occupancy and use is prohibited on slopes greater than 40 percent to protect soil resources from loss of productivity, prevent erosion on steep slopes, soil mass movement, and resultant sedimentation". The application of this stipulation and the additional assessment of the lands at APD commencement mitigate any effects to surface waters that may be impacted by soil conditions and erosion.

Similar to the above stipulations, CSU 12-5 prohibits surface disturbance of riparian areas of wetlands, intermittent, ephemeral, or perennial streams and rivers, with the exception of essential road and utility crossings. NSO 11-33 (no surface occupancy), provides for no surface occupancy within 200 feet of wetlands, lakes, and ponds. As previously mentioned, these stipulations are applied during the lease process; enforcement of these authorities in the field and at the APD stage would require field observations and data review of the existing conditions and resources. This field review allows for the appropriate placement of well pads, roads, utilities, and ancillary facilities therefore mitigating any effects to surface waters as implied by

the lease stipulation.

Comparable to Standard 16-3 the USFS stipulations LMG2020-CSU-01 and LMG2020-LN-01 give notice to potential lessees that proposed activities may contain lands with riparian ecosystems and that development in that area could be highly restricted in order to preserve, restore, and enhance the values provided by floodplains and wetlands.

The DPG personnel apply and enforce their stipulations in an equivalent manner as the BLM by conducting field visits, completing data reviews of the existing conditions and resources, and coordinating with lessees to modify their proposed project to protect the resource.

The application and enactment of all SMA stipulations may be achieved through field (onsite) and data reviews of soil types, average rainfall, stormwater management, engineered drawings, GIS, etc. Specialists and interdisciplinary personnel commonly perform these reviews. Project constraints such as placement, timing, and design could be altered from the initial proposal based on these observations, reviews, and the known potential impacts that are typical of oil and gas development. Equally important are potential BMP's and design features that may be added. The modifications to the project, if approved, would be documented and part of any approval.

Cumulative Impacts

Given the limited disturbance estimated in the reasonably foreseeable development scenario (see Table 1), the potential for future development associated with the July 2024 lease sale to contribute to the cumulative impacts of water resources is correspondingly limited and likely negligible (relative to other water uses and potential sources of contamination).

However, with more oil and gas wells being developed in proximity to fresh water, there is a potential for groundwater and surface water decline, as well as an increased possibility for nonpoint source pollution associated with ground disturbance to adversely affect water quality in receiving waterbodies. The vulnerability of the decline and related impacts to existing water users and environmental processes is directly associated with the water need, the quantity and quality of the groundwater, and the cumulative withdrawals and is likely correlated to existing and predicted Baseline Water Stress within the potentially affected basins. Water used to develop any of the proposed parcels could have a cumulative depletion effect, especially if other oil and gas development and regional water uses exceed recharge rates in the basins, potentially affecting surface flows and groundwater elevations. Such effects could be exacerbated during periods of drought. BMPs and design features to reduce runoff, erosion, and potentially associated nonpoint source pollution to downstream waterbodies would minimize cumulative effects to water quality.

Groundwater recharge rates can be extremely low, and groundwater pumping can exceed recharge rates in many areas of the country (Konikow, 2013). Cumulative drawdowns can affect surface waterbodies since groundwater can be the source of base flow in streams and alter groundwater quality by mobilizing chemicals from geologic sources, among other means (DeSimone et al., 2014).

Aquifers can be affected directly and indirectly by increasing the number of wells in an area. Direct impacts are a result of direct use of the groundwater. Indirect ramifications could result from declines in surface water resources (or vice versa) which could lead to increased groundwater withdrawals and net cumulative depletions of groundwater (Castle et al., 2014; Georgakakos et al., 2014; Konikow, 2013; Famiglietti et al., 2011).

It should be noted that cumulative impacts on water quality findings associated with hydraulic fracturing appear inconclusive at this time, but localized impacts to surface water quality associated with dense surface disturbance have been observed elsewhere. It has been observed that pumping can promote changes in

reduction-oxidation (redox) conditions and thereby mobilize chemicals from geologic sources (DeSimone et al., 2014). Similar patterns of groundwater quality degradation associated with prolonged aquifer depletion (i.e., salinization and contamination) have also been observed. (U.S. Environmental Protection Agency; 2016a).

As studies are conducted and ramifications are analyzed they will be instrumental in developing better science to determine cumulative impacts to the environment. When the science of these studies is complete, they will be incorporated to the analysis of oil and gas lease sales to determine the best course of action according to the science.

3.7 Issue 5 – Cultural Resources

How would the leasing and potential development of these parcels affect cultural resources to include Native American Religious Concerns and National Historic Landmarks and Trails?

The BLM screened parcels and gathered comments to determine if any parcels would affect cultural resources. Parcels that were identified as being in close proximity to the Lewis and Clark National Historic Trail (L&C NHT) administered by the National Park Service include ND-2024-07-0733,-0734, -6850, MT-2024-07-0360, -0365, -0401, -0402, -0403, -0270, -0376, -0381, -0382, -6941. The L&C NHT, is approximately 3,700 miles, extending from Wood River, Illinois, to the mouth of the Columbia River in Oregon and is administered by the National Park Service (NPS) through partnerships with federal, state, and local agencies; tribal nations; nonprofit organizations; and private landowners. The L&C NHT follows the outbound and inbound routes of the 1803 to 1806 Lewis and Clark Expedition also known as the Corps of Discovery. Specifically, in the project area the L&C NHT is located in the Missouri River valley in North Dakota and divides into two separate routes at the confluence of the Yellowstone and Missouri Rivers. In Montana the northern route of the trail continues to follow the Missouri River while the southern route of the trail meanders along the Yellowstone River. The L&C NHT honors the diverse cultures and experiences that were documented to include interactions with over 50 Native American Tribes on the expedition (<https://www.nps.gov/lecl/learn/historyculture/index.htm>).

3.7.1 *Affected Environment*

Parcels in the project area that are in close proximity to the L&C NHT include ND-2024-07-0733,-0734, -6850, MT-2024-07-0360, -0365, -0401, -0402, -0403, -0270, -0376, -0381, -0382, -6941. The trail in the project area consists of a water route that runs along the Missouri (Lake Sakakawea Reservoir) and Yellowstone Rivers and an auto tour route that is part of existing highways in North Dakota and Montana. The [auto tour route](#), consists of State Highway 23, State Highway 200, State Highway 1804, State Highway 1806, State Highway 58, US Highway 85, US Highway 2, and Interstate 94. Contemporary and commercial development in the area includes hydroelectric dams, recreational locations, private cabin sites, agricultural infrastructure, and oil and gas well pads, and municipal infrastructure. The water route passes through the townsites of New Town, ND, Four Bears Village, ND, Williston, ND, Poplar, MT, Wolf Point, MT, Sidney, MT, Glendive, MT, Miles City, MT, and Forsyth, MT. The trail also passes through four reservations in the project area: Fort Berthold Reservation and Trenton Indian Service Area in North Dakota and Fort Peck Reservation in Montana.

3.7.2 *Environmental Effects - No Action Alternative*

Under the No Action Alternative, the BLM would not offer any of the nominated parcels in this 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. If the parcels are not available to be leased and potential

development on or near the proposed parcels would not occur, then no impacts to cultural resources would be expected from potential oil and gas development. The No Action Alternative would result in the continuation of already-approved land uses and would not result in new impacts related to exploration of the proposed oil and gas lease parcels.

3.7.3 Environmental Effects - Proposed Action Alternative

Under Alternative B, 27 parcels encompassing approximately 5,574.46 acres would be offered for sale. Those parcels that are successfully leased will generate Federal bonus bid revenue and annual rents, which will be collected on leased parcels not held by production. While the leasing action does not directly result in development that would generate surface disturbance, potential future development of the leased parcels are reasonably foreseeable and can be estimated for the purposes of this lease sale.

Due to horizontal directional drilling on fee land, federal and private mineral interests on lease parcels can be reached from a surface location near, but not on, federal property. Some of the parcel's surface is submerged by water. For this reason and per the BLM lease stipulations, USACE Oil and Gas Policy and lease stipulations to include no surface occupancy, any proposed development scenario would likely come from a pre-existing pad off-lease.

There are many existing anthropogenic impacts such as municipalities, roads, reservoirs, etc. along much of the Lewis and Clark trail. The BLM and USACE have applied stipulations to the lease parcels for the protection the historic and cultural resources that include HQ-CR-1 which would require the BLM to complete its obligations under NHPA and other authorities to include consultation with the NPS, and Standard 16-3 which requires the submission of an APD and potentially a site-specific cultural resource inventory prior to any proposed surface disturbance. Specifically, Controlled Surface Use Stipulation (CSU 12-35), Lease Notice (LN 14-2), Lease Notice (LN14-14), Lease Notice (LN 14-22), and No Surface Occupancy Stipulation (NSO 11-83) have been applied to the applicable previously mentioned parcels to protect the trail resources.

At the time of development, the APD and proposed surface use plan of operations will include design features and mitigation measures to reduce, avoid, or minimize potential impacts to the historic and cultural resources based on results of the prerequisites of the stipulations. Additionally, Per the [USACE Oil and Gas Policy Critical Requirements](#), site selection or approval would occur after a review and potential onsite meeting. Some of the USACE critical requirements include no exploratory or production activity within .5 miles of a recreation area and no exploratory or production activity within 300 feet of any National Register eligible cultural site or American Indian Traditional Use Area. For a complete list, reference the [USACE Oil and Gas Policy](#) and Appendices A and B.

Cultural resources and Native American Religious Concerns

Consultation, collaboration, and coordination for the identification of cultural resources and mitigation of disturbance or detrimental effects is robust and ongoing. The BLM has applied lease terms and stipulations to proposed parcels that include CR16-1 and STD 16-3 (see Appendix B for definitions). The result of the applying these stipulations at leasing provides protection to cultural resources. The BLM will not approve any ground disturbing activities that may affect such properties or resources until it completes its obligations associated with the stipulations that are applied to each respective parcel as well as applicable requirements of the National Historic Preservation Act and any 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. Within the administrative boundaries of the USFS Dakota Prairie Grasslands, LMG2020-LN-03 is applied to protect these resources on parcels ND-2024-07-0163, -0164, -0165, -0178, and -0179.

Native American Religious Concerns: Native American belief systems and traditional practices can vary widely across traditional tribal lands and require ongoing consultation and coordination to ensure that an action authorized by the BLM will not impede upon or impair practices or locations that are deemed as Traditional Cultural Properties or are otherwise important. The BLM applied HQ-CR-1 to all parcels that may have possible 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 purchaser of a lease is entitled to develop the parcel consistent with lease stipulations and must have an approved Application for Permit to Drill (APD), including a plan of operations and a review and consideration of Native American religious concerns, before ground disturbing activities can begin. The BLM may require modification to exploration or development proposals to protect unevaluated, eligible, or other such properties, or disapprove any activity that is likely to result in adverse effects that cannot be successfully avoided, minimized, or mitigated.

Cumulative Effects

Given the limited disturbance estimated in the reasonably foreseeable development scenario (See Chapter 2, Table 2), the potential for future development associated with the July 2024 lease sale to contribute to the cumulative impacts of cultural resources is correspondingly limited and likely negligible. The mitigation discussed for the L&C NHT is applied to the lease parcels and the likelihood of off-lease development negates any negative impacts to the L&C NHT as a result of leasing the listed parcels. Any off-lease development will be authorized by the BLM at the time of APD approval and will be administered through BLM guidance specifically, BLM IM 2018-014.

As previously stated, Tribal consultation and coordination is ongoing for all BLM projects. Chapter 4 contains a summary of consultation and coordination for this analysis, as well as a list of all tribal entities, governments, and historic preservation officers contacted to participate in the writing of this EA. There were no scoping comments received from Tribal entities. A list of comments received during the comment period and BLM response is available in Appendix K. The stipulations applied to each lease parcel (specifically HQ-CR-1 and STD 16-3) and applicable laws prohibit surface disturbance on any lands that may have possible historic properties and/or protected resources. These resources include, but are not limited to: locations associated with the traditional beliefs of Native American groups about its origins, culture history, and nature of the world; a location where Native American religious practitioners have historically gone, and are known to go today to perform ceremonial activities in accordance with traditional cultural rules of practice; a location where an identifiable community has carried out economic, artistic, and other cultural practices important in maintaining its historical identity, or any other Traditional Cultural Property not described here. As such, with continued coordination and consultation and adherence to laws and regulations, any detrimental effects to Cultural and Native American Religions concerns could be fully mitigated.

3.8 Issue 6 – Big Game

Introduction

What are the effects to pronghorn winter range and migration routes if the parcels nominated in the July 2024 lease sale are leased and subsequently developed for oil or gas production?

In 2015, the BLM approved Record of Decisions and Approved Resource Management Plans and Amendments for the Rocky Mountain Region, which includes the Miles City Field Office. The Miles City field office designated pronghorn antelope a priority species (i.e., Miles City RMP FEIS, p. 3-45 (Vol 1)). BLM planning guidance (Handbook 1601-1) provides direction for the designation of priority species and priority habitat for management for fish or wildlife species recognized as significant for at least one factor such as density, diversity, size, public interest, remnant character, or age. For priority species and habitat,

H1601-1 provides that the BLM shall:

Describe desired habitat conditions and/or population for major habitat types that support a wide variety of game, non-game, and migratory bird species; acknowledging the states' roles in managing fish and wildlife, working in close coordination with state wildlife agencies, and drawing on state comprehensive wildlife conservation strategies. Identify actions and area-wide use restrictions needed to achieve desired population and habitat conditions while maintaining a thriving natural ecological balance and multiple- use relationships.

During the 2015 RMP revisions, Miles City coordinated with Montana Fish, Wildlife, and Parks (MTFWP) to identify crucial winter range for big game species. At the time of the RMP revision, data was only available to identify crucial winter range for mule deer. MTFWP identified large blocks of general winter range for pronghorn, but data was lacking to map discrete areas of crucial winter range more accurately in the RMP. The RMP does not identify migration corridors for any big game species.

Consistent with H 1601-1, the BLM developed CSU 12-26 to facilitate long-term maintenance of big game wildlife populations and applies the stipulation to parcels located in crucial winter range, which states:

CSU 12-26: Surface occupancy and use is subject to the following operating constraint: prior to surface occupancy and use within crucial winter ranges for big game wildlife, a plan must be approved by the Administrative Officer that maintains the functionality of habitat.

CSU 12-26 may be subject to a variety of waivers, exceptions, or modifications (WEMs) if the Administrative Officer finds that:

- The action will not impair the function or suitability of the winter range habitat,
- Portions of the leasehold no longer contains viable winter range,
- Wintering animals no longer occupy significant portions of the area, and/or
- There is no reasonable likelihood of future use (the specific language varies by stipulation).

On November 15, 2018, the BLM issued Secretarial Order 3362: Site Specific Management Activities to Conserve or Restore Big Game Habitat. SO 3362 emphasizes the importance of conserving and improving elk, mule deer, and pronghorn habitat. In particular, S.O. 3362 directs that the BLM “appropriately apply site-specific management activities, as identified in State land use plans, site-specific plans, or the Action Plan that conserve or restore habitat necessary to sustain local and regional big-game populations...” Site-specific management activities that can help conserve or restore big game habitat as outlined in S.O. 3362 include avoiding development in the most crucial winter range or migration corridors during sensitive seasons, minimizing development that would fragment winter range and primary migration corridors, and limiting disturbance of big game on winter range.

For the July 2019 and subsequent lease sales, In the interim, BLM developed Lease Notice 14-40 for MFTWP identified pronghorn general winter range, which states:

Lease Notice 14-40: The lease area may contain habitat for big game winter range and/or migration corridors delineated by Montana Fish, Wildlife and Parks. The lessee/operator is given notice that prior to project-specific approval, the authorized officer may require modifications to exploration and development proposals to conserve or restore habitat necessary to sustain local and regional big-game populations (Secretarial Order 3362, November 15, 2018, and 43 CFR 3101.1-2). The objective of the requirements would be to conserve, restore, minimize, avoid and/or limit activities that could impact habitat for big game winter range and/or migration corridors. Site-specific requirements would be identified during environmental review processes and would be developed into the project proposal as terms and conditions of the subsequent approval.

In 2020 MTFWP initiated several studies of pronghorn seasonal use areas and migration corridors across the state, including distinct populations in Garfield and Rosebud Counties in eastern Montana. The study concluded in 2023. In September of 2023, MTWF published preliminary results of the pronghorn telemetry research. In the Rosebud-Garfield Study area, MTFWP fitted 91 female pronghorn with GPS collars and monitored the movements of those individuals. Of the 91 pronghorn collared, 47 died and 3 collars malfunctioned (DeVoe et al. 2023, p. 17). This study identifies pronghorn movements in the vicinity of the proposed lease parcels in Rosebud County (0270 and 0403).

Of the 27 nominated parcels in the July 2024 sale:

- Two parcels in Bighorn County are in RMP designated crucial big game (mule deer) winter range (6946 and 6947), which are subject to CSU 12-26. These parcels are also in MT Fish, Wildlife and Parks (MTFWP) identified mule deer winter range. BLM applied LN 14-40 to these parcels.
- Two parcels are in MTFWP identified pronghorn general winter range in Rosebud County (0270 and 0403). BLM applied LN 14-40 to these parcels.
- LN 14-40 was applied to the ten remaining parcels in Richland and Roosevelt Counties within the Miles City Field Office (0360, 0365, 0366, 0376, 0381, 0382, 0401, 0402, 6941, and 6945).
- Parcel 0367 is within RMP designated big game winter range. BLM applied TL 13-48.
- None of the North Dakota parcels contain RMP designated or state- mapped crucial winter range or general winter range for big game.

For the reasons discussed above, this analysis considers effects to pronghorn winter range and migration routes from road density and oil and gas well pad density for the Rosebud County Montana Parcels, which are two factors known to affect big game habitat effectiveness.

3.8.1 Affected Environment

Pronghorn antelope are one of the most common big game animals found throughout the State of Montana where adequate habitat remains. In 2023, MTFWP estimated there were 133,434 pronghorn distributed across portions of southwestern, central, and eastern Montana, down from 155,279 in 2022. (Montana Fish, Wildlife, and Parks 2023) In the spring of 2023, Montana experienced late winter conditions, which may offer a possible explanation for the decline in pronghorn population numbers from 2022 to 2023.

MTFWP notes that pronghorn populations were abundant, and at or above regional population objectives/long-term averages (LTAs) throughout their range in Montana during the mid-2000s with harvest totaling 33,500 at the latest peak in 2007. Following widespread blue-tongue virus (BTV) outbreaks in the subsequent two years, then the record cold and snowy winter in 2010-2011, harvest fell to a low of 8,200 in 2013. Pronghorn populations typically rebound quickly with favorable weather conditions, yet numbers of pronghorn in many of FWP administrative region 4, 5, 6, and 7's hunting districts (HDs) are less than 50 percent of population objective despite multiple years of favorable weather and minimal harvest. Rosebud lies within region 7. Pronghorn populations in Garfield and Rosebud Counties have not fully rebounded after the BTV and severe winter related declines. (FWP pronghorn proposal, April 2019).

The optimum habitat for pronghorn consists of open, rolling sagebrush grassland, as free from human disturbance as possible. Browse, primarily sagebrush, is vital in the pronghorn diet. Pronghorn utilize the sagebrush grassland habitats almost exclusively during the winter (HiLine FEIS, Volume I; p. 423). In eastern Montana, crucial winter habitat is largely contained within identified greater sage-grouse priority habitat and at lower levels within crucial mule deer winter range (Miles City FEIS, Volume I; p. 3-48). Very little is

known about seasonal pronghorn movements and migration across Montana/Dakotas.

In a recent study of migration behavior of pronghorn on their northern range in Alberta and Saskatchewan, Canada and northeastern Montana, Jakes et al. (2018) found that 55 percent of individuals undertook seasonal migrations. Migrating pronghorn captured in Montana or Saskatchewan traveled a mean Euclidean distance of 66.4 km (41.3 miles) in the spring, and 51.8 km (34.2 miles) in the fall. The longest annual migration in the Jakes et al. (2018) study was by an individual migrating a Euclidean distance of 435 km (270.3 miles) and 888 km (551.8 miles) measured pathway distance. Jakes et al. (2018) also documented facultative winter migration, where pronghorn moved from one winter range to another in response to extreme weather events. In another recent study in northeastern Montana, Tack et al. (2019) notes that pronghorn in northeastern Montana have been observed switching between migratory and resident behavior, although losing migration behavior would likely reduce regional populations that are more vulnerable to human- dominated landscapes.

As noted in the FEIS for the HiLine RMP, higher densities of permanent facilities and roads have been found to increase adverse impacts to wildlife although investigations on landscape-level effects have only been completed on a few species. Ungulates predictably avoid areas during active exploration and drilling, moving to denser cover and areas farther from human activity. Kolar (2009) studied resource selection of pronghorn in North Dakota between January 2005 and March 2008. During the summer, pronghorn were twice as likely to use areas that were greater than 1 km (0.6 mi) from primary roads (paved) and were two times more likely to use areas greater than 3.1 km (1.9 mi) from secondary roads (high grade gravel and maintained county roads) than areas less than 3.1 km (0.6 mi) from secondary roads. Pronghorn avoided secondary roads in the winter and were 7.5 times less likely to select areas within 1 km (0.6 mi) from secondary roads than they were to select areas beyond 3.1 km (0.6 mi) (Kolar 2009).

In a study on factors influencing seasonal migrations of pronghorn across the northern sagebrush steppe, Jakes et al. (2018) found that pronghorn avoided spring stopover sites with increased well densities while they avoided fall migration pathways with increased road densities. Jakes et al. (2018) further identified priority corridors through Canadian Forces Base (CFB) Suffield grassland complex in Alberta Canada, despite a high density of oil/natural gas development. He notes that innovative infrastructure at CFB Suffield keeps most of the oil/natural gas operations underground and close to the limited number of roads on base (Jakes, 2015; p. 176).

Across studies, ungulates showed avoidance responses to human development an average of 1 km (0.62 miles) from the human disturbance (Hebblewhite, 2008, p. 108; Jakes et al. 2020). When they are consistently applied, seasonal use restrictions are a valuable tool for limiting disturbance to wildlife at sensitive times of year. However, seasonal restrictions are currently limited to exploration and drilling phases of oil field development. Oil and gas operations also disturb and displace wildlife throughout a production life of up to 40 years and longer (Wyoming Game and Fish, 2010). A 15-year study of resident pronghorn in the Greater Yellowstone Ecosystem found that mean avoidance distance from well pads in winter habitat increased over time by 22 percent and that pronghorn dispersal from the area increased by 57 percent as the study area was developed from a well density of 0.18 per km² (0.11 mi²) to 5.45 per km² (3.39 mi²) (Sawyer et al. 2018). In the north sagebrush steppe pronghorn populations in Montana and Alberta, Jakes et al. (2020) found that anthropogenic disturbance features, including road, oil, and natural gas well densities, were a primary factor in determining pronghorn migration habitat selection.

Wyoming Game and Fish identified impact thresholds based on well pad densities and acreages of disturbance that correspond to *moderate*, *high*, and *extreme* impacts to habitat effectiveness. **Habitat effectiveness** refers to the degree to which a habitat or its components fulfill specific habitat functions, or the degree to which a species or population is able to continue using a habitat for a specific function. All three levels of impact – moderate, high, and extreme –result in a loss of habitat effectiveness. To the extent reasonable, seasonal use restrictions, standard management practices, and appropriate habitat mitigation could be applied at all levels of

development to avoid and minimize impacts. Impact thresholds for crucial pronghorn winter range are identified in **Table 15** below.

Table 15. Impact thresholds for terrestrial resources

Species and Habitat Function	Category of Impact		
	Moderate	High	Extreme
Pronghorn Crucial Winter Range	1-4 well pad locations or <20 acres disturbance per square mile	5-16 well pad locations or 20-80 acres disturbance per square mile	>16 well pad locations or >80 acres disturbance per square mile

Source: Recommendations for Development of Oil and Gas Resources within Important Wildlife Habitats, Version 6. Wyoming Game and Fish, April 2010.

- **Moderate Impact:** Impairment of habitat function becomes discernable – however the impact can be significantly reduced or eliminated through seasonal use restrictions, standard or best management practices.
- **High Impact:** Impairment of habitat function increases – the impact will be more difficult or at times impossible to effectively mitigate within the project area. The impact can be reduced, but probably not eliminated through seasonal use restrictions and more intensive management and mitigation practices.
- **Extreme Impact:** Habitat function is substantially impaired or lost – the impact cannot be fully mitigated within the project area but can be partially reduced through seasonal use restrictions and intensive management and mitigation practices.

In a study of wildlife and energy development in the Upper Green River Basin of Wyoming, Beckmann found that pronghorn actually have a higher probability of use closer to well pads, when habitat loss from surface disturbance is less than five percent. Overall, though, probability of use declines as the distance to the nearest well pad increases. On average, habitat patches with the highest probability of use have 3.8 percent surface disturbance due to construction of roads and well-pads versus 5.3 percent and 5.2 percent surface disturbance for patches with high to medium use, respectively (Beckman et al 2011, p. 79 - 84).

Beckman et al. (2011) also reported that across all winters except 2005, pronghorn utilized areas closer to gas wells when snow depths were greater, perhaps using associated roads to facilitate movement. In general, barring 2005, the interactive snow depth parameters suggest that when snow is deeper, pronghorn are more likely to use areas closer to disturbance and wells, likely because those disturbed areas are situated in the most crucial pronghorn winter habitat that becomes necessary during winters of high snowfall. Beckman suggested that true impacts of gas field development may only be seen during the most severe winters in the Upper Green River Basin when animals are forced by higher snow depths to utilize other parts of the gas fields (Beckman et. al. 2011, p. 95).

Analysis Methods

BLM assessed baseline condition of open road density and oil and gas well pad density in a 1705.7mi² (41.3 miles x 41.3 miles) area surrounding the lease parcels, which are metrics reported in the cited literature to influence pronghorn movements and habitat use. The size of the analysis area was selected because 41.3 miles is the mean spring migration distance reported by Jakes et al. (2018) in northeastern Montana, and is a large enough area to capture direct, indirect, and cumulative effects (Jakes et. al. 2018). The analysis area represents the best available information regarding pronghorn seasonal migration in eastern Montana. Migration distances in other places including Wyoming, North Dakota, Idaho, and Alberta, Canada reported both larger and smaller pronghorn migration distances. Although the pronghorn populations for Saskatchewan and northeastern Montana are located in the Northwestern Glaciated Plains ecoregion (characterized by gently rolling grassland plains and hills) and central eastern Montana is located in the Northwestern Great Plains ecoregion (characterized by rolling shale plains moderately dissected with flat-topped buttes and badlands).

The Northern Glaciated Plains ecoregion is more representative of habitat types found across eastern Montana than the other ecoregions. Migration distances reported for southwestern Wyoming (Middle Rockies and Wyoming Basin ecoregions) were not used, specifically because pronghorn must travel longer distances around mountains, which are lacking in eastern Montana. The average spring migration distance for study areas in MTFWP's pronghorn movement study is 28.6 miles (DeVoe et al. 2023). The size of the analysis area captures habitat effectiveness beyond the average distance for spring migration from the MTFWP telemetry project.

Within this analysis area, BLM used TIGER data to identify open roads; TIGER roads line and shapefile data are an extract of selected geographic and cartographic information from the U.S. Census Bureau's Master Address File / Topologically Integrated Geographic Encoding and Referencing (MAF/TIGER) Database (MTDB). The MTDB represents a seamless national file with no overlaps or gaps between parts, however, each TIGER/Line shapefile is designed to stand alone as an independent data set, or they can be combined to cover the entire nation (<https://catalog.data.gov/dataset/tiger-line-shapefile-2017-nation-u-s-primary-roads-national-shapefile>). Due to the broad scale coverage of TIGER data across the nation, it is not going to include every road on the landscape, especially unimproved two track roads. However, it provides a consistent dataset for identifying improved roads across large geographic areas and across state lines. BLM used State of Montana data to identify all currently producing oil or gas wells. Closed and abandoned wells were excluded because they would have minimal to no effect on big game.

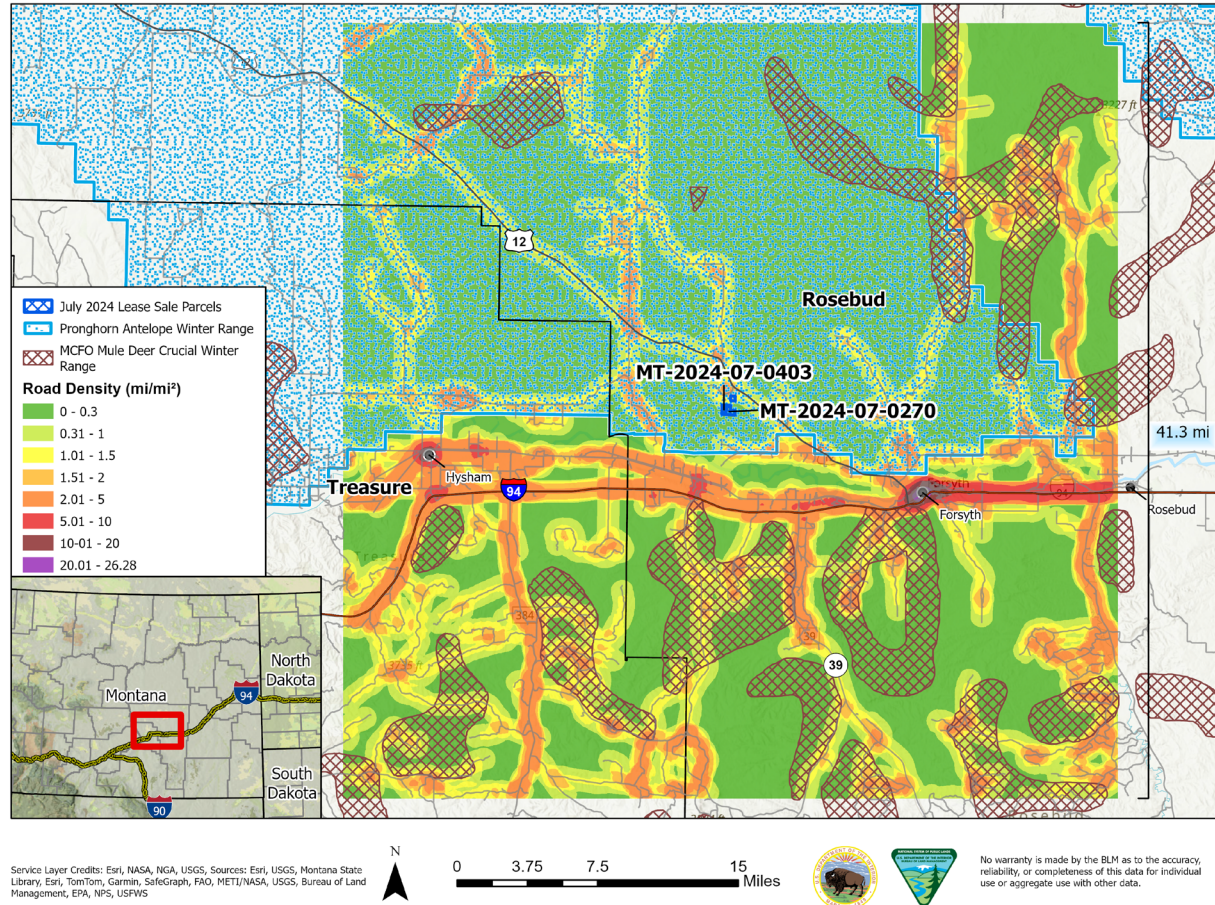
Road Density

The threshold of open road development used in the Billings RMP to minimize impacts to big game winter range and calving areas from roads is 1.0 mi/mi². Overall, approximately 71.53 percent of the analysis area provides areas with road densities less than 1.0 mi/mi². Pronghorn are most likely to use these areas. Approximately 11.76 of the analysis area has a road density between 1.01 mi/mi² and 1.5 mi/mi², which corresponds to a moderate impact. Literature suggests that pronghorn would use these areas to a lesser degree than the areas free from roads but may use roads to facilitate movement during winters with high snowfall. Approximately 16.71 percent of the analysis areas are highly impacted by open roads. There are areas that pronghorn would likely avoid except during extreme winters. Refer to **Table 16** and **Table 17** below and Figure 20.

Table 16. Road density within a 1705.7 mi² analysis area centered around Rosebud County parcels

Road Density (mi/mi ²)	Percent of Analysis Area	Degree of Impact
0-0.30	56.09	Very Low
0.31-1.0	15.44	Low
1.01-1.5	11.76	Moderate
1.51-2.0	6.63	High
2.01-5.0	9.00	Very High
5.01-26.28	1.08	

Figure 20. Road Density and winter range within the Rosebud big game analysis area



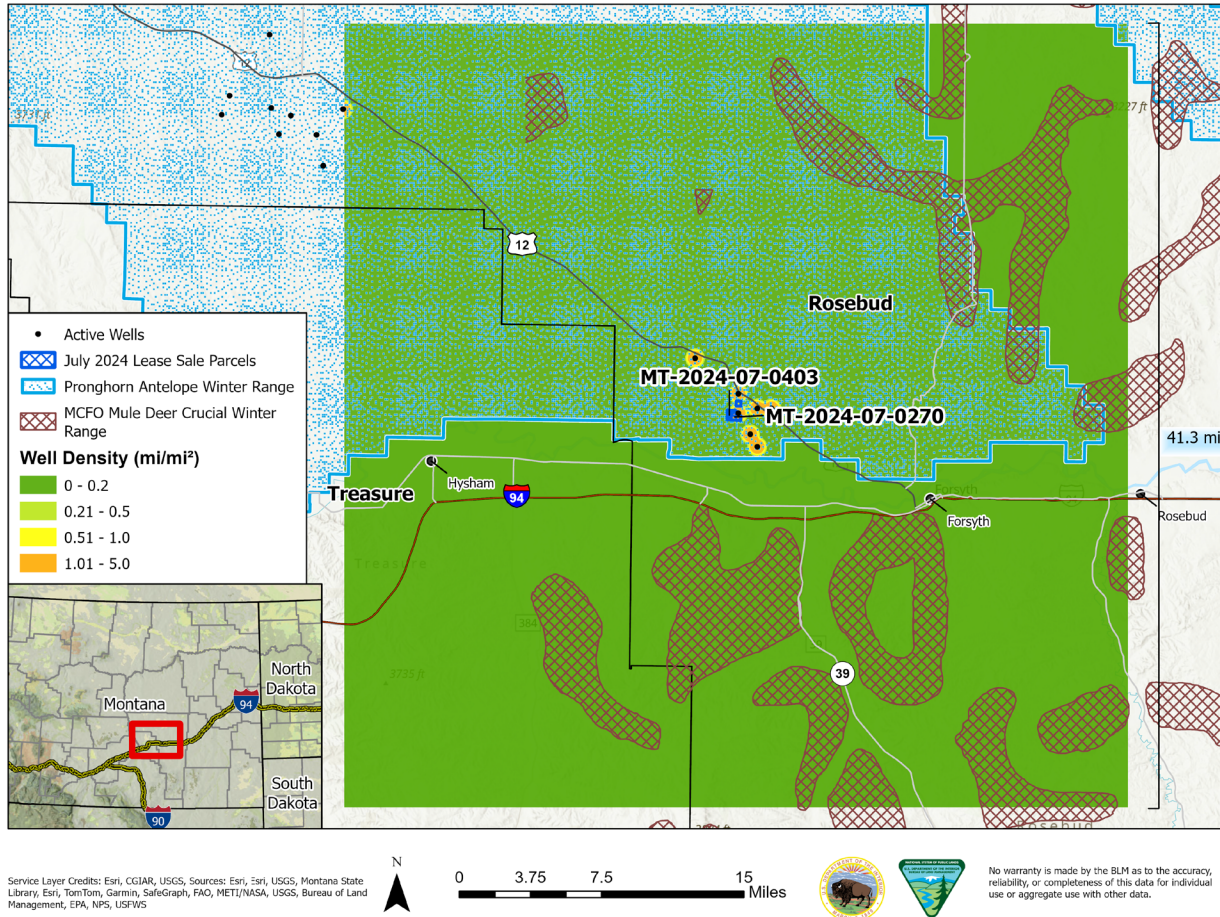
Well Pad Density

Using the thresholds identified by Wyoming Game and Fish, approximately 99.64 percent of the Analysis Area is free from oil and gas development (i.e., not impacted), approximately 0.16 percent have a low level of impact, 0.20 percent are moderately impacted, 0 percent are highly or extremely impacted. Refer to **Table 17** below and **Figure 21**.

Table 17. Well Density in 1705.7 mi² analysis area around the Rosebud County Parcels

Well Density (wells/mi ²)	Percent of Analysis Area	Degree of Impact
0 - 0.2	99.64	None
0.21 - 0.5	0.07	Low
0.51 - 1.0	0.09	Low
1.01 - 5.0	0.20	Moderate
5.01 - 10.0	0	High
10.01 - 20.0	0	High
20.01 - 31.0	0	Extreme

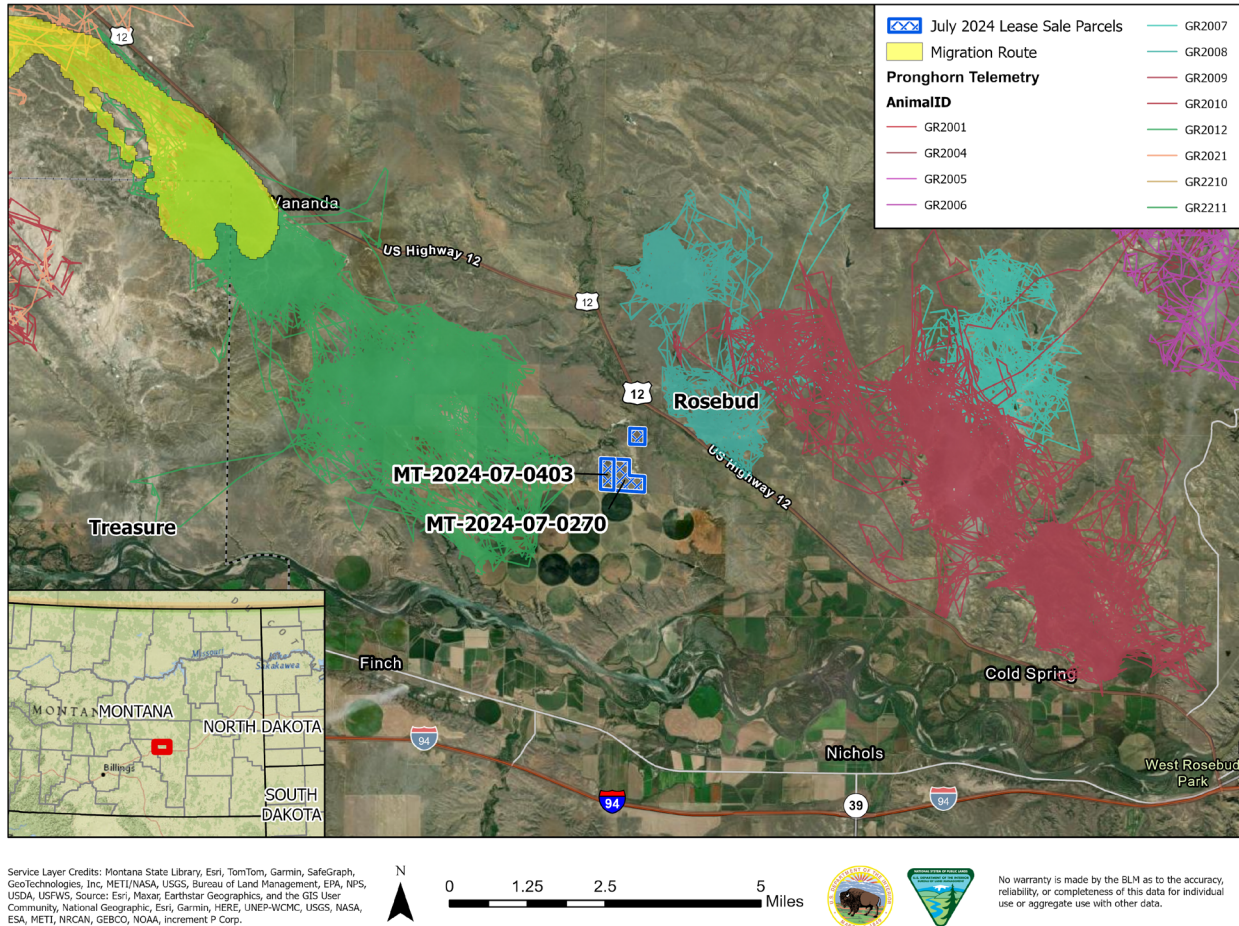
Figure 21. Well Density and winter range within the Rosebud big game analysis area.



Telemetry Data

The BLM reviewed telemetry data from a three-year study in Rosebud and Garfield Counties to evaluate pronghorn movements. BLM compared the data to the road density and oil/gas well pad density models, and reviewed data for proximity to the proposed lease parcels. The data indicates that 24 collared pronghorn occupied the analysis area during the study. Collared pronghorn occupy the northern portion of the analysis area, north of Interstate 94 and the Yellowstone River. Pronghorn likely occupy the southern portion of the analysis area as well, but there were no collared animals from the MTFWP telemetry study in that area. Pronghorn form mixed-sex groups that can number into the hundreds some years in the late/fall winter, so it is a valid assumption that there are additional pronghorn occupying and traveling through the analysis area with the collared individuals. By comparing the preliminary results of the telemetry data with the location of proposed lease parcels, it is apparent that pronghorn are wintering to the east and west of the proposed lease parcels. The data does not show any pronghorn activity within the parcels. The telemetry data also validates the road density and oil/gas well pad density models, showing that pronghorn are spending the majority of their time in areas identified as having high habitat effectiveness. Refer to **Figure 22**.

Figure 22. Pronghorn Telemetry data around the Rosebud County parcels



3.8.2 Environmental Effects - No Action Alternative

Under no action, BLM would not hold the July 2024 oil/gas lease sale. None of the parcels would be offered for sale, sold, or subsequently developed. Therefore, there would be no effect to pronghorn general winter range from this action. Pronghorn general winter range would continue to be influenced by baseline open road and well pad density.

Overall, baseline development patterns suggest that high road density reduces habitat effectiveness to a larger degree compared to oil and gas well pad density. Approximately 17 percent of the analysis area is comprised of areas containing high road density compared to zero percent containing high oil and gas well pad density. Telemetry data suggests that Hwy 12 serves as a barrier to pronghorn movement, with numerous individuals residing on either side of this highway without crossing it. Only a few individuals were documented crossing this highway during any season.

Other disturbances on the landscape may also influence habitat effectiveness. Migratory populations of both sage-grouse and pronghorn in the Northern Great Plains have demonstrated avoidance of cultivated lands (Tack et. al. 2019). In winter, nutrient-rich vegetation is scarce, and the majority of pronghorn's diet consists of evergreen browse, mainly sagebrush species that protrude through the snow. However, during the summer, forage quantity is peaked and pronghorn forage on diverse vegetation, including forbs, legumes, and perennial

crops (Jakes, 2015). Approximately 7.22 percent of the Rosebud County analysis areas is cultivated or altered with some other anthropogenic disturbance. Telemetry data in the area shows pronghorn avoiding certain cultivated lands. Additionally, fences within the Garfield-Rosebud study area serve as a barrier to daily and seasonal pronghorn movements (DeVoe et al. 2022).

While these factors suggest that habitat effectiveness may be reduced across portions of the analysis area, telemetry study results show identified pronghorn migration routes and seasonal ranges throughout the northern portion of the analysis area. MTFWP is developing population models to identify factors affecting pronghorn population growth across study areas, including the Rosebud-Garfield area that a portion of the analysis area falls into.

3.8.3 Environmental Effects - Proposed Action Alternative

Offering parcels for lease would not result in immediate ground disturbance. However, once a lease is sold the lessee maintains valid existing rights to the federal mineral resource. Effects to pronghorn general winter range could occur later in time when a lease is developed. At the leasing stage the specific location and extent of development is unknown. The BLM would complete project specific NEPA analysis when an Application for Permit to Drill (APD) is submitted. It is at this time that project specific avoidance, minimization, and mitigation measures would be identified. This analysis looks at the parcels in aggregate and discusses potential effects from future development on or surrounding the lease parcels should it occur.

As summarized in **Chapter 2/Table 2** and detailed in **Appendix D**, the BLM estimates that one to two oil and gas wells could be drilled on the Miles City Field Office parcels, resulting in about 3-6 acres of short-term and 1-2 acres of long-term disturbance. The Rosebud parcels have low development potential. Parcels 0270 and 0403 in Rosebud County are the least likely to be developed of the parcels in Miles City Field Office. These parcels are also unlikely to be developed due to their involvement in a drainage case. Refer to **Appendix D**.

Oil and gas development could negatively affect pronghorn by allowing for well development during crucial timing periods, increased road density, and increased well density beyond thresholds found to be detrimental to pronghorn. **LN 14-40** would potentially require avoidance and minimization measures at the APD stage to reduce impacts to MTFWP identified pronghorn winter range.

MTFWP identified pronghorn winter range occurs in the northern half of the analysis area. The Rosebud County lease parcels are located outside of an existing oil or gas field, in an area characterized primarily by low well pad density and low to moderate road density. The distribution of existing roads across the analysis areas suggests that high road density could be reducing habitat effectiveness across portions of pronghorn general winter range (refer to Alternative A above).

Parcels 0270 and 0403 are located in a large block of pronghorn general winter range in Rosebud County that is characterized by low to moderate road and oil/gas well pad density. This area corresponds to sage-grouse habitat that BLM characterized as Category 6 in the case of parcel 0270 due to lack of disturbance and proximity to leks and Category 3 in the case of parcel 0403 due to existing disturbance and proximity to leks.

Based on the road density model and preliminary telemetry data, oil, and gas development on parcels 0270 and 0403 would be less impactful compared to development in other portions of pronghorn winter range within the analysis area. While located in general winter range, telemetry data does not show pronghorn traveling through or spending the winter in the immediate vicinity of parcels 0270 and 0403. The road density model shows the parcels within an area of low to moderate road density, but they are close to areas of higher road density and close to Highway 12. These parcels are located in the vicinity of the few active wells within the analysis area. MTFWP delineated a pronghorn migration route from the telemetry data in the northwest

portion of the analysis area, approximately 6.5 miles from the parcels. Oil and gas development to the north, east, or west of 0270 and 0403 could potentially place additional stress on pronghorn migrating between spring/summer and their winter range, result in travel disruptions, or possibly increased risk of mortality. Refer to the wildlife maps in **Figure 20, Figure 21, and Figure 22.**

In the Rosebud County analysis area, oil/gas development is generally concentrated within a few miles of the parcels 0403 and 0270 in the center of the analysis area. There are scattered dry holes and plugged and abandoned wells throughout the analysis area. The telemetry data shows that one collared individual spent the spring in the area around one of the active gas wells but moved to undisturbed habitat for the winter. Both of the parcels are located adjacent to areas of existing oil/gas development, and new disturbance occurring on the parcels has potential to be co-located with existing disturbances. New disturbance on the parcels would be far enough from the identified migration route to not place stress on the individuals utilizing it. Oil/gas development on the parcels could reduce habitat effectiveness if not co-located, but the parcels are situated near areas of lower habitat effectiveness that the telemetry data does not show utilization of.

It is worth noting that both of the nominated Rosebud County parcels located in MTFWP pronghorn general winter range are also located in designated GHMA for sage-grouse. Because the area is in GHMA and not PHMA, neither the No Surface Occupancy stipulation nor the density disturbance cap apply. If BLM were to receive an APD for development on any of these parcels, the location a well pad and access road may need to be negotiated to reduce impacts to both pronghorn general winter range and sage-grouse habitat. The BLM may modify the siting of the proposed location by no more than 200 meters consistent with 43 CFR § 3101.1-2. The BLM may approve the application as submitted or with appropriate modifications or conditions or return the application and advise the applicant of the reasons for disapproval if project impacts cannot be adequately mitigated (43 CFR § 3162.3-1 (h)).

3.8.4 Reasonably Foreseeable (Cumulative) Effects

The BLM reviewed previous lease parcels offered for sale since the 2015 ARMPs were approved to identify areas that may be developed in the future. As previously noted, once a lease is sold the lessee maintains valid existing rights to the federal mineral resource. While it is unknown if any particular lease parcels would be developed, it is reasonable to assume that there is continued industry interest to develop oil and gas resources in areas that are currently producing.

In Rosebud County from 2015-2023, BLM offered 30 parcels, none of which are within the pronghorn analysis area. If previous lease parcels are developed that do not have either the CSU or the LN, oil and gas development could encroach into pronghorn general winter range or a migration corridor without any operating constraints on disturbance. BLM started applying Lease Notice 14-40 to parcels in MTFWP pronghorn general winter range for the July 2019 and subsequent sales. There are no previous lease sale parcels offered from 2015-2023 within the Rosebud County analysis area, therefore development without constraints on disturbance is unlikely in this area.

The Rosebud County parcels are not likely to see additional development. The water resources analysis notes that these parcels are being leased due to a communitization agreement pertaining to a well in 7N 39E Section 30. The unleased federal minerals in the Rosebud parcels within that agreement are being leased due to drainage. The BLM self-nominated these parcels to protect the federal mineral interest. The leasing of these parcels complies with pooling and well spacing requirements within the state of Montana and are not likely to result in the drilling of any new wells.

3.9 Issue 7 – Greater Sage-Grouse

Introduction

What are the direct, indirect, and cumulative effects to sage-grouse habitat from potential oil and gas development on the lease parcels? When a parcel stipulation is “no surface occupancy”, how would off site development affect surrounding sage-grouse habitat in the broader landscape?

The greater sage-grouse is an upland game bird native to Montana, North and South Dakota, and eight other western states. Due to habitat loss and fragmentation, the population of sage-grouse has declined across its range. As recently as 2015, the U.S. Fish and Wildlife Service (USFWS) considered it for listing under the federal Endangered Species Act. On October 2, 2015, USFWS published its decision (US FWS 2015) that listing was not warranted due to the commitments federal agencies and western states made to institute regulatory mechanisms and habitat protection measures.

The greater sage-grouse is classified as a BLM and USFS special status sensitive species. Under Manual 6840 (Special Status Species Management; US BLM 2008), actions authorized by the BLM shall further the conservation of Bureau sensitive species. Bureau sensitive species are managed consistent with species and habitat management objectives in land use and implementation plans to promote their conservation and to minimize the likelihood and need for listing under the Endangered Species Act. Manual 6840 directs the BLM to incorporate best management practices, standard operating procedures, conservation measures, and design criteria to mitigate specific threats to Bureau sensitive species during the planning of activities and projects.

For national forests and grasslands operating under the 1982 Planning Rule, Forest Service Manual direction (FSM 2670) requires that proposed activities be reviewed for their potential effects on threatened, endangered and sensitive (TES) species, and outlines policies, objectives, and procedures for conducting the reviews. Under the 2012 Planning Rule, sensitive species will no longer be designated, and species of conservation concern will be tracked instead. Species of conservation concern are those species, other than federally listed threatened, endangered, proposed, or candidate species, that are known to occur in the Land Management Plan area, and for which the regional forester has determined that the best available scientific information indicates substantial concern about the species capability to persist over the long-term in the plan area (36 CFR 219.9; FSH 1909.12.52).

In 2015, the BLM approved Record of Decisions and Approved Resource Management Plan Amendments (ARMPA) for the Great Basin and Rocky Mountain Regions (US BLM 2015a, US BLM 2015b), which cover the Montana/Dakotas BLM. The Billings, HiLine (Glasgow, Malta, and Havre), Lewistown, Miles City Field Offices in Montana, and North and South Dakota Field Offices are part of the Rocky Mountain Region. Lewistown completed a RMP revision in 2021. Each of these field offices manages BLM designated sage-grouse habitat. The Rocky Mountain ROD and Resource Management Plans or Plan Amendments provide a set of management decisions focused on specific greater sage-grouse conservation measures on BLM-administered lands and provide overall resource management plan direction for managing all resources on BLM-administered land in their respective Planning Areas.

The RMPs designate areas as open or closed to fluid mineral leasing (resource allocations) and designate specific areas that provide sage-grouse habitat as Priority Habitat Management Areas (PHMAs), General Habitat Management Areas (GHMA), or Restoration Habitat Management Areas (RHMA) subject to management actions designed to avoid and minimize disturbances associated with proposed projects (i.e., stipulations). A key component of the 2015 RMPs is that PHMA is open to fluid mineral leasing subject to no surface occupancy (NSO) stipulations without waiver or modification and with limited exception. Additional stipulations across HMAs, may include No Surface Occupancy – NSO, Controlled Surface Use – CSU, and / or Timing Limitations - TL.

Prioritization Objective

In addition to the resource allocations and stipulations, the BLM RMPs describe a Prioritization Objective, which in addition to allocations that limit disturbance in PHMAs and GHMAs, prioritize oil and gas leasing and development outside of identified PHMAs and GHMAs. This is to further limit future surface disturbance and encourage new development in areas that would not conflict with sage-grouse. This objective is intended to guide development to lower conflict areas and as such protect important habitat and reduce the time and cost associated with oil and gas leasing development by avoiding sensitive areas, reducing the complexity of environmental review and analysis of potential impacts on sensitive species, and decreasing the need for compensatory mitigation (Rocky Mountain ROD, page I-25).

To clarify how the prioritization objective would be implemented, the BLM Washington Office issued Instruction Memorandum (IM) 2016-143 (US BLM 2016) on September 1, 2016, which was replaced with IM 2018-026 (US BLM 2017). However, in the MT District Court Order in Case 4:18-cv-00069-BMM Document 147 Filed 05/22/20, the court found that the December 2017 and March 2018 Lease Sales and BLM Instruction Memorandum 2018-026 violated FLPMA and vacated the subject leases. The Order states BLM must prioritize non-sage-grouse habitat to accomplish two purposes: “to further limit future surface disturbance and encourage new development in areas that would not conflict with sage-grouse habitat.” The court found that BLM allows entities to develop oil and gas resources through a competitive leasing process but may withhold or defer parcels for various reasons, including environmental concerns. The MT District Court determined that the Prioritization Objective in the 2015 RMPs is “intended to guide development to lower conflict areas and as such protect important habitat.

Concurrently, the Montana/Dakotas BLM issued IM No. MT-2020-018 (US BLM 2020). This IM provides guidance on prioritizing implementation decisions for BLM oil and gas leasing and development in sage-grouse habitat across the Montana/Dakotas in a manner that is consistent with the 2015 Approved Resource Management Plans (RMPs) and Plan Amendments for Montana / Dakotas RMPs, and the MT District Court Order cited above. This IM provides a framework for BLM to follow when making a decision to lease nominated parcels. In general, parcels are prioritized by whether they are, or are not, within 3.1 miles of a lek, if there is existing disturbance on the lease, and the oil and gas potential.

Additional Considerations and Background

The BLM Washington Office has issued IM 2023-006 (US BLM 2023a), IM 2023-007 (US BLM 2023b), and IM 2023-010 (US BLM 2023c) that cover implementation of the Inflation Reduction Act, specifically in regard to considering expressions of interest, selecting parcels for lease sales, and reviewing parcels under NEPA analysis. In addition to the policy above for leasing in GRSG habitat, these IMs include policy for the BLM covering evaluating the preference of each parcel (related to proximity to existing development, resource values, and development potential) and how to consider offering high vs. low preference parcel for sale in various alternatives.

US Department of Interior, BLM Permanent Instruction Memorandum (PIM) No. 2018-014 (US BLM 2018a) provides guidance for directional drilling into federal mineral estate from well pads on non-federal locations (which could occur under a No Surface Occupancy scenario). The policies and procedures in PIM 2018-014 apply to the processing of APDs for wellbores that produce Federal minerals from well pads that are located on entirely non-Federal land, commonly referred to as fee-fee-fed. This IM clarifies that BLM’s jurisdiction extends to surface facilities on entirely non-Federal lands solely to the extent of assuring production accountability for royalties from Federal and Indian oil and gas and provides guidance for complying with NEPA and other regulations when processing APDs under three specific Fee/Fee/Fed situations. The IM explicitly states that BLM has no jurisdiction to require an APD before an operator may begin pad and road

construction or drilling on the non-Federal land, but that APD approval is necessary to drill into the Federal mineral estate. It also describes various scenarios for consideration of alternatives and how to conduct an effects analysis.

Mitigation policy, especially BLM's ability to require compensatory mitigation, has varied for the BLM since the development of permanent policy in 2016, BLM's Mitigation Manual Section (MS-1794: US BLM 2021d) and Handbook (H-1794-1: US BLM 2021e). The 2016 policy was the result of lessons learned and approaches from interim policy over ten years, and covered how the BLM would implement a consistent approach, utilize mitigation to address impacts, and ensure the BLM utilizes a landscape-scale approach, maintain durability, and monitor mitigation. However, under the next administration Secretarial Order 3360 rescinded the Mitigation Manual and Handbook, and the BLM issued, IM 2018-093 (US BLM 2018b), replaced by IM 2019-018 (US BLM 2019), to provide guidance to the BLM related to offsite compensatory mitigation and supersede all previous policies. Then, after another administration change, BLM issued IM 2021-038 (US BLM 2021b), to rescind IM-2019-018 and then BLM IM 2021-046 (US BLM 2021c) to reinstate the BLM's Mitigation Manual Section (MS-1794) and Handbook (H-1794-1). Under this policy the BLM will follow the mitigation hierarchy to avoid damage, minimize impacts, and compensate for any residual impacts. Furthermore, BLM IM 2023-037 (US BLM 2023d) established policy for the BLM to follow when approving and working with third party mitigation-fund holders (e.g., see the Montana Sage-Grouse Conservation Program below).

Due to continued range wide declines of sage-grouse (e.g., Coates et al. 2021), potential inconsistency between management and new sage-grouse science, and rapid changes, including from climate change effects, across western sagebrush landscapes, the BLM filed a Notice of Intent in the Federal Register to amend land use plans across 11 western states (US BLM 2021a). By addressing, and possibly amending, sage-grouse management the BLM will consider approaches to avoiding, minimizing, restoring, or offsetting disturbances and habitat loss associated with declining sage-grouse populations. Included aspects of sage-grouse management in the planning efforts include adjustments, based on the best available science, to habitat boundaries, approaches to minimize disturbance (caps and buffers to important habitat), leasing and development of mineral resources (including prioritization of resources), strategies for restoration, and additional actions to activities and threats associated with sage-grouse populations and habitats. The BLM will analyze these adjustments to sage-grouse management in an EIS and consider how different alternatives to management, along with ongoing activities, valid existing rights, and reasonably foreseeable development will impact sage-grouse. The BLM is considering land use plan amendments to meet sensitive status species policy, BLM Manual 6840 (Special Status Species Management), that directs the BLM to further the conservation of Bureau sensitive species and manage these species consistent with objectives set to minimize the likelihood and need for listing under the Endangered Species Act.

In Montana, development of the Montana Sage-Grouse Conservation Strategy set up a process to conserve sage-grouse habitat across all lands in the state, and apply to any projects requiring a state permit, technical assistance, or state grant funds in designated sage-grouse habitat (MT DNRC 2020). Montana's strategy outlines stipulations for land uses and activities occurring in designated sage-grouse habitat, requires newly proposed land uses and activities to avoid, minimize, and reclaim impacts to sage-grouse habitat to the extent feasible, and to provide compensatory mitigation for any remaining impacts, including those that are indirect or temporary. On October 4, 2018, the Montana Sage Grouse Oversight Team (MSGOT) approved the Montana Mitigation System Policy Guidance Document for Greater Sage-Grouse and the Habitat Quantification Tool Technical Manual (HQT).

On January 11, 2019, the Final Adoption Notice was published in the Montana Administrative Register, and the HQT and mitigation policy guidance document took effect January 12, 2019. It is based upon Executive Orders 12-2015 and 21-2015 and the Greater Sage-Grouse Stewardship Act. Montana's Mitigation System is not only informed by the best available science, but also is required to incorporate new science as it becomes

available. The System draws on findings and science from the U.S. Fish and Wildlife Service's (USFWS) Conservation Objectives Report (COT), the 2015 USFWS Not Warranted Finding, and the recommendations of the Montana Greater Sage-Grouse Habitat Conservation Advisory Council. These sources describe the key threats to sage grouse and their habitat and offer biologically based strategies for management and conservation in both the short and long-term. Lastly, the approach is based on deliberations of the Montana Mitigation Stakeholders Team (Stakeholders Team) (Policy Guidance Document, p. 4). The HQT calculates the functional acres lost on a debit project and gained on a credit project. Functional acres are based on the quality and quantity of affected habitat. The policy guidance document applies signal multipliers for development projects to incentivize voluntary conservation and consistency with the Montana Sage-Grouse Habitat Conservation Plan or specific provisions of federal land use plans (policy guidance document, p. 60).

The Montana Policy Guidance defines the processes and information necessary to create, buy, or sell mitigation credits suitable for meeting sage grouse mitigation requirements within the State of Montana. The HQT calculates the functional acres lost on a debit project and gained on a credit project. Functional acres are based on the quality and quantity of affected habitat. For APDs in Montana, BLM adopts any State-required mitigation as a project design feature consistent with Mitigation Manual Section (MS-1794) and Handbook (H-1794-1).

The State of North Dakota does not regulate development in sage-grouse habitat; habitat conservation efforts are strictly voluntary. The BLM and USFS manage development/activities on federal lands in sage-grouse habitat consistent with management decisions in federal land use management plans. As described in IM 2018-014 (fee-fee-fed), the BLM does not have jurisdiction to impose surface requirements off lease, construction of surface facilities including well pads and roads can occur before BLM approves an APD to access federal minerals.

The USFS issued a 2020 Record of Decision for the Northern Great Plains Management Plans Revision for Oil and Gas Leasing Final SEIS, established a No Surface Occupancy Stipulation in sage-grouse PHMA. The ROD states:

North Dakota is on the edge of the current range of greater sage-grouse, and habitat is recognized only in the southwestern corner of the state. A portion of the priority habitat in North Dakota is located in the southwest corner of the Little Missouri National Grassland. While there have been no sage-grouse documented on the Little Missouri National Grassland for over five years, the emphasis of this stipulation is to preserve high quality sagebrush habitat.

This stipulation may be waived over the entire lease if, in coordination with the North Dakota Game and Fish Department, it is determined that the area holds limited value for sage-grouse life cycle needs compared to neighboring lands (e.g., state, private, etc.), as determined by the state wildlife agency, and doing so would lead to greater benefits to sage-grouse on those lands. Exceptions and modifications may be allowed when doing so would improve management opportunities in areas of higher habitat value on neighboring lands or more effective sage-grouse habitat management and conservation at the landscape scale.

Continued coordination with North Dakota Game and Fish Department will be important to implementing the stipulation and to determine the cross-boundary context of sage-grouse habitat, population trends, and other management factors (FSEIS 94, 103, 108).

3.9.1 Affected Environment

Greater sage-grouse occupy sagebrush landscapes across eleven western states. Sage-grouse numbers and habitat have declined since regular assessments began in the 1960s. Sage-grouse are typically sensitive to

disturbance, while also requiring large landscape to facilitate seasonal movements. Sage-grouse may reside near (within a handful of miles) their spring breeding grounds, leks, or undertake migratory movements between seasonal habitats. Differences between seasonal movements across the range may be driven by weather, juxtaposition of seasonal habitats, and other factors. In the Northeastern portion of their range, they are found in southwestern and eastern Montana, northwestern South Dakota, and southwestern North Dakota from the Canadian to the Wyoming border (Greater Sage Grouse, viewed 4/21/2023 at <https://www.fws.gov/species/greater-sage-grouse-centrocercus-urophasianus>).

The Western Association of Fish and Wildlife Agencies (WAFWA) divided the GRSg range into seven Management Zones. The majority of GRSg habitat in Montana is part of Management Zone 1 (and all parcels in GRSg habitat included in this sale), along with populations in the Dakotas and northeastern Wyoming. The Dakotas are on the far eastern edge of greater sage-grouse range and the two states' populations are considered at high risk of extirpation because of their small numbers and isolation. Sage-grouse in the Dakotas form a population with connected areas in eastern Montana and northeast Wyoming, though it is unclear how many birds move between the states (Cross et al. 2016, Row et al. 2018, Oyler-McCance et al. 2022). In Wyoming active leks have remained stable over the last couple decades (about 1,100), but the average male lek count has declined, and in northeast Wyoming, active lek numbers are decreasing (Christiansen 2013).

In Montana, there are about 1,000 confirmed active sage-grouse leks, out of 1892 known lek locations (MT FWP 2022). The number of confirmed active leks has grown since 2002 as survey efforts have identified new leks and have been able to identify the status of unconfirmed leks. Sage-grouse populations tend to cycle, often declining by 50 percent and then doubling again within 10 years, and average male lek counts range from above 40 to just below 20 in Montana (MT SGWG 2005). Over a period of 18 years, Montana population estimates have ranged from a high of 111,701 in 2006 to a low of 35,976 in 2014 (MT FWP 2022). Recent population declines have been attributed to extreme drought that limited wet areas with critical food resources during the late summer brood-rearing season (MT FWP 2022). Therefore, the MT FWP concludes that the apparent decline in estimated population numbers in 2018 – 2019 and 2022, is likely a result of natural fluctuations and cautions that management decisions should be based on patterns over longer time frames (MT FWP 2022).

Greater sage-grouse were never widespread in North Dakota (Smith et al. 2004) and are presently confined to the southwestern portion of the state in Bowman, Slope, and Golden Valley Counties (Robinson 2014). The North Dakota population is considered contiguous with sage-grouse populations in Montana and South Dakota (Robinson 2014). Recent genetic analysis has shown a sub-population spanning southeastern Montana, southwestern North Dakota, northwestern South Dakota, and northeastern Wyoming (Cross et al. 2016, Oyler-McCance et al. 2022).

In North Dakota, there were historically around 52 sage-grouse leks in Bowman, Slope, and Golden Valley Counties, of which 21 are within the administrative boundary of the Little Missouri National Grassland. The population has been significantly impacted by historic habitat loss and more recent West Nile virus impacts over the last ten plus years, with natural mortality levels occurring at a higher rate than recruitment into the population. Population counts from 1997 to 2007 averaged 187.5 males across all leks, but from 2008 to 2018, the average number of males dropped to 45.3. In 2017, the North Dakota Game and Fish Department translocated 60 sage-grouse from southern Wyoming to Bowman County (40 females and 20 males), with limited success. In mid-June 2017, Department biologists reported that two hens had successfully hatched young and were brooding chicks. However, many of the birds moved great distances from their release site (Ron Wilson, ND Game and Fish Dept, 2019).

By 2012, there were 72 males on 12 leks in North Dakota (including 14 males on five leks in Slope County. In 2023, that number has dropped to less than 20 males on two leks in Bowman County (with no males observed on leks in Slope County) (ND Sage-Grouse Lek Database). No males have been observed on leks in Slope

County since 2019. Abandonment of leks in the eastern edge of the greater sage-grouse distribution in the Dakotas suggests that land use patterns in these areas have changed and now fail to support greater sage-grouse through population fluctuations driven by climate and disease (Connelly and Braun 1997 in Smith et al. 2004). While efforts to improve sagebrush habitat are ongoing, the decline in sage-grouse numbers in the last decade or so in North Dakota is credited to conversion of sagebrush communities to crops, long term over-stocking and degradation of sagebrush communities, West Nile virus outbreaks, increasing presents of vertical structures (power poles, buildings, fence lines, and other structures) that provide perches for predators, and drought. The population was especially hard hit by the West Nile virus in 2007-08 (Wilson 2017 in USFS Final SEIS for Oil and Gas Leasing, 2020).

This analysis considers impacts to sage-grouse habitat from subsequent oil and gas development, with a focus on leks within 3.1 and 5 miles of the lease parcels. The 2015 RMPs direct the BLM to consider impacts to leks from actions requiring NEPA analysis using lek buffer-distances identified in the USGS Report Conservation Buffer Distance Estimates for Greater Sage-Grouse – A Review (Manier et al. 2014). The interpreted range for energy development spans a lower distance of 3.1 miles and an upper distance of 5 miles. Consideration of impacts within this analysis area is also supported in relevant research. In a study of sage-grouse in southeastern Montana, Foster and others (2013) found that 59 percent of sage-grouse nests were within one mile of a known lek location, 84% within 2 miles, 93% within 3 miles, and 97% within 4 miles. However, leks are the focus of activity in the breeding season, and sage-grouse populations can show high variability between use-patterns across seasonal habitats (Manier et al. 2014; Connelly et al. 2011). For most populations, it is assumed that most movements and seasonal use is within about 5 miles of leks (Manier et al. 2014), but longer distance movements and unique populations do exist (e.g., Newton et al. 2017).

In this lease sale there are 10 parcels within GRSG habitat, found in the Miles City, Havre, and North Dakota Field Offices. The Miles City and HiLine RMPs defines confirmed, provisionally confirmed, and unconfirmed leks. Within confirmed leks, an *Active Lek* is a lek with at least two years with two or more males documented. An *Inactive Lek* is a lek that was active but then had 10 years with no sign of lek activity, with at least three years of survey during strutting seasons within those ten years. In North Dakota, lek status definitions differ, and are defined in the BLM 2015 ND Sage-Grouse RMPA:

- **Inactive lek.** Any lek where sufficient data suggests that there was no strutting activity throughout a strutting season. Absence of strutting grouse during a single visit is insufficient documentation to establish that a lek is inactive. This designation requires documentation of either: 1) an absence of Greater Sage-Grouses on the lek during at least two ground surveys separated by at least seven days. These surveys must be conducted under ideal conditions (April 1-May 7 (or other appropriate date based on local conditions), no precipitation, light or no wind, half hour before sunrise to one hour after sunrise) or 2) a ground check of the exact known lek site late in the strutting season (after April 15) that fails to find any sign (tracks, droppings, feathers) of strutting activity. Data collected by aerial surveys should not be used to designate inactive status as the aerial survey may actually disrupt activities.
- **Occupied lek.** A lek that has been active during at least one strutting season within the prior 10 years.
- **Unoccupied lek.** A lek that has either been “destroyed” or “abandoned.”
- **Abandoned lek.** A lek in otherwise suitable habitat that has not been active during a period of 10 consecutive years. To be designated abandoned, a lek must be “inactive” (see above criteria) in at least four non-consecutive strutting seasons spanning the 10 years. The site of an “abandoned” lek should be surveyed at least once every 10 years to determine whether it has been re-occupied by Greater Sage-Grouse.

This analysis focuses on the trend and conditions around active leks and other available information about the

use and quality of GRSG habitat. Based upon information in the State of Montana and North Dakota lek databases, there are four active leks within 3.1 or 5 miles of these parcels (**Refer to Table 18**), found in Big Horn County and Blaine County.

Table 18. Lek Status for leks w/in five miles of July 2024 Lease Sale Parcels

	Miles City, Rosebud County	Miles City, Big Horn County			North Dakota*	Havre
Name(s)	RO-150	BI-014	BI-012a	BI-015 BI-018 BI-019 BI-019a BI-029	SLO-11 SLO-12 GOV-13	SG24-005 SG24-008 SG24-008A
Status	Inactive	Active	Not Confirmed Active	Not Confirmed Active	Inactive / Occupied	Active
Parcels w/in 3.1 miles	0270	6946 6947	6946 6947	-	-	0367
Parcels w/in 5 miles	0270 0403	6946 6947	6946 6947	6946 6947	-	-

* There are no known leks within 5 miles of parcels 0163, 0164, 0165, 0178, and 0179 in North Dakota, leks reported are the closest, see Table 19

Table 19. Lek trend data within eight miles of proposed lease parcels in Slope County

Lek	Last Survey	Status*	Survey Results
SLO11	2020	Inactive / Occupied	2 birds in 2013, 0 birds in surveys 2014-2020
SLO12	2019	Inactive / Occupied	1 bird in 2013, 0 birds in surveys 2014-2016, 2018-2019
GOV13	2019	Inactive / Occupied	1 bird in 2010, 0 birds in surveys 2011-2016, 2019

To prioritize parcels according to IM MT-2020-018 the BLM overlaid the proposed parcels on designated habitat and sorted them into seven categories based upon existing disturbance, development potential, and location inside/outside of a 3.1-mile lek buffers. **Refer to Table 20**

Table 20. Sage-Grouse Assessment Category, Parcel Acres, and Potential

Parcel	County	Category and Reference	O&G Potential	Acres	Type of Habitat
MT-2024-07-6946	Big Horn	4 - Within Existing Disturbance/Within 3.1 miles of Lek	Medium	560.65	PHMA/GHMA
MT-2024-07-6947	Big Horn	4 - Within Existing Disturbance/Within 3.1 miles of Lek	Medium	640.31	GHMA
MT-2024-07-0270	Rosebud	6 - No Existing Disturbance/ Outside 3.1 mile from Lek/ Low RFD	Low	159.06	GHMA
MT-2024-07-0403	Rosebud	3 - Within Existing Disturbance/ Outside 3.1 mile from Lek	Low	67.85	GHMA
ND-2024-07-0163	Slope	6 - No Existing Disturbance/ Outside 3.1 mile from Lek/ Low RFD	Low	159.69	PHMA

ND-2024-07-0164	Slope	6 - No Existing Disturbance/ Outside 3.1 mile from Lek/ Low RFD*	Low	146.11	PHMA
ND-2024-07-0165	Slope	6 - No Existing Disturbance/ Outside 3.1 mile from Lek/ Low RFD*	Low	319.38	PHMA
ND-2024-07-0178	Slope	6 - No Existing Disturbance/ Outside 3.1 mile from Lek/ Low RFD*	Low	108.81	PHMA
ND-2024-07-0179	Slope	6 - No Existing Disturbance/ Outside 3.1 mile from Lek/ Low RFD*	Low	199.69	PHMA
MT-2024-07-0367	Blaine	4 - Within Existing Disturbance/Within 3.1 miles of Lek	Low	521.66	GHMA

* Parcels in Slope County, North Dakota are USFS managed lands. While these parcels are not subject to the prioritization objective in BLM RMPs, the category is identified here for analysis purposes.

3.9.2 Environmental Impacts

This analysis assumes all BLM oil and gas stipulations to conserve habitat would be applied on the lease parcels consistent with all applicable RMPs and Land Use Plans and provisions in the 2015 sage-grouse amendments, and that any off-lease development could occur consistent with applicable state regulations and BLM policy.

The BLM analyzed the effects of managing sage-grouse habitat in accordance with the BLM stipulations in the FEIS for each applicable RMP, and that analysis is hereby incorporated by reference into this analysis. In the BLM (2015a, 2015b) Record of Decisions the BLM determined that these stipulations strike a balance between long-term conservation of public land and resources with commodity production, recreation access, and services, and provide a layered management approach that offers the heightened level of protection for sage-grouse in the most valuable habitat (BLM 2015a: Miles City page 3-4, BLM 2015b, North Dakota ROD page 1-10, Alt E/HiLine, page 3-18, BLM 2015c). The 2015 FEISs analyzed cumulative effects to sage-grouse for all of WAFWA Management Zone 1 because it encompasses areas with similar floristic conditions containing important GRSG habitat, and includes sage-grouse populations in the Dakotas, Northern Montana, Powder River Basin, and the Yellowstone watershed (BLM 2015c: Miles City FEIS, page 1609; BLM 2015d: North Dakota FEIS, page 4-609, BLM 2015c: HiLine FEIS, page 1609).

The Miles City, HiLine, and North Dakota RMPs recognizes that a large percentage of sage-grouse habitat in Management Zone 1, lies outside of BLM's jurisdiction and that coordination with other agencies and private landowners will be important to conserving habitat:

Due to the patchwork distribution of land ownership, the conservation results obtained on any ownership are limited unless conservation actions are enacted across ownership boundaries.

Anthropogenic features, including oil and gas well pads, may negatively affect sage-grouse habitat at various spatial scales (Naugle et al. 2011, Johnson et al. 2011). Numerous studies have concluded that oil and gas development negatively affect sage-grouse lek persistence and attendance, nesting, brood-rearing and winter habitat selection, chick survival, and population growth rates. Several of those studies are briefly summarized below.

- In a study of sage-grouse in western Wyoming, Holloran (2005) observed that greater sage-grouse avoided breeding within or near development boundaries of natural gas fields, and that the number of displaying males declined as distances from leks to gas-field-related disturbance sources decreased

(i.e., drilling rigs, producing wells, and main haul roads), and as traffic volumes within 3 km of leks increased.

- Holloran et al. (2010) noted that sage-grouse adult males and females exhibited strong fidelity to breeding sites and seasonal ranges, implying that population dispersal and response of a population to habitat fragmentation depends on yearling cohorts. Holloran noted that nesting yearling females avoided nesting within 950 meters (about 1 km / 0.6 mile) of natural gas infrastructure, and that a female will nest within a 272-ha area (672 acres) over its lifetime. Yearling females appeared to select nesting sites at the spatial scale of their lifetime nesting areas, and avoided areas within the infrastructure of natural-gas fields.
- After controlling for habitat, Walker et al. (2007) found support for negative effects of coal bed natural gas (CBNG) development within 0.8-km and 3.2-km of the lek and for a time lag between CBNG development and lek disappearance.
- Tack (2009) found that the probability of a lek being large (> 25 males) decreased as the number of producing oil and gas wells in a 12.3km radius from the lek increased (i.e., a high well density). These effects were found with a 4-year time lag. Furthermore, maintenance of larger leks likely requires undisturbed habitats at large scales and the occurrence of large leks is reduced near the edge of the species range, and when leks are more isolated.
- Dinkins et al. (2014) observed that sage-grouse selected habitat with lower densities of oil and gas structures at all reproductive stages.
- Johnson et al. (2011) found that, across the range of the species, trends on leks within 5.0-km of a producing oil or natural gas well were depressed.
- Holloran et al. (2015) found that sage-grouse avoided areas with high well pad densities in southwestern Wyoming during the winter regardless of differences in activity levels associated with well pads.
- Doherty et al. (2008) found that sage-grouse were 1.3 times more likely to occupy sagebrush habitats that lacked CBNG wells within a 4-km² area, compared to those that had the maximum density of 12.3-wells/4.0-km² allowed on federal lands, and that GRSG avoid CBNG development in otherwise suitable winter habitat.
- Manier et al. (2014) synthesized studies of energy development impacts of GRSG and noted that the casual factors of human land-use on GRSG are commonly difficult to assess due to concurrent types of surface disturbing activities (roads, well-pads, powerlines, etc.). Overall, the combined level of activity (i.e., human footprint) in the landscape surrounding a lek was negatively associated with lek persistence.

Offering parcels for lease would have no direct effects on sage-grouse and sage-grouse habitat; however, once a lease is sold the lessee maintains valid existing rights to the federal mineral resource. Direct, indirect, and cumulative effects may occur at the time the leases are developed at the APD stage. At the leasing stage, which this document covers, the specific location and extent of development is unknown. Project specific proposals would be evaluated at the Application for Permit to Drill (APD) stage, and would undergo site specific NEPA review, as well as proceed through a review by the Montana Sage Grouse Habitat Conservation Program for parcels in Montana (because a state permit would be required). It is at this time that project specific avoidance, minimization, and mitigation measures would be identified. This analysis looks at the parcels in sage-grouse habitat in aggregate and discusses potential effects from future development surrounding the lease parcels should it occur.

3.9.3 Environmental Effects - No Action Alternative

Under No Action, the BLM would not conduct the July 2024 oil/gas lease sale. None of the parcels would be offered for sale, sold, or subsequently developed. There would be no impact to sage-grouse from this action. Sage-grouse habitat would continue to be managed by the BLM on federal lands in accordance with existing regulations.

3.9.4 Environmental Effects - Proposed Action Alternative

The BLM utilizes a sale specific Reasonably Foreseeable Development (RFD) scenario to consider potential effects from leasing using development potentials identified in the applicable RMPs. As summarized in **Chapter 2/Table 2** and detailed in **Appendix D**, the BLM estimates approximately 7 oil or gas wells could be developed on/around parcels in the July 2024 lease sale. For those ten parcels in sage-grouse habitat, the sale specific RFD estimates very limited development (1-2 wells total) as the potential is low for most GRSG parcels (**Refer to Table 20**). The most likely parcels to be developed would be the medium potential parcels in Big Horn County in the Miles City Field Office. Furthermore, the two parcels in Rosebud County, 0403 and 0270 are part of a communitization agreement and are being leased for drainage issues due to spacing requirements (see Chapter 3.6.1). Due to existing wells, it is not likely any new development, drilling, would occur on these parcels. Of the total of 27 parcels in this sale 10 are in GRSG habitat, 4 of 14 in Miles City, 1 of 2 in HiLine, and 5 of 11 in North Dakota. The BLM applied the following stipulations:

PHMA Habitat: The BLM applied the following No Surface Occupancy (NSO) stipulations on all or aliquot portions of parcels with PHMA for parcels in the lease sale, including:

- NSO 11-79 Miles City (1 parcel), Surface occupancy and use is prohibited within sage-grouse priority areas
 - MT-2024-07-6946 (aliquot part; SEC. 28 E1/2;)
- NSO LMG2020-NSO-06, USFS Little Missouri Grassland (5 parcels), No surface occupancy or use is allowed on the lands described below
 - ND-2024-07-0163 (all lands), ND-2024-07-0164 (all lands), ND-2024-07-0165 (all lands), ND-2024-07-0178 (all lands), ND-2024-07-0179 (all lands),

GHMA Habitat. The BLM applied the following Controlled Surface Use (CSU) and Timing Limitation (TL) stipulations on all or aliquot portions for parcels in the lease sale, including:

- CSU 12-30, Miles City (3 parcels), Surface occupancy and use within 2 miles of the perimeter of a lek active within the past 5 years may be restricted or prohibited
 - MT-2024-07-0403 (all lands), MT-2024-07-6946 (all lands), MT-2024-07-6947 (all lands)
- CSU 12-67, HiLine (1 parcel), Surface disturbing or disruptive activities may be restricted within 2 miles of GRSG leks.
 - MT-2023-09-0367 (all lands)

Winter Range. The BLM applied the following stipulations for big game and/or sage-grouse winter range:

- TL 13-48, HiLine (1 parcel), Surface occupancy and use is prohibited from December 1 through May 15 in Big Game/GRSG winter range
 - MT-2024-07-0367 (all lands)

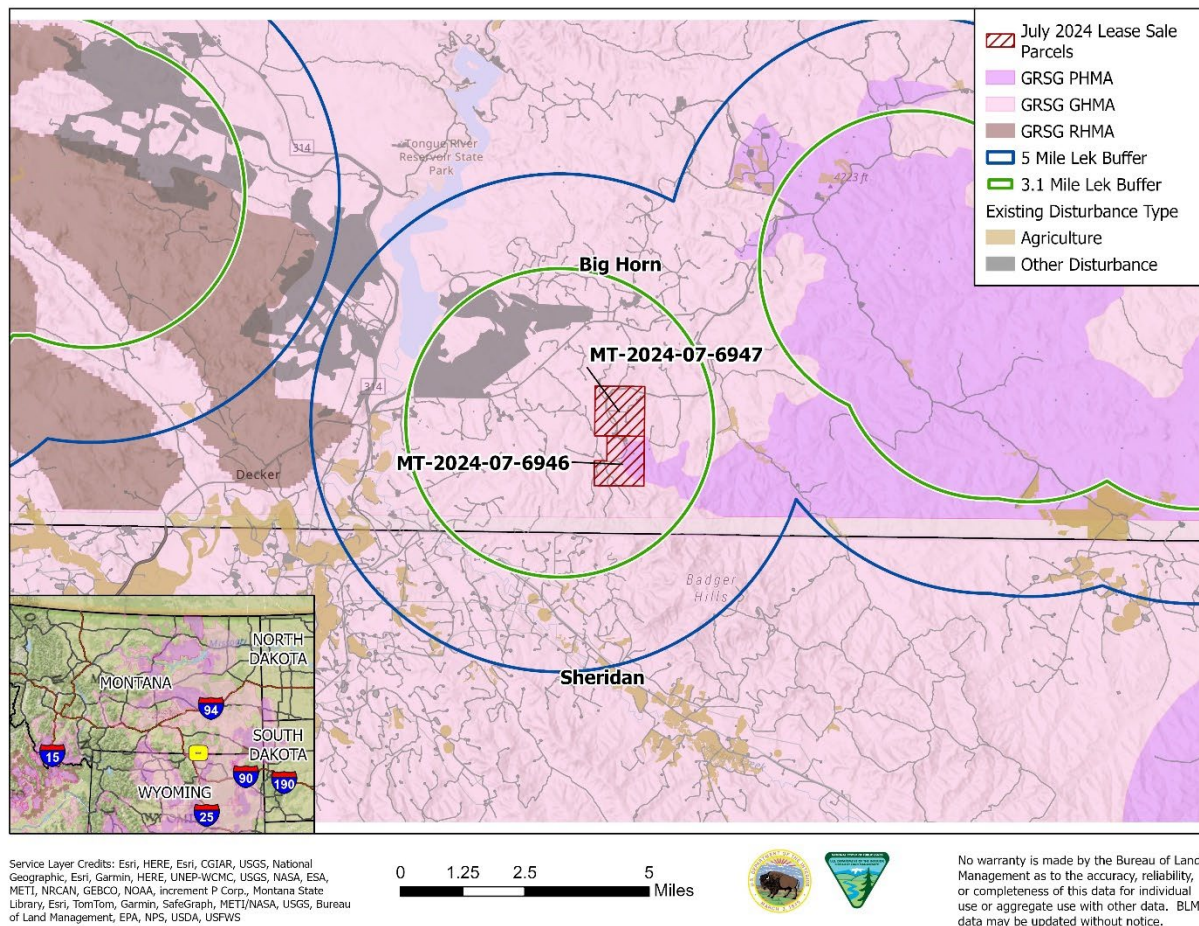
See Appendix A for all applied stipulations, and Appendix B for a definition of the stipulations. These stipulations are intended to avoid or minimize direct impacts to sage-grouse on the proposed parcels. In addition, the BLM applied lease notices to all BLM parcels with sage-grouse habitat. **LN 14-11** provides notice that a lease may contain important sage-grouse habitat, and that the operator may be required to implement specific measures to reduce impacts of oil and gas operations, which would be determined during the environmental review process at the APD stage. **LN 14-37** provides notice to a lessee/operator that mitigation measures and/or compensatory mitigation measures may be required to conserve, enhance, and restore Greater Sage-Grouse habitat, which would also be determined during the environmental review process at the APD stage. Any drilling proposal in Montana would require a state permit, and as such would be required to adhere to Montana sage-grouse requirements for compensatory mitigation across all lands in designated habitat. BLM Montana/Dakotas is fulfilling RMP mitigation requirements through coordination and compliance with the State of Montana's Sage Grouse Conservation Strategy, implemented by the Sage

Grouse Habitat Conservation Program.

As previously noted, the BLM estimates that up to two wells could be drilled on or in the vicinity of parcels in the Miles City (Rosebud and Big Horn Counties), HiLine (Blaine County), and North Dakota (Slope County) Offices. Parcels in PHMA are no surface occupancy (NSO) on all or aliquot portions of the parcels. Previous comments have noted that NSO would simply shift the impact off site where the NSO no longer applies. The length of a directional drill is typically less than two miles, with some very rare exceptions of distances of up to four miles (personal communication with BLM fluid minerals staff; May 2023). Depending on the spatial arrangement of leks and GRSG seasonal habitat, development may still be within distances or habitats with impacts to GRSG populations. Development of parcels, including off site development, where there is currently no existing disturbance, and high or medium development potential has a greater chance of impacting sage-grouse habitat compared to development of parcels with existing disturbance where colocation can occur or parcels with low development potential where activity is unlikely. The BLM reviewed lek locations within 3.1 and 5 miles of the parcels, and consider impacts to habitats surrounding these leks.

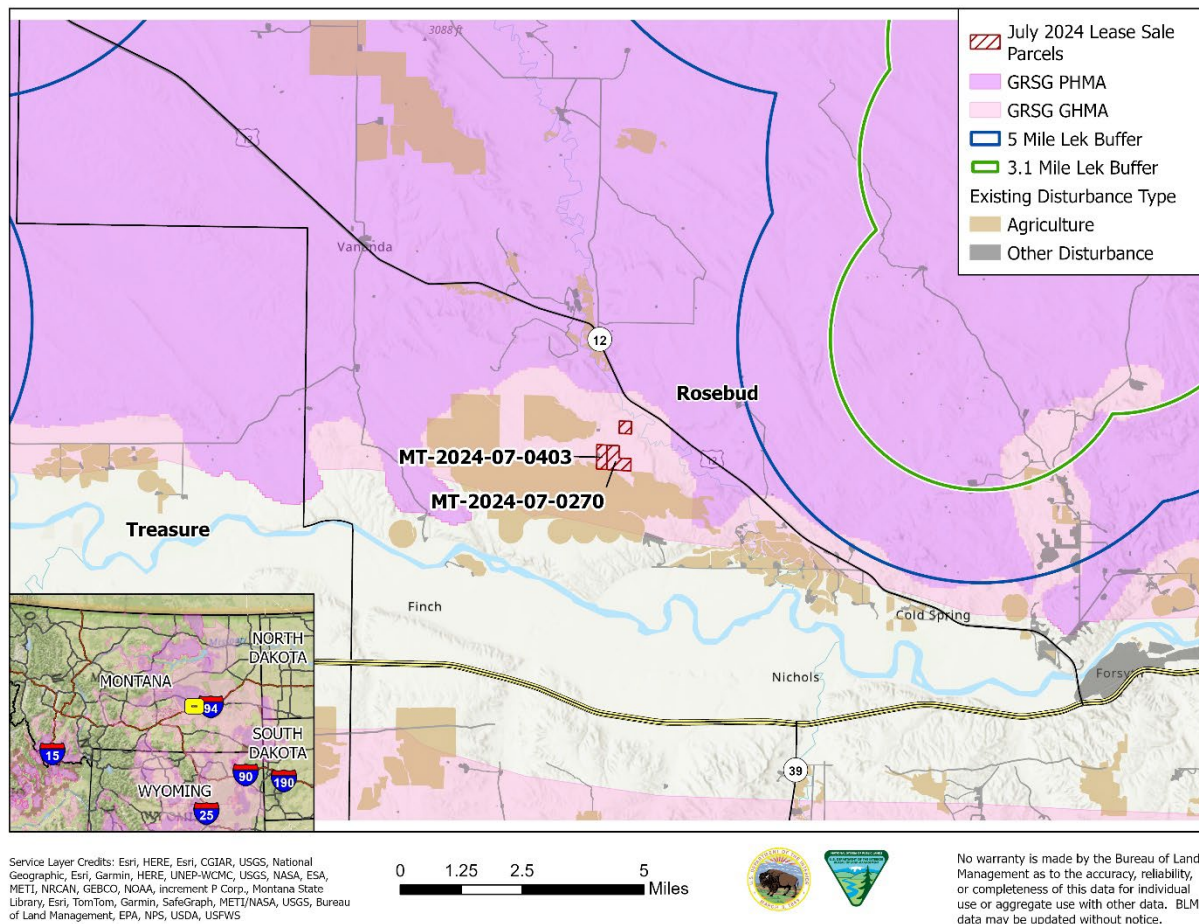
Within the Miles City field office there is one active lek within five miles of parcels (MT-2024-6946 and MT-2024-6947) containing designated habitat. Refer to **Table 18 and Figure 23**. This lek, BI-014 found in Big Horn County and in GHMA, last had documented attendance in 2013, with 3 males, and the nine surveys since have found zero males. Other leks within five miles of the parcels have not been confirmed as active. These sites had males during one lek survey (many around about 2000) but never had a second year with activity. Leks have been periodically surveyed since initial observations. Disturbance in the area of these two parcels is high, including a high density of producing oil and gas wells to the north and southwest. In addition, to the northwest is a portion of the Spring Creek Coal Mine complex. Furthermore, prior oil and gas exploration has led to a developed road network in the area, and a handful of plugged and abandoned wells. Refer to **Figure 23**. While the lek in the area are categorized as active, and the parcel is within 3.1 miles of those leks, this lek has not been occupied since at least 2014. Parcel MT-2024-07-6946 is in GHMA and is a category 4 parcel; CSU 12-30 has been applied to protect GRSG habitat. Parcel MT-2024-07-6946 is in GHMA and PHMA. The BLM applied NSO11-79 in the PHMA portion and CSU 12-30 across the whole parcel (PHMA and GHMA portions). Both parcels are farther than 0.6 miles from an active lek and therefore are not subject to a no surface occupancy stipulation in the GHMA area. CSU 12-30 would restrict surface disturbing activities within 2 miles of an active lek by requiring the operator to minimize and avoid actions that impact GRSG nesting and breeding habitat (such as location, timing, etc.). The parcels both include existing disturbance (category 4), and the surrounding area also has existing disturbance, therefore it is likely that any surface disturbance associated with development of the lease could be collocated in already disturbed areas.

Figure 23. July 2024 lease parcels, GRSG lek buffers, and disturbance in Miles City, Big Horn County



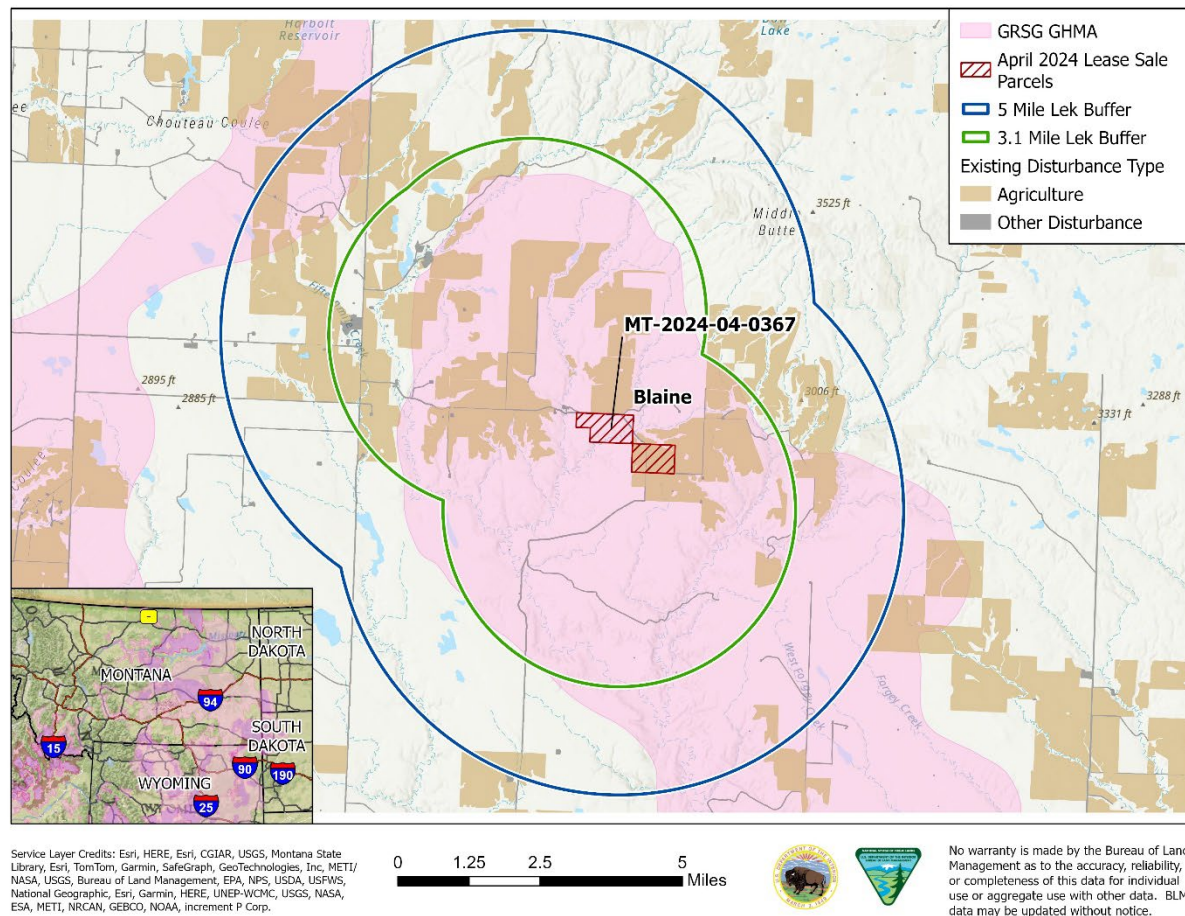
Two other Miles City parcels, MT-2024-0270 and MT-2024-0403, located in Rosebud, have no active leks within five miles of parcels. These parcels are located in GHMA, but near to PHMA. Refer to **Figure 2**. Disturbance in the area of these two parcels includes agricultural fields to the south and west, and major roads. Highway 12 located about one mile to the northeast and Interstate 94 between 4 and 5 miles to the south. Refer to **Figure 24**. There are no leks in the area, parcel 0403 is a category 3 and parcel 0270 is category 6. Due to the distance to any active leks it is unlikely that development on these parcels would have a substantial impact on GRSG or occupied habitat. While CSU 12-30 has been applied, these parcels are farther than two miles from any currently known leks. Furthermore, these parcels are being leased due to drainage potential from existing development, therefore, any drilling activity is unlikely. If there was development following the sale of these parcels a site-specific analysis would relook at current lek status, and without an active lek within 2 miles, the BLM would consider impacts based on LN-11 and LN-37 to mitigate impacts. Parcel 0403 includes existing disturbance, and the surrounding area also has existing disturbance, therefore it is possible that any surface disturbance associated with development of the lease could be collocated in already disturbed areas.

Figure 24. July 2024 lease parcels, GRSG lek buffers, and disturbance for Miles City, Rosebud County



Within the HiLine Havre Field Office there are three active leks within 3.1 miles of the parcel MT-2024-07-0367 (Table 1, Figure 3). The leks within 3.1 miles of parcel MT-2024-07-0367 are SG24-008, SG24-008a, and SG24-005. The BLM reviewed lek population data for these leks and noted all three have not had any documented attendance recently, however, these leks have also either not been unattended for 10 years or had three zero counts, so do not have the survey effort to be classified as inactive. Disturbance in the area is high, but primarily agriculture. Other disturbances, such as road density, is low. Refer to Figure 25. While the three leks in the area are categorized as active, and the parcel is within 3.1 miles of those leks, these leks have not been occupied since at least 2014. Parcel MT-2024-07-0367 is in GHMA and is a category 4 parcel; CSU 12-67 and TL 13-48 have been applied to protect GRSG habitat. CSU 12-67 would restrict surface disturbing activities within 2 miles of an active lek, and TL13-48 would limit construction activity from December 1 through May 15. The parcel includes existing disturbance, and the surrounding area also has existing disturbance, therefore it is likely that any surface disturbance associated with development of the lease could be collocated in already disturbed areas.

Figure 25. Lease parcel, GRSG lek buffers, and disturbance for HiLine, Havre Field Office

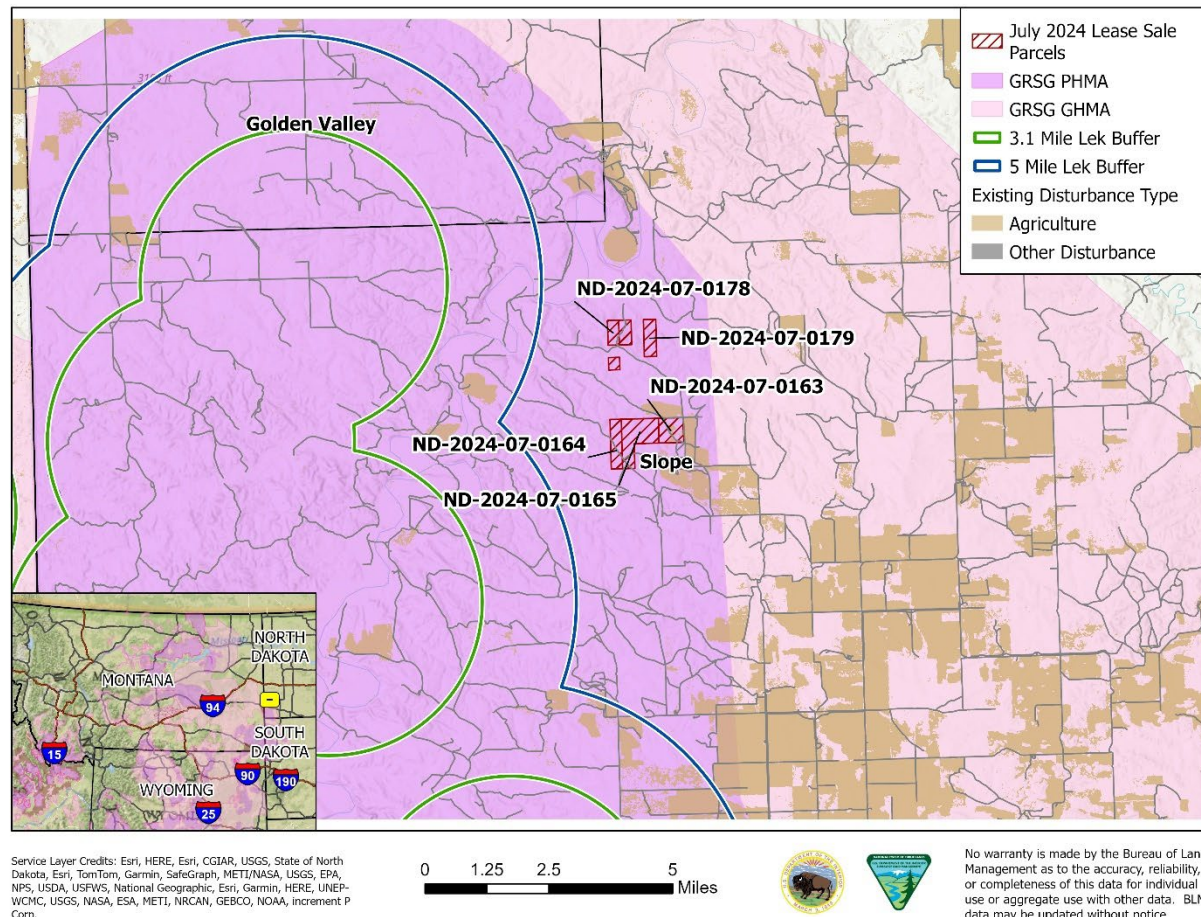


All five parcels in GRSG habitat in this lease sale for North Dakota are more than 7 miles from any known leks, active or inactive. Refer to **Figure 26** (showing the most recent active leks in the vicinity). The three closest leks were active in 2013, but subsequent surveys have not located any GRSG. Refer to **Table 18 and Table 19**. The five parcels in Slope County, ND-2024-07-163, ND-2024-07-164, ND-2024-07-165, ND-2024-07-178, and ND-2024-07-179, are however located in PHMA and on USFS managed lands. Therefore, LMG2020-NSO-06, has been applied which will prevent surface occupancy during development of these leks. No surface occupancy stipulations on the Slope County parcels would move development off site under the fee-fee-fed scenario. The BLM reviewed the potential for off-site development to affect sage- grouse habitat on adjacent private lands. Under a fee-fee-fed scenario, the BLM does not have the jurisdiction to require an APD before an operator may begin pad and road construction or drilling on the non-Federal land, but that APD approval is necessary to drill into the Federal mineral estate. Thus, impacts to habitat could occur before the BLM even processes an APD. However, these parcels have a low development potential, making intense development unlikely, private land where disturbance could be located is primarily east of the parcels, farther away from leks, and due to existing roads and agriculture, collocation is possible.

The leases in Slope County would occur in one of the largest undeveloped blocks in the southern badlands. Development may be counter-productive to current efforts to maintain what remains of the sage-grouse population/habitat in the state, and therefore could conflict with conservation goals, strategies, and actions for set forth in North Dakota's Sage-Grouse Management Plan (Management Plan and Conservation Strategies for Greater Sage-Grouse in North Dakota, 2014). The PHMA in North Dakota represents the last remaining limited habitat with recent occupancy by sage-grouse in the state and despite limited lek activity for any leks

within the recent past for leks close to the parcels in this July 2024 lease sale, the BLM must still consider how these actions may interfere with objectives to restore habitat in the state. Due to the low development potential (i.e., limited likely disturbance), the distance to any lek locations that may be used for relocations, and existing agriculture and roads in the area, it is unlikely that these specific parcels will have adverse impacts on possible future restoration actions.

Figure 26. July 2024 lease parcels, GRSG lek buffers, and disturbance for North Dakota Parcels



While BLM involvement is more limited at the APD stage when development occurs on private lands off lease, the State of Montana sage-grouse program requirements apply to private lands. In addition, any development in mapped sage-grouse habitat in Montana that requires a state permit must comply with provisions of the Montana Sage Grouse Conservation Strategy, as well as needing to submit their project to the Montana Sage grouse Conservation Program, thus ensuring analysis of project impacts to sage-grouse habitat on all lands in the State of Montana.

Requirements, include, but are not limited to:

- No surface occupancy (NSO) within 0.6 mile of an active lek in core habitat,
- Timing restrictions outside the NSO perimeter up to 4 miles from an active lek in core habitat (March 15 – July 15 for breeding, nesting, and early brood-rearing habitat, December 1 – March 15 for winter concentration areas),
- NSO within 0.25 miles of an active like in general habitat, and
- Timing restrictions up to 2 miles from an active lek in general habitat.

Both within BLM PHMA and State of Montana Core Areas detrimental disturbance of suitable sage-grouse habitat within the area affected by a project are limited to five percent disturbance and well pad densities may not exceed an average of one per square mile in PHMA. The analysis area used for detrimental disturbance calculations (DDCT) in PHMA, encompasses a four-mile project boundary and a four-mile boundary around occupied leks (e.g., HiLine ARMPA, Appendix E). Note that a project specific DDCT analysis, a boundary would be identified based on an actual project footprint and proximity to active leks. Therefore, analysis and discussion of disturbance in this EA are similar but differ from the approach to calculating DDCT when an actual location of proposed disturbance is known.

According to the Montana Sage-grouse Conservation Strategy, any proposals for deviations from these stipulations, undefined activities, or exceptions must demonstrate that the proposed activities will not cause declines in sage-grouse populations in core areas. In addition, Montana's Sage-grouse Habitat Conservation Program ensures statewide consistency across all lands for implementing the mitigation hierarchy including first avoiding and minimizing impacts, and then compensating for residual impacts of development. The BLM would coordinate with the Montana Sage-grouse Conservation Program on any project in designated sage-grouse habitat. Consistent with IM 2019-018 (12/6/2018), BLM would incorporate any State of Montana required sage-grouse compensatory mitigation into the design of a project action, which allows BLM to meet existing RMP requirements for net conservation gain. While the effects of any specific oil and gas development project are unknown at the leasing stage, the regulatory mechanisms in place for both the BLM and State of Montana EO provide a multi-pronged approach for addressing specific threats to the species. Specifically, where existing conditions and development potential (e.g., through the prioritization process and this analysis) are conducive to leasing BLM proposed parcels, additional mitigation requirements are in place to reduce impacts to GRSG, and where appropriate, additional development within GRSG can be avoided.

In North Dakota, there are no state regulatory requirements concerning development in sage-grouse habitat on private lands and sage-grouse habitat remains at risk of development. Without a specific proposal, the impacts to sage-grouse habitat in the surrounding area, including specific leks, cannot be quantified. However, relative to possible development in Montana, conservation actions for GRSG at the development stage will be voluntary and subject to site specific discussions.

3.9.5 Cumulative Impacts

The July 2024 lease sale is one sale in part of a nationwide mineral leasing program, whereby the BLM offers federal minerals for sale. In accordance with the Federal Onshore Oil and Gas Leasing Reform Act of 1987 and BLM Manual 3120, each BLM state office will hold sales at least quarterly if lands are available for competitive leasing. Going forward, the BLM anticipates offering parcels across any District in the MT/Dakotas where EOIs have been submitted. The direct, indirect, and cumulative effects of a minerals leasing program were evaluated in the FEIS for the applicable RMPs and that analysis is incorporated by reference into this EA.

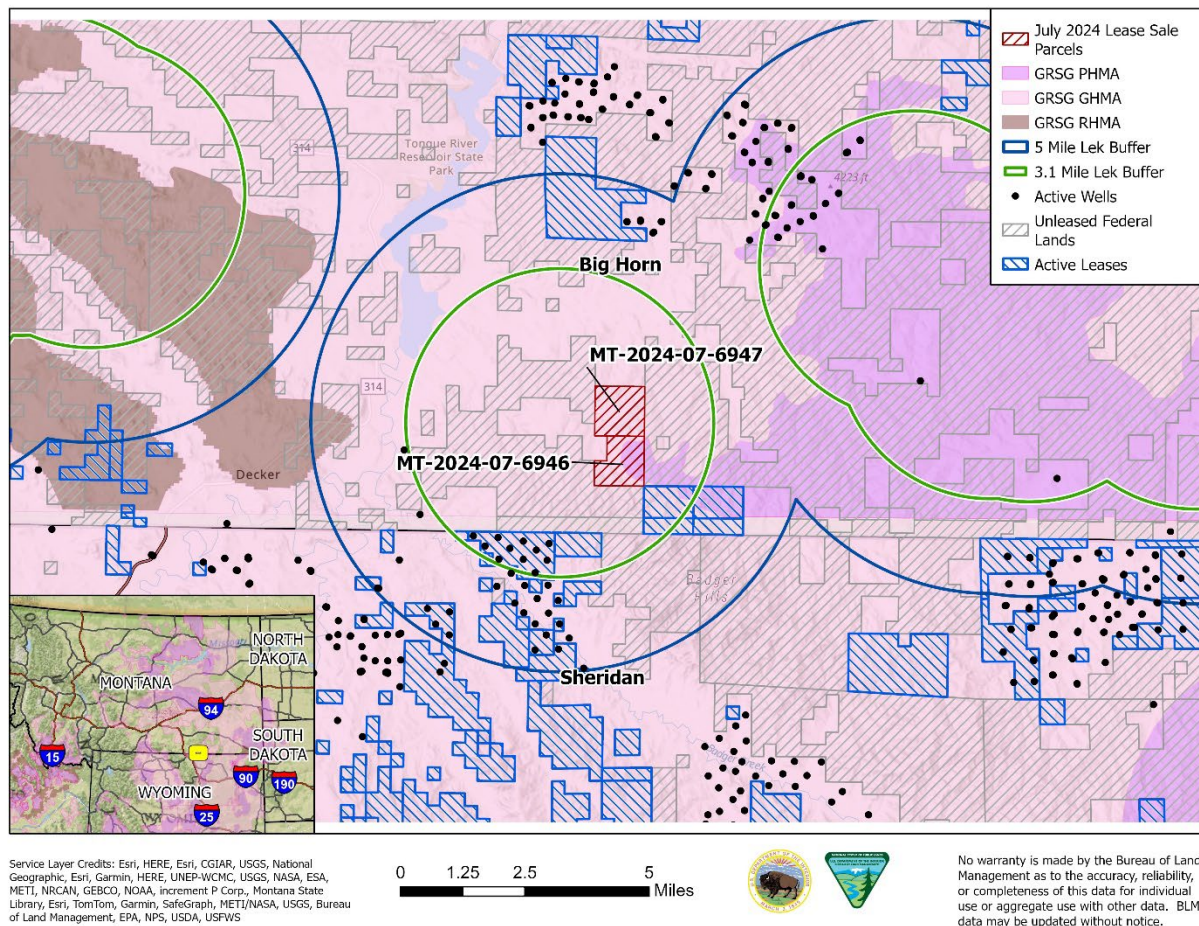
Approximately 64 percent of sage-grouse habitat in Montana is in private ownership. Therefore, managing threats to the species across all lands is important to conserving sage-grouse habitat in the state. As previously noted, the State of Montana adopted a Habitat Quantification Tool (HQT) and Montana Mitigation System Policy Guidance Document for Greater Sage-Grouse in January 2019. BLM participated in this stakeholder process to develop these documents. The HQT document provides the methodology for assessing direct/indirect impacts and quantifying debits and credits; the policy guidance document defines the processes and information necessary to create, buy, or sell mitigation credits suitable for meeting sage-grouse mitigation requirements within the State of Montana. Both the BLM RMPs and the State of Montana stipulations for developing in sage-grouse habitat apply (including density and disturbance limits in PHMA), and a full suite of mitigation options are available to avoid/mitigate impacts. Together with the State of Montana Sage-grouse Habitat Conservation Program, there are regulatory mechanisms in place to reduce cumulative impacts to

sage-grouse habitat across Montana.

Oil and gas development potential is highly variable across the Montana/Dakotas. It is relatively low for western Montana. Development pressure is much higher across the HiLine and eastern Montana. In 2023, the highest producers of oil were Richland County, Roosevelt County, and Fallon County. The 2023 highest gas producers were Powder River County, Richland County, and Phillips County. Refer to the detailed RFDs in **Appendix D**. The BLM produced maps overlaying sage-grouse habitat, 3.1 and 5 mile lek buffers, and existing surface disturbance. Refer to **Figures 23 through 26** above. In addition, the BLM prepared maps to examine currently leased federal parcels and active oil and gas wells. **Refer to Figures 27-29**, to examine, the potential for sage-grouse habitat to be impacted from multiple years of oil/gas leasing and development for parcels in this lease sale. This analysis is to allow the BLM to ascertain cumulative impacts of the 10 parcels that overlap GRSG habitat in this lease sale. For each grouping of parcels this allows an analysis of whether oil and gas activity would be a new stressor to GRSG populations and habitat or would be part of the existing environment. For areas where construction of a new oil/gas well on or near the sage-grouse parcels would not overlap spatially or temporally with existing oil/gas developments, this would be a novel threat to sage-grouse. When combined with other activities and disturbances, and considering the existing sage grouse habitat, population trends, spatial arrangement of leks (including large vs. small leks), the BLM can analyze how leasing proposed parcels may change the risk of an area moving from providing habitat for dense sage-grouse populations (multiple large leks), habitat for a viable but medium-low density population (stable but limited or no large leks), or an area where disturbance thresholds are passed, and the habitat may not support a viable population. The BLM also considered how sage-grouse viability is impacted by West Nile Virus, weather, land use patterns, and other factors, to assess if and how oil/gas development could compound these stressors.

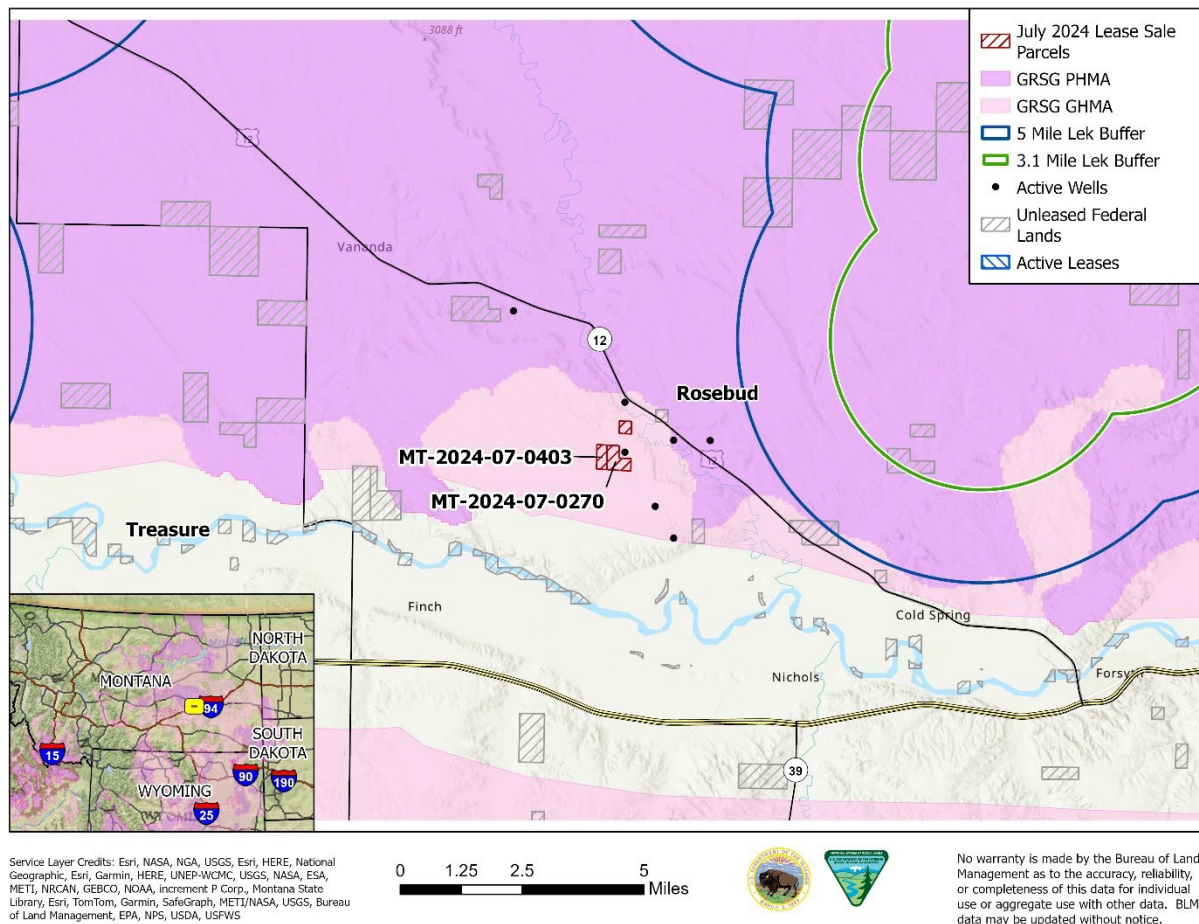
Parcels 6946 and 6947 in Miles City (Big Horn County) have one active lek BI-014, within 5 mi. There are currently leaseholders of multiple federal parcels within five miles of the two tracks, but these are predominantly north and south of these parcels. Likewise, there is a high density of active wells to the north and southwest. Refer to **Figure 27**. Prior drilling in the area of these two parcels resulted in plugged and abandoned wells between the two active fields. Federal parcels to the east and west are currently unleased. Leasing the July 2024 parcels would possibly lead to a smaller gap between active fields but as discussed above, other prior disturbance, including coal development, already likely led to the abandonment of the nearby lek.

Figure 27. July 2024 lease parcels and O&G Leasing and Active Wells for Miles City, Big Horn County



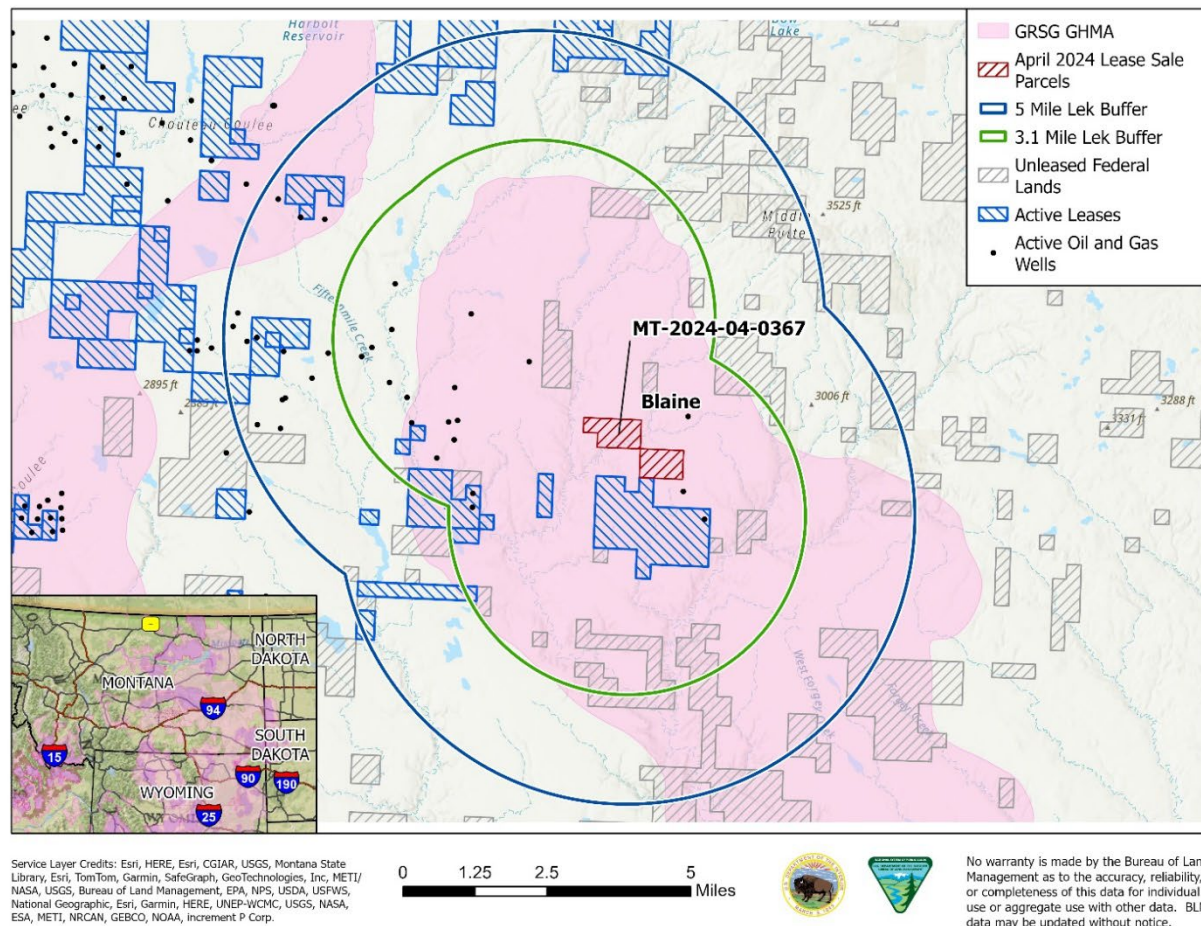
Parcels 0270 and 0403 have no active leks within 5 mi. Federal parcels within the area are very limited, and there is moderate density of active wells in the immediate vicinity of the July 2024 parcels. Refer to **Figure 28**. Leasing the July 2024 parcels would be unlikely to increase the density of oil and gas wells in this location due to establishing a communitization agreement to access federal minerals from an existing well, due to drainage. In the event additional wells developed, due to the distance from known GRSG leks and other habitats would have limited impact on GRSG habitat in an already disturbed landscape.

Figure 28. July 2024 lease parcels and O&G Leasing and Active Wells for Miles City, Rosebud County



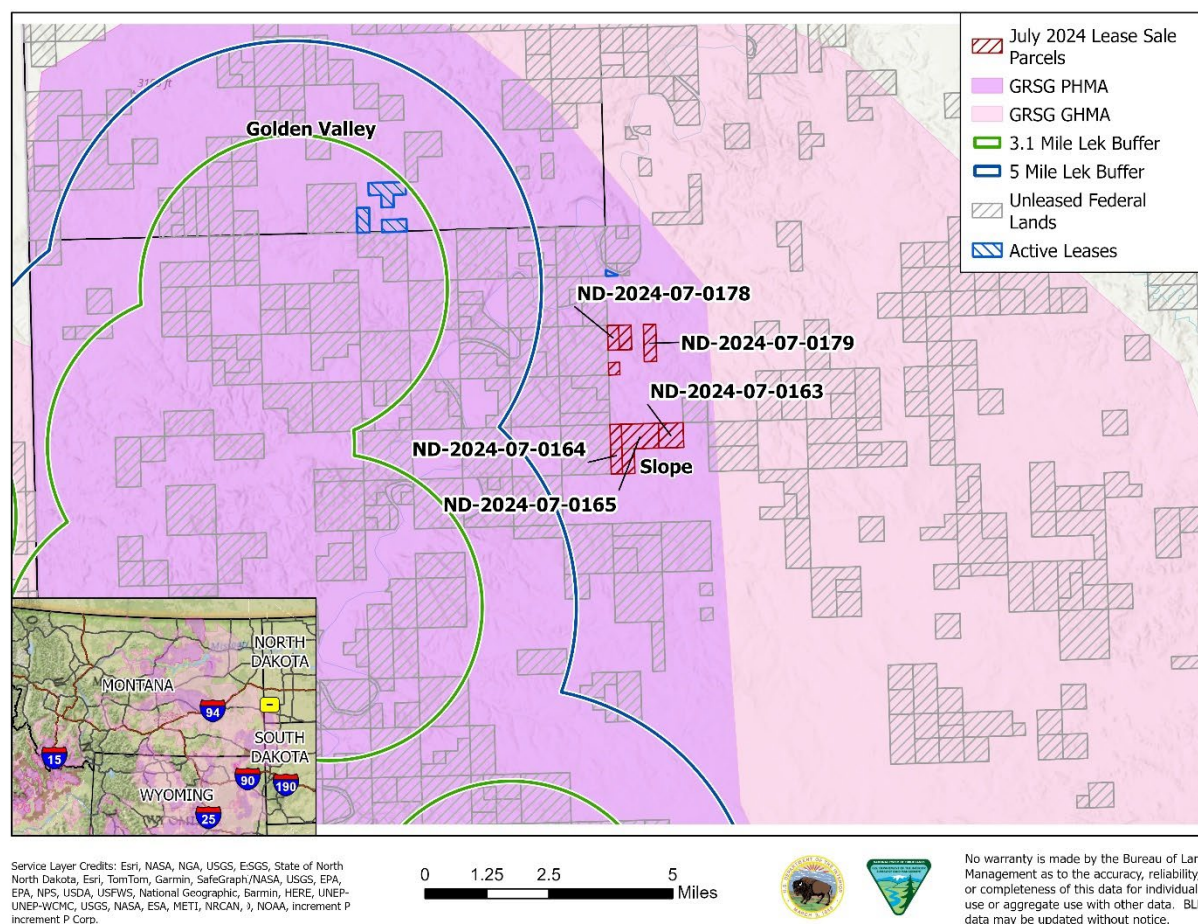
Parcel 0367 (GHMA) is within 5 mi of leks SG24-008A, SG24-008, and SG24-005. There are currently leaseholders of multiple federal parcels within five miles of the track and active producing wells. In addition, a moderate density of active wells exists to the east within 4 miles and a higher density to the northeast at about 8 miles. Refer to **Figure 29**. For these three leks, current disturbance is high and, as discussed above, lek attendance has been zero for almost ten years. Leasing the July 2024 parcels would possibly lead to increased density of oil and gas wells but other prior disturbance and isolation has already likely led to the abandonment of the nearby leks.

Figure 29. July 2024 lease parcels and O&G Leasing and Active Wells for Havre



North Dakota parcels 0163, 0164, 0165, 0178, and 0179 have no active leks, or leks active within the last 10 years, within 5 mi. Federal parcels within the area are predominantly unleased, and there are no active wells in the vicinity of the July 2024 parcels in Slope County, North Dakota. Refer to **Figure 30**. Leasing the July 2024 parcels would possibly introduce a new disturbance activity to this location, as prior exploration led to predominantly abandoned locations. However, due to the distance from known GRSG leks and other habitats, low development potential, the location on the periphery of PHMA, NSO stipulations, and possible locations for offsite development, offering these parcels for lease would have limited additional impact on GRSG habitat. Issues in North Dakota for GRSG habitat include conversion of sagebrush communities, long term degradation of sagebrush communities, West Nile virus outbreaks, increasing anthropogenic structures, and drought.

Figure 30. July 2024 Lease parcels and O&G Lesing and Active Wells for North Dakota



4 Consultation and Coordination

4.1 Summary of Consultation and Coordination

The BLM coordinates with Montana Fish, Wildlife, and Parks (MTFWP), North Dakota Game and Fish (NDGF) and the U.S. Fish and Wildlife Service (USFWS) to identify wildlife concerns, protective measures, and apply stipulations and lease notices associated with oil and gas lease sales. While the BLM manages habitat on BLM lands, the state agencies are responsible for managing all wildlife species populations. The USFWS also manages some wildlife populations but only those federal trust species managed under mandates such as the Endangered Species Act, Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act. The BLM mailed letters to NDGF and USFWS informing them of scoping and EA comment periods. The BLM also communicated informally with NDGF. No scoping comments were received from USFWS.

The BLM consults with Native Americans under various statutes, regulations, and executive orders, including the American Indian Religious Freedom Act, the National Historic Preservation Act, the Native American Graves Protection and Repatriation Act, the National Environmental Policy Act, and Executive Order 13175-Consultation and Coordination with Indian Tribal Governments. The BLM notified consulting tribes of the oil and gas lease sale and invited them to identify any issues or concerns that the BLM should consider in this EA.

The BLM coordinates with the USFS DPG McKenzie and Medora Ranger Districts to identify resource concerns and apply stipulations and lease notices to lease parcels proposed within the administrative boundary of the DPG McKenzie Ranger District. The BLM coordinates with the USACE to identify resource concerns and apply stipulations and lease notices to lease parcels proposed within the administrative boundary of the Garrison Dam/Lake Sakakawea Project. Refer to **Table 21** for the list of Tribes and Agencies contacted.

Table 21. Tribes and Agencies Contacted

Blackfoot Nation	THPO	John Murray
Blackfoot Tribe	Chairman	Illiff "Scott" Kip Sr.
Cheyenne River Sioux Tribe	THPO	Steve Vance
Cheyenne River Sioux Tribe	Tribal Chairman	Ryman LeBeau
Chippewa Cree Tribe	THPO	Jonathan Windy Boy
Chippewa Cree Tribe	Tribal Chairman	Harlan Gopher
Comanche Nation	Chairman	Mark Woommavovah
Comanche Nation	THPO	Martina Callahan
Confederated Salish & Kootenai Tribes	Chairman	Tom McDonald
Confederated Salish & Kootenai Tribes	THPO	
Confederated Salish & Kootenai Tribes	Tribal Preservation Specialist	Mike Durglo
Confederated Tribe of the Umatilla Indian Reservation	Chairman	N. Kathryn Brigham
Confederated Tribe of the Umatilla Indian Reservation	THPO	Carey Miller
Confederated Tribes of the Colville Indian Reservation	Chairman	Jarred-Michael Erickson
Confederated Tribes of the Colville Indian Reservation	THPO	Guy Moura
Crow Creek Sioux Tribe	Chairperson	Peter Lengkeek
Crow Creek Sioux Tribe	THPO	Merle Marks
Crow Tribe	Chairman	Frank White Clay
Crow Tribe	THPO	Aaron Brien
Eastern Shoshone Tribe	Chairman	John St. Claire
Eastern Shoshone Tribe	THPO	Josh Mann
Flandreau Santee Sioux Tribe	President	Anthony Reider
Flandreau Santee Sioux Tribe	THPO	Gerrie Kills A Hundred
Fort Peck Tribe	Chairman	Floyd Azure
Fort Peck Tribe	THPO	Dyan Youpee
Ft. Belknap Tribe	Acting THPO	Michael J. Black Wolf
Ft. Belknap Tribe	CAO	Delina Cuts The Rope
Ft. Belknap Tribe	Environmental Protection Manager	Ina Nez Perce
Ft. Belknap Tribe	President	Jeffery Stiffarm

Kiowa Nation	Chairman	Lawrence Spottedbird
Kiowa Nation	THPO(Acting)	Dewey Tsonetonkoy Sr.
Little Shell Chippewa Tribe	Chairman	Gerald Gray
Little Shell Chippewa Tribe	THPO	Dwayne Reid
Lower Brule Sioux Tribe	Chairman	Clyde Estes
Lower Brule Sioux Tribe	Cultural Resources	Claire Green
Lower Sioux Indian Community	President	Robert Larson
Lower Sioux Indian Community	THPO	Cheyenne St. John
Nez Perce Tribe	Chairman	Shannon Wheeler
Nez Perce Tribe	NAGPRA Coordinator	Robert Tayloer
Nez Perce Tribe	THPO	Keith "Pat" Baird
Nez Perce Tribe	Tribal Archaeologist	Josiah Pinkham
Northern Arapaho Nation	Chairman	Lloyd Goggles
Northern Arapaho Nation	THPO	Crystal Cbearing
Northern Cheyenne Tribe	THPO	Teanna Limpy
Northern Cheyenne Tribe	Vice President	Serena Wietherelt
Oglala Sioux Tribe	President	Frank Star Comes Out
Oglala Sioux Tribe	Project Coordination	Thomas Brings
Rosebud Sioux Tribe	President	Scott Herman
Rosebud Sioux Tribe	THPO	Ione Quigley
Santee Sioux Tribe of Nebraska	Chairman	Roger Trudell
Santee Sioux Tribe of Nebraska	THPO	Joseph Moose
Shoshone-Bannock Tribes Fort Hall Reservation	Chairman	Nathan Small
Shoshone-Bannock Tribes Fort Hall Reservation	Cultural Resources Director	Louise E. Dixey
Shoshone-Bannock Tribes Fort Hall Reservation	Environmental Program Manager	Christina Cuttler
Sisseton-Wahpeton Oyate Tribe	Chairman	J. Garret Renville
Sisseton-Wahpeton Oyate Tribe	THPO	Dianne Desrosiers
Spirit Lake Sioux Tribe	Chairman	Lonna Jackson Street
Spirit Lake Sioux Tribe	THPO	Kenny (KJ) Gray Water
Standing Rock Sioux Tribe	Chairperson	Janet Alkire
Standing Rock Sioux Tribe	THPO	Jon Eagle
Three Affiliated Tribes	Chairman	Mark Fox
Three Affiliated Tribes	THPO	Allen Demaray
Turtle Mountain Band of Chippewa	Chairman	Jamie Azure
Turtle Mountain Band of Chippewa	THPO	Jeff Desjarlais Jr.
Yankton-Sioux Tribe	Chairperson	Robert Flying Hawk
Yankton-Sioux Tribe	THPO	Kip Spotted Eagle
LCTHF	Executive Director	Lindy Hatcher
US Environ. Protection Agency Reg 8	Helena office	

Montana DNRC	Northern District Field Office	
National Wildlife Federation	Northern Rockies Proj. Office	
Army Corps of Engineers	Omaha District	
Earthjustice	Rocky Mountain	
Montana DNRC	Trust Land Management HQ	
Center for Biological Diversity		Randi Spivak
ConocoPhillips Company		Pushpa Nellikkattil
Dept. of Env. Quality		Christopher Dorrington
Div of Ecological Services		Jodi Bush
DNRC MT board of O&G		Tom Richmond
DNRC-Eastern Land Office		Chris Pileski
EPA Region 8 NEPA Program		Amelia Platt
Friends of the Earth		Nicole Ghio
Ft. Peck Army Corps of Engineers		Darin McMurry
Lewis & Clark National Historic Trail		Denise Nelson
Little Missouri National Grassland		Cale Bickerdyke
Mariah Energy		Lenny Behm
Montana Environmental Information Center		Derf Johnson
Montana Historical Society		Dr. Mark Baumler
Montana Trout Unlimited		
Montana Wilderness Association		
MT Fish, Wildlife, and Parks		Deb O'Neill
MT Preservation Alliance		Chere Justio
ND Game and Fish		Patrick T. Isakson
North Blaine Cooperative State Gazing Distrcit		Cheryl Schuldt
North Dakota Dept of Trust Lands		
North Dakota Office		USFWS
Northern Plains Resource Council		Adam Haight
Public Lands Solutions		Jason Keith
South Dakota Dept. of Game, Fish and Parks		
State Historical Society of ND		Claudia Berg
The Wilderness Society		Ben Tettlebaum
Theodore Roosevelt Conservation Partnership		
Theodore Roosevelt National Park		Heidi Riddle
USFS NPNHT Admin.		Sandi McFarland

USFS NPNHT CMP		Sandra Broncheau-McFarland
USFS NPNHT PAO		Roger M. Peterson
Western Energy Alliance		Esther Wagner
Western Env. Law Center		Morgan O'Grady

4.2 Summary of Public Participation

Public scoping for this project was conducted through a 30-day scoping period from September 18 to October 18, 2023, as described in a Press Release issued by the Montana/Dakotas State Office, advertised on the BLM Montana/Dakotas State Office website, and posted online in the BLM NEPA e-Planning website. The BLM also mailed letters to local, state, and federal agencies, Tribal entities, and private surface owners informing them of the lease sale and seeking comments. The mailing list is included in the project record.

A 30-day public comment period has been completed from November 16 to December 18, 2023, as described in a Press Release issued by the Montana/Dakotas State Office, advertised on the BLM Montana/Dakotas State Office website, and posted online in the BLM NEPA e-Planning website. The BLM also mailed letters to local, state, and federal agencies, Tribal entities, and private surface owners informing them of the lease sale and seeking comments. The mailing list is included in the project record and can be viewed in **Table 21**.

4.2.1 Section 208 Report

In November 2021, the Department of the Interior released a Report on the Federal Oil and Gas Leasing Program (Report). The Report made specific recommendations to address documented deficiencies in the program to meet three programmatic goals:

- Providing a fair return to the American public and States from Federal management of public lands and waters, including for development of energy resources;
- Designing more responsible leasing and development processes that prioritize areas that are most suitable for development and ensure lessees and operators have the financial and technical capacity to comply with all applicable laws and regulations; and
- Creating a more transparent, inclusive, and just approach to leasing and permitting that provides meaningful opportunity for public engagement and Tribal consultation.

The Report also recommends: As an overarching policy, BLM should ensure that oil and gas is not prioritized over other land uses, consistent with BLM's mandate of multiple-use and sustained yield. The BLM should carefully consider what lands make the most sense to lease in terms of expected yields of oil and gas, prospects of earning a fair return for U.S. taxpayers, and conflicts with other uses, such as outdoor recreation and wildlife habitat. The BLM should always ensure it is considering the views of local communities, Tribes, businesses, State and local governments, and other stakeholders. While the leasing decisions for this lease sale result from the BLM's exercise of its discretion based on its analysis and review of the record, they are also consistent with the recommendations in the Report, as well as numerous reports issued by the Governmental Accountability Office and Congressional Budget Office, including: ensuring public participation and Tribal consultation, addressing conflicts with other resources, avoiding lands with low potential for oil and gas development, focusing leasing near existing development and ensuring a fair return to taxpayers.

This lease sale and NEPA process have included a 30-day scoping period, 30-day comment period on the environmental assessment (which was then extended by an additional 10 days) and 30-day protest period. The BLM has also ensured applicable Tribal consultation is current. The BLM's leasing decisions take into

account comments received during this process and will further evaluate points raised in any protests received. As a result of public comments received on the sale and consistent with recommendations in the November 2021 report, BLM undertook additional review and has not identified any additional parcels which warrant deferral. Details of this review is included in **Appendix J**.

5 List of Preparers

Table 22. List of Preparers

Name	Title	Resource Area
Cale Bickerdyke	Mineral and Lands Supervisor, USFS	USFS DPG Coordination
Tyler Croft	Petroleum Engineer	Water Resources
Peter Davis	Petroleum Engineer	Reasonably Foreseeable Development Scenario
Greg Liggett	Geologist (Paleontology)	Paleontology
Marcus Lorusso	GIS Specialist	GIS
Jessica McDermott	Geospatial Ecologist	Big Game, Greater Sage-grouse
Mark Peterson	Air Resources Specialist	Air Resources, GHG Emissions
Scott Rickard	Economist	Socioeconomics, Environmental Justice
Tessa Wallace	Natural Resource Specialist	Project Lead and Coordination, Editor Environmental Justice and Human Health
Hattie Payne	Natural Resource Specialist	Project Lead and Coordination, Editor
Dave Wood	Wildlife Biologist	Wildlife, Listed Species (Greater Sage-grouse)
Karsyn Lamb	Economist	Environmental Justice and Human Health

6 Table of Issues and Resources Considered

Table 23. Issues and Resources Considered

Determination*	Issue	Rationale for Determination
NI	Access	No issues from act of leasing.
PI	Air Quality	Potential impacts; will be analyzed.
NP	Areas of Critical Environmental Concern	Not present per review of GIS data.
NP	Backcountry Conservation Areas	Not present per review of GIS data.
PI	Climate	Potential impacts; will be analyzed.
PI	Cultural Resources	Potential impacts; will be analyzed.
PI	Environmental Justice	Potential impacts; will be analyzed.
NP	Farmlands (Prime or Unique)	Not present per review of GIS data.
NI	Fire Management	No issues from act of leasing.
NI	Fish Habitat	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NI	Floodplains	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NI	Forests and Rangelands	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NI	Forestry Resources and Woodland Products	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
PI	Greenhouse Gases and Climate	Potential impacts; will be analyzed.
PI	Human health and safety concerns	Potential impacts; will be analyzed.
NI	Invasive, Non-native Species	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NI	Lands and Realty	The act of leasing is in accordance with current management plans and is consistent with current land use.
NP	Lands with Wilderness Characteristics	Not present per review of GIS data.
NI	Livestock Grazing Management	No issues from act of leasing.
NI	Migratory Birds	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NI	Native American Religious Concerns	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NI	Noise Resources	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NI	Paleontological Resources	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.

Determination*	Issue	Rationale for Determination
NI	Recreation Resources	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
PI	Sage Grouse Habitat	Potential impacts; will be analyzed.
PI	Socioeconomics	Potential impacts; will be analyzed.
NI	Soils	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NI	Threatened, Endangered or Candidate Plant or Animal Species	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NI	Vegetation	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NI	Visual Resources	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NI	Wastes, Hazardous or Solid	No issues from act of leasing. Stipulation application and regulatory requirements will adequately mitigate potential impacts at APD stage.
PI	Water	Potential impacts; will be analyzed.
NI	Wetlands/Riparian Zones	No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
NP	Wild Horses and Burros	Not present per review of GIS data.
NI	Wild and Scenic Rivers	Not present per review of GIS data.
NP	Wilderness and Wilderness Study Areas	Not present per review of GIS data.
PI	Wildlife	Potential impacts; will be analyzed. No issues from act of leasing. Stipulation application will adequately mitigate potential impacts at APD stage.
<p>*NP = not present in the area impacted by the proposed or alternative actions. NI = present, but not affected to a degree that detailed analysis is required. PI = present and may be impacted. Will be analyzed in affected environment and environmental effects. For consistency, the term 'effects' is used throughout the EA, but we use the term 'impacts' just in this table. (NOTE: PI does not necessarily mean effects are likely to be significant, only that there are effects to this issue, resource, or use. Significance will be determined through analysis and documented in a Finding of No Significant Impact or Environmental Impact Statement.)</p>		

7 Acronyms and Abbreviations

ACEC	Area of Critical Environmental Concern
AERMOD	American Meteorological Society / EPA Regulatory Model
APA	Administrative Procedures Act
APD	Application for Permit to Drill
AQRV	Air Quality Related Value
ARMP	Approved Resource Management Plan
ARPA	Archeological Resources Protection Act
ARTSD	Air Resource Technical Support Document
ATV	All-Terrain Vehicle
AUM	Animal Unit Month
BBCS	Bird and Bat Conservation Strategy
BCC	Birds of Conservation Concern
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	Best Management Practice
BOR	Bureau of Reclamation
BTV	Blue-tongue Virus
CAA	Clean Air Act
CALPUFF	California Puff Model
CAP	Criteria Air Pollutant
CBNG	Coal Bed Natural Gas
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO ₂ eq	Carbon Dioxide Equivalent
COA	Condition of Approval
CSU	Controlled Surface Use
DEQ	Department of Environmental Quality
DM	Departmental Manual
DoAQ	Division of Air Quality
DPG	Dakota Prairie Grasslands
DR	Decision Record
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EOI	Expression of Interest
EOR	Enhanced Oil Recovery
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESD	Ecological Site Description
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FLIGHT	Facility Level Information on Greenhouse Gas Tool
FLIR	Forward Looking Infrared
FLPMA	Federal Land Policy Management Act of 1976, as amended
FONSI	Finding of No Significant Impact
FOOGLRA	Federal Onshore Oil and Gas Leasing Reform Act of 1987
GHG	Greenhouse Gas
GHMA	General Habitat Management Area

GIS	Geographic Information Systems
GWP	Global Warming Potential
HAP	Hazardous Air Pollutant
HD	Hunting District
HMA	Herd Management Area
HQT	Habitat Quantification Tool Technical Manual
IB	Information Bulletin
IBLA	Interior Board of Land Appeals
IDT	Interdisciplinary Team
IM	Instruction Memorandum
IMPROVE	Interagency Monitoring of Protected Visual Environments
IPCC	Intergovernmental Panel on Climate Change
KOP	Key Observation Point
LN	Lease Notice
LTA	Long-Term Averages
MAAT	Mean Annual Air Temperature
MACT	Maximum Achievable Control Technologies
MAF	Master Address File
MAP	Mean Annual Precipitation
MBOGC	Montana Board of Oil and Gas Conservation
MBTA	Migratory Bird Treaty Act of 1918
MCFO	Miles City Field Office
MDEQ	Montana Department of Environmental Quality
MDNRC	Montana Department of Natural Resources and Conservation
MFP	Management Framework Plan
MLA	Mineral Leasing Act
MMT	Million Metric Tons
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MSGOT	Montana Sage Grouse Oversight Team
MTDB	MAF/TIGER Database
MTFWP	MT Fish, Wildlife and Parks
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NDDH	North Dakota Department of Health
NDFO	North Dakota Field Office
NDGF	North Dakota Game and Fish
NDSWC	North Dakota State Water Commission
NEPA	National Environmental Policy Act
NHD	National Hydrography Dataset
NHPA	National Historic Preservation Act
NHT	National Historic Trails
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSO	No Surface Occupancy
NSPS	New Source Performance Standards
OHV	Off-Highway Vehicle
PEIS	Programmatic Environmental Impact Statement
PFC	Proper Functioning Condition
PGM	Photochemical Grid Modeling

PHMA	Priority Habitat Management Area
P.L.	Public Law
PM	Particulate Matter
PSD	Prevention of Significant Deterioration
RAC	Resource Advisory Council
RFD	Reasonably Foreseeable Development
RFFA	Reasonably Foreseeable Future Action
RHMA	Restoration Habitat Management Area
RMP	Resource Management Plan
RMPA	Resource Management Plan Amendment
ROD	Record of Decision
ROW	Right-of-way
SEIS	Supplemental Environmental Impact Statement
SHPO	State Historic Preservation Office
SRP	Special Recreation Permit
T&E	Threatened and Endangered
TIGER	Topologically Integrated Geographic Encoding and Referencing
TL	Timing Limitation
TRNP	Theodore Roosevelt National Park
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USDOI	U.S. Department of the Interior
USFS	U.S. Department of Agriculture Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geologic Survey
VOC	Volatile Organic Compound
VRI	Visual Resource Inventory
VRM	Visual Resource Management
WEM	Waivers, Exceptions, or Modifications
WHB	Wild Horse and Burro
WO	Washington Office
WSA	Wilderness Study Area

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